Greenhouse Gas Emissions in Afghanistan

Afghanistan Numbers at a Glance (2011)

35 $MtCO_2e$*
Total GHG emissions (0.07% of world total)
World: 46,906 $MtCO_2e$

29,105,480
Population
World: 6,964,618,177

1.19
tCO_2e per capita
World: 6.73 tCO_2e

US$10,869 Million
GDP**
World: US$54,034 Billion

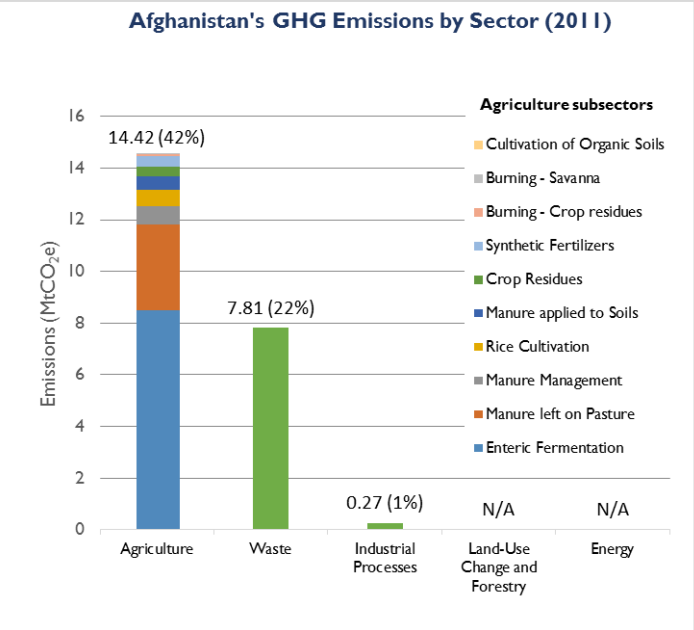
3,195
tCO_2e/million US$ GDP
World: 868 tCO_2e/million US$ GDP

+19 $MtCO_2e$ (+118%)
Change in GHG emissions (1990–2011)
World: +12,969 $MtCO_2e$ (+38%)

Source: WRI CAIT 2.0, 2015
*Million metric tons of carbon dioxide equivalent
**Gross Domestic Product (GDP) in constant 2005 US$

Greenhouse Gas (GHG) Emissions by Sector

According to the World Resources Institute's Climate Analysis Indicator Tool (WRI CAIT), Afghanistan emitted 35 million metric tons (CO_2 equivalent) of GHGs in 2011.[1] WRI CAIT indicates that the agriculture, waste, and industrial processes sectors contributed around 42%, 22%, and less than 1% of those emissions.[1] It does not report GHG emissions from energy and land-use change and forestry (LUCF).[2] In contrast, Afghanistan's 2007 Greenhouse Gas Inventory Report (2007 GHG inventory), reports 2005 emissions as 53% from agriculture, 13% energy, 32% land use change and forestry, 1% industrial processes, and 0.5% waste.[3] This source is used in Afghanistan's 2015 Intended Nationally Determined Contribution (INDC) and its 2013 Initial National Communication (INC) to the UNFCCC. Afghanistan is undergoing rapid changes, which, together with the incompleteness of national level data, makes the interpretation of these data sources challenging.



Sources: WRI CAIT 2.0 Database (2015) and FAOSTAT (2015).

Change in GHG Emissions in Afghanistan (1990-2011)

WRI CAIT data show that Afghanistan's GHG emissions from agriculture, waste, and industrial processes grew by 118% from 1990 – 2011, with a 3.3% average annual rate of change. CAIT reports that emissions from agriculture likewise grew by nearly 4% per year, but does not provide time-series data for the energy or LUCF sectors. According to the US Energy Information Administration (EIA), emissions from energy averaged 11% annual growth during this time.

Agriculture: Agriculture emissions nearly doubled from 1990 – 2011, from 7.4 $MtCO_2e$ to 14.4 $MtCO_2e$. Emissions from enteric fermentation by livestock grew an average of 6% per year and accounted for over half of the change. Other contributors included agricultural soils, manure

[1] World Resources Institute Climate Analysis Indicator Tool (WRI CAIT), 2.0. 2015.

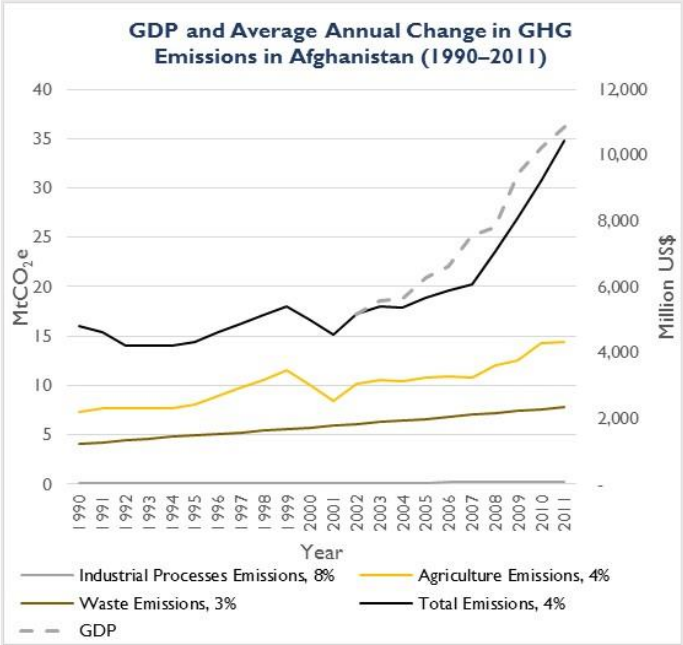
[2] For energy and LUCF sector emissions, WRI CAIT uses data from the International Energy Agency (IEA) and the Food and Agriculture Organization (FAO), respectively. Since there are no IEA and FAO data for Afghanistan, energy and LUCF sector emissions are not presented in the graphs in this fact sheet.

