01 WHO IS EMITTING?

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Current global emissions

As per World Resources Institute's Climate Analysis Indicators Tool (CAIT) version 7.0, USA has less than 5 per cent of the world's population, but accounts for more than 20 per cent of the global carbon dioxide emissions in 2006. India, with almost 17 per cent of global population, accounts for less than 5 per cent of the emissions.

Table 1: Share of global CO_2 emissions and population, 2006

Country	Total CO_2 emissions in 2006 (Million tCO_2)	Share of global CO_2 emissions in 2006 (%)	Share of world population in 2006 (%)
China	6206.6	21.78	20.19
United States of America	5770.8	20.25	4.59
European Union (27)	4119.1	14.46	16.94
Germany	842.3	2.96	1.28
United Kingdom	545.4	1.91	0.93
France	388.6	1.36	0.94
Spain	354.6	1.24	0.67
Poland	313.3	1.10	0.59
Netherlands	179.7	0.63	0.25
Russian Federation	1614.4	5.67	2.37
India	1331.1	4.67	16.94
Japan	1247.6	4.38	1.98
Canada	549.7	1.93	0.50
South Korea	503.5	1.77	0.75
Iran	472.2	1.66	1.07
Italy	471.9	1.66	0.91
Mexico	441.2	1.55	1.60
Australia	399.3	1.40	0.32
Indonesia	360.4	1.26	3.41
Brazil	355.5	1.25	2.89
Saudi Arabia	353.6	1.24	0.36
South Africa	348.4	1.22	0.73
Ukraine	317.1	1.11	0.73
Taiwan	279.9	0.98	0.35
Turkey	263.4	0.92	1.12
Thailand	236.6	0.83	0.98
Kazakhstan	184.1	0.65	0.23
Rest of the world	4166.2	14.62	33.32

Source: Climate Analysis Indicators Tool (CAIT) Version 7.0. (Washington, DC: World Resources Institute, 2010).

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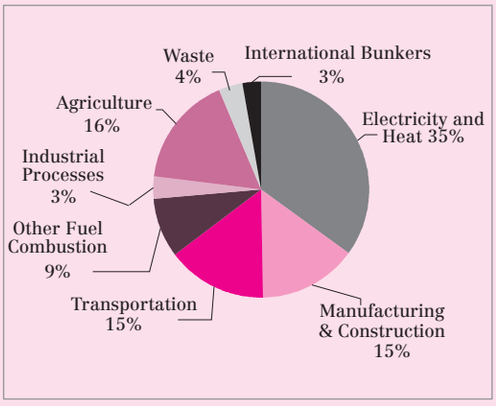
Sectors: Where emissions come from

WRI and International Energy Agency (IEA) also examined global, national and sectoral CO_2 emissions. The following graphical representations and sectoral analysis are based on this data.

Graph 1: World GHG emissions by sector in 2006 (excludes land use change)



Source: Climate Analysis Indicators Tool (CAIT) Version 6.0 & 7.0. (Washington, DC: World Resources Institute, 2010).

Table 2: World GHG emissions by sector in 2006 (excludes land use change)

Sector	Percentage share of global GHG emissions
Energy	74
Electricity & Heat	35
Manufacturing & Construction	15
Transportation	15
Other Fuel Combustion	9
Industrial Processes	3
Agriculture	16
Waste	4
International Bunkers	3

Source: Climate Analysis Indicators Tool (CAIT) Version 6.0 & 7.0. (Washington, DC: World Resources Institute, 2010).

