



Greenhouse Gas Emissions in Pakistan

Pakistan Numbers at a Glance (2012)

342 MtCO₂e*

Total GHG emissions
(0.72% of world total)

World: 47,599 MtCO₂e

179,160,111

Population*

World: 7,043,181,414

1.9

tCO₂e per capita

World: 6.76 tCO₂e

US\$137,744 Million

GDP**

World: US\$55,261 Billion

2,480

tCO₂e/million US\$ GDP

World: 861 tCO₂e/million US\$ GDP

+159 MtCO₂e (+87%)

Change in GHG emissions
(1990–2012)

World: +13,661 MtCO₂e

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

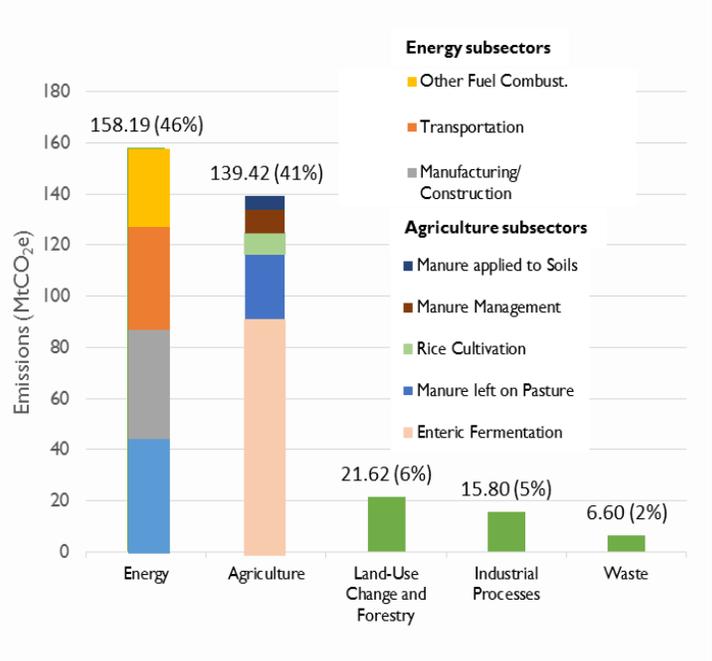
Pakistan's GHG profile is dominated by emissions from the energy and agriculture sectors, whose combined emissions total 87% of national GHG emissions. According to the World Resources Institute's Climate Analysis Indicator Tool (WRI CAIT), energy contributes 46% of Pakistan's total annual GHG emissions, of which 26% is attributed to electricity consumption, 25% to manufacturing, 23% to transportation and the remaining 25% to other energy subsectors. Agriculture accounts for 41% of total GHG emissions, of which enteric fermentation is the primary contributor (46%). The land use change and forestry (LUCF) sector contributes 6%, dominated almost entirely by changes in forest land.¹ Industrial processes (IP) and waste contribute 5% and 2%, respectively.

Pakistan submitted its [Initial National Communication \(INC\)](#) in 2003, which included a national GHG inventory for the period July 1993 - June 1994. Pakistan also developed a GHG inventory for year 2008, referenced in the Final Report of the [Task Force on Climate Change](#) published in 2010.

Change in GHG Emissions in Pakistan (1990-2012)

Pakistan's total GHG emissions grew 87% from 1990-2012. The average annual change in total emissions during this period was 2.9%, with sector-specific average annual changes as follows: energy (3.8%), agriculture (2.7%), LUCF (-0.7%), IP (7%), and waste (1.3%). Energy emissions in Pakistan grew by 87 MtCO₂e from 1990 through 2012, contributing to 55% of total emissions growth. During the same time, agriculture emissions grew by 62 MtCO₂e and contributed 39% of the total increase. Emissions from the IP sector showed the highest average annual increase, but contributed relatively little given the sector's small share of total emissions.²

Pakistan's GHG Emissions by Sector (2012)



Sources: WRI CAIT 2.0, 2015; FAOSTAT, 2015

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¹ Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT), viewed May 22, 2016: <http://faostat3.fao.org/browse/area/2/E>.