[3] The data required to estimate the GHG emissions was collected from the following sources: Afghanistan Statistical Year Book, 2005; Afghanistan Import and Export Statistical Year Book, 2006; Asian Development Bank TA 4088: Afghanistan Energy Sector Master Plan, 2004; websites of various UN and international funding agencies; consultations with the National Environmental Protection Agency of Afghanistan, and with various ministries and government agencies.

left on pasture, and cultivation of soils.[4] Most livestock-related emissions come from cattle, whose production grew at approximately 3.1% per year from 1990 - 2011.[5] Livestock products contribute more than 50% of Afghanistan's agricultural GDP.

LUCF: According to the INC, approximately 95% of LUCF GHG emissions stem from conversion of forest and grassland to permanent cropland or pasture. Most of these emissions are released immediately when forest or grassland biomass is burned; consumption of wood fuel has also increased due to conflict-related disruption of commercial fuel supplies. Afghanistan's forest area declined by 3% per year from 2000 – 2005, and by another 13% from 2005 to 2010. Overgrazing and expansion of rain-fed wheat production to serve a growing population are two main sources of pressure on available land.[6]

Energy: Energy emissions data from the U.S. Energy Information Administration reflects Afghanistan's low but fast-growing absolute and per capita energy consumption rate: CO_2 emissions from energy consumption skyrocketed from 800,000 tons in 2005 to 8.6 million tons in 2012, an increase of over 1000%. This trend is fueled by a six-fold increase in domestic energy production, from 7 to 44 trillion BTU, and by a dramatic increase in energy imports.[7] The INC notes that between 2006 and 2010, national coal production increased twenty-fold with the 2007 government lease arrangements with the private sector. Coal use expanded from household cooking and heating to fueling cement industries and power plants.[8] Transportation vehicle imports into Afghanistan have grown by an average of 10% per year between 2004 and 2010, and accordingly, petroleum imports from neighboring countries such as Pakistan and Uzbekistan have increased five-fold, from 0.5 to 2.5 million metric tons. Electricity imports, which were virtually non-existent in 2005, now comprise 77% of commercial energy comprising hydropower, natural gas, coal, and petroleum.[9]



Source: WRI CAIT 2.0 Database, 2015

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

Data from WRI CAIT show that Afghanistan's carbon intensity fluctuated between 2,500 and 3,200 tons CO_2e per US $1 million between 2002 and 2011. This figure is approximately 3 times the world average. EIA reports that intensity of CO_2 emissions from energy consumption increased dramatically during the same period, from 155 tons of CO_2 per US$1 million in 2002 to 736 tons CO_2 per US$1 million in 2011, surpassing the world average CO_2 intensity from energy of 597 tons CO_2 per US $1 million in 2011.

Climate Change Mitigation Targets and Plans

Afghanistan's INDC establishes a target to reduce GHG emissions by 13.6% below business as usual (BAU) by 2030 through increased energy production from renewables and natural gas; energy efficiency; a shift to more efficient transport vehicles and clean fuels; afforestation, reforestation, and rehabilitation of rangelands; and improved manure and land management for agriculture. This goal can be reached with financial, capacity building, technology, and legal assistance. In 2015, with the support of the United Nations Environment Program (UNEP), Afghanistan's National Environmental Protection Agency (NEPA) began developing a Low Emission Development Strategy (LEDS) to promote human, social and economic development while keeping GHG emissions on a low growth path.[10]

[4] Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT), viewed May 3, 2016: http://faostat3.fao.org/browse/area/2/E.

[5] Ibid.

[6] Afghanistan's Initial National Communication to the UNFCCC, 2013, available at http://unfccc.int/resource/docs/natc/afgnc1.pdf.

[7] Energy Information Administration (EIA) International Energy Statistics, available at http://www.eia.gov/beta/international/data/, accessed on May 5, 2016.

[8] Afghanistan's Initial National Communication to the UNFCCC, 2013, available at http://unfccc.int/resource/docs/natc/afgnc1.pdf.

[9] Ibid.

[10] Greenhouse Gas Emission Future for Afghanistan, available at http://www.unep.org/disastersandconflicts/CountryOperations/Afghanistan/News/AfghanistanLEDS/tabid/1060395/Default.aspx (viewed May 4, 2016)