Electricity and heat

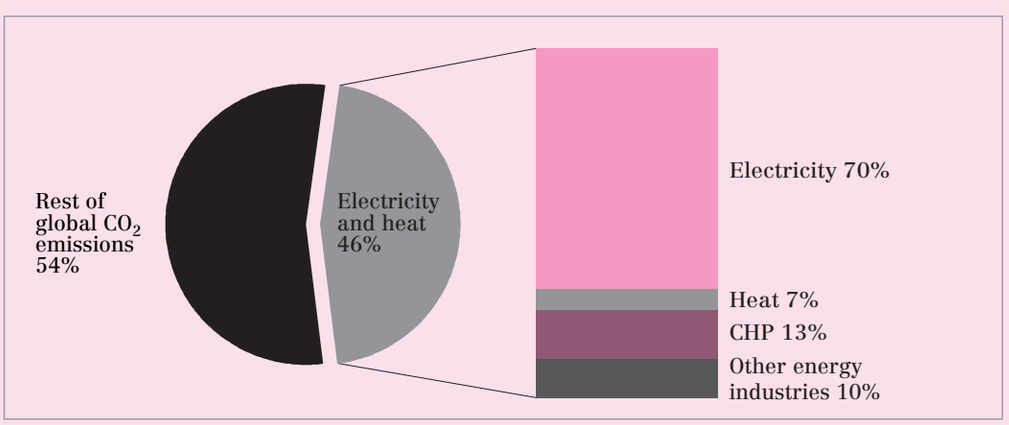
Electricity and heat account for about 46 per cent of global CO_2 emissions, making it the largest sector. In terms of global share of CO_2 emissions from electricity and heat, China, US and EU-27 take up the top spots of 25, 20 and 12 per cent respectively, of the global total, with India following at the fifth position. The 10 largest emitters account for 81 per cent of the emissions from this sector. The major per capita emitters, in order, are Middle East countries, Australia and the US.

Table 3: Share of CO_2 emissions from electricity and heat

Country	Percent of world total (2008)
China	25.4
USA	19.8
EU-27	11.8
Russia	7.0
India	6.3
Japan	3.8
South Korea	1.9
Australia	1.9
Canada	1.4
South Africa	1.3
Brazil	0.5
Rest of World	18.9

Source: International Energy Agency(IEA):CO_2 emissions from fuel combustion highlights (2010 Edition):CO_2 emissions by sector in 2008

Graph 2: Emissions from electricity and heat



Note: CHP - Combined heat and power
Source: International Energy Agency (IEA):CO_2 emissions from fuel combustion highlights (2010 Edition):CO_2 emissions by sector in 2008

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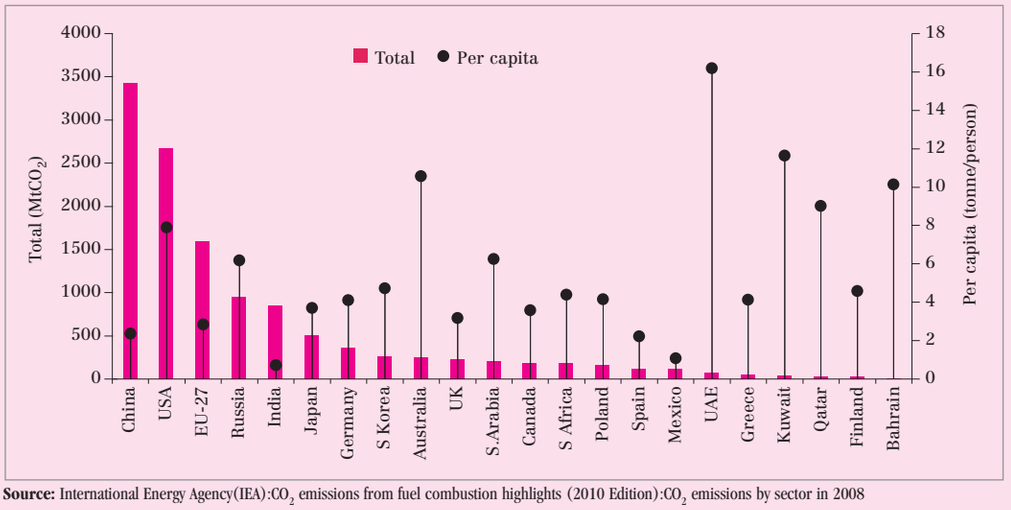
Graph 3: Per capita CO_2 emissions from electricity and heat, 2008