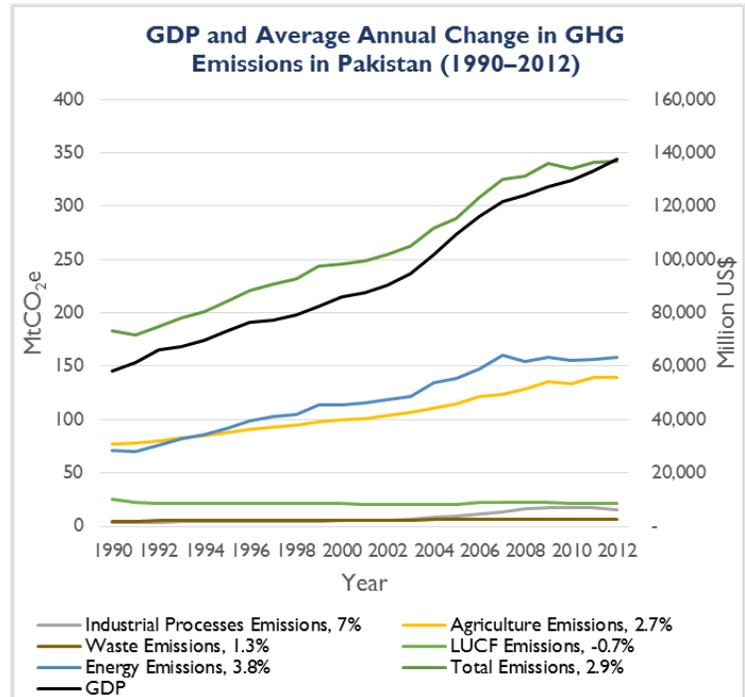
² World Resources Institute Climate Analysis Indicators Tool (WRI CAIT) 2.0, 2015.

Energy: The electricity and transportation subsectors were the main drivers of energy sector emissions growth, contributing 30% and 27%, respectively, of the total energy sector increase.³ The relative share of GHG-intensive fossil fuels (coal, oil, and natural gas) in the electricity generation mix increased from 54% in 1990 to 64% in 2012. The total amount of electricity consumption also doubled during this time, from 31 billion kWh in 1990 to 77 billion kWh in 2012, driven by improved access to electricity, from 60% of the population in 1990 to 94% in 2012.⁴ The number of motor (private) vehicles registered increased from 2 million vehicles in 1992⁵ to more than 9 million vehicles registered in 2011,⁶ driving an increase in consumption of fuel oil and compressed natural gas⁷ in the transport sector.

Agriculture: 54% of emissions growth from this sector is due to enteric fermentation while another 18% came from synthetic fertilizers and 14% came from manure left on pasture.⁸ These trends are accompanied by growth of the livestock population, which increased at an annual growth rate of 2.4% between 1990 and 2000, and approximately 3.5% between 2001 and 2011.⁹ The largest sector of Pakistan's economy, agriculture contributes about 24% of the Gross Domestic Product (GDP).¹⁰

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

GHG emissions grew by 89% over the period 1990-2012, averaging just under 3% annually, whereas GDP grew by 136% during the same time, averaging 4% annually.¹¹ With the carbon intensity of Pakistan's economy at almost 4 times the world average, there is potential to reduce Pakistan's GHG emissions relative to GDP.



Source: WRI CAIT 2.0, 2015

Climate Change Mitigation Targets and Plans

Pakistan's [Intended Nationally Determined Contribution \(INDC\)](#), submitted on November 12, 2015, does not specify an emissions reduction target or set of mitigation activities. The country's [2012 National Climate Change Policy](#) states that the Government will develop an Action Plan for implementing climate change mitigation measures in the energy, agriculture, and forestry sectors, including promoting renewable and hydroelectric power, prioritizing natural gas imports over oil and coal, introducing energy conservation measures, developing public transit and implementing vehicle emission standards, promoting better agriculture and livestock management practices, setting afforestation and reforestation targets, and curbing illegal deforestation. These actions are contingent upon affordability, provision of international climate finance, transfer of technology, and capacity building.

³ Calculations using data from World Resources Institute Climate Analysis Indicators Tool (WRI CAIT) 2.0, 2015.

⁴ World Bank World Development Indicators, available at <http://data.worldbank.org>, viewed May 26, 2016.

⁵ National Economic & Environmental Development Study (NEEDS), 2011, available at <https://unfccc.int/files/adaptation/application/pdf/pakistanneeds.pdf>, viewed June 1, 2016.

⁶ Pakistan Statistical Yearbook, 2012 – Transport, available at <http://www.pbs.gov.pk/sites/default/files/other/yearbook2012/Transport%20and%20Comm/20-24.pdf>, viewed June 1, 2016.

⁷ Pakistan had the highest amount of natural gas vehicles in the world at 2.3 million vehicles running on CNG (NEEDS, 2011).

⁸ Calculations using data from FAOSTAT, available at <http://faostat3.fao.org/>, viewed May 22, 2016.

⁹ This figure refers to all species combined. Source: Pakistan Statistical Yearbook, 2012 – Livestock population, available at <http://www.pbs.gov.pk/sites/default/files/other/yearbook2012/Agriculture/1-24.pdf>, viewed June 1, 2016.

¹⁰ Pakistan Bureau of Statistics, <http://www.pbs.gov.pk/content/agriculture-statistics>, viewed May 24, 2016.

¹¹ World Resources Institute Climate Analysis Indicators Tool (WRI CAIT) 2.0, 2015.