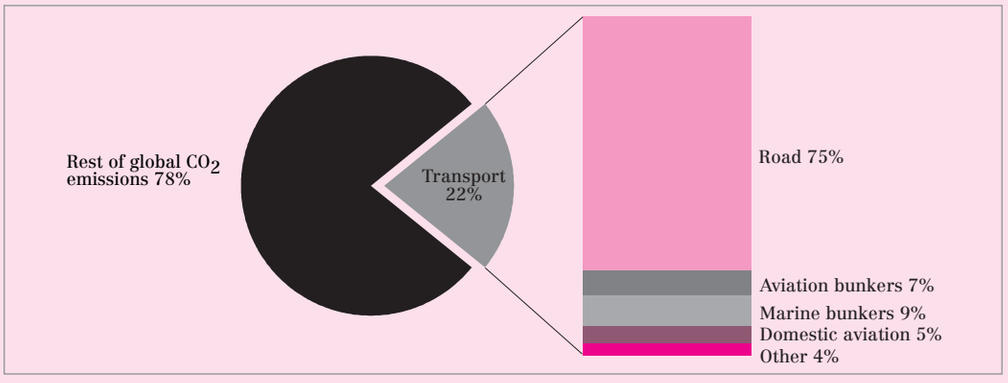


Source: International Energy Agency(IEA):CO_2 emissions from fuel combustion highlights (2010 Edition):CO_2 emissions by sector in 2008

Transport

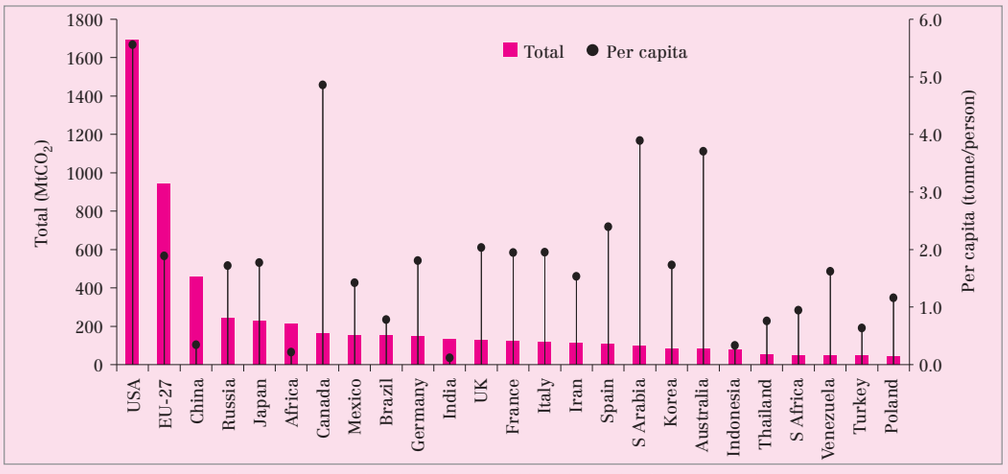
Transport accounts for about 22 per cent of global CO_2 emissions. Within this sector, road transport, at 75 per cent of CO_2 emissions accounts for the largest share. Aviation amounts to about 12 per cent. Interventions in this sector tend to be oriented around safety and fuel efficiency regulations and devlopment of transportation infrastructure like roads, highways, seaports, and airports. However, difficulties arise in attributing emissions to countries. Ground transport is relatively easy to attribute; although there some exceptions, such as in Europe, emissions almost always occur within the same national boundaries where fuels are purchased. Emissions for international transport, however, nearly all occur in or over international territory, raising ambiguities concerning attribution.

Graph 4: CO_2 emissions from transportation



Source: International Energy Agency(IEA):CO_2 emissions from fuel combustion highlights (2010 Edition):CO_2 emissions by sector in 2008

Graph 5: Per capita CO_2 emissions from transportation, 2008



Source: International Energy Agency(IEA):CO_2 emissions from fuel combustion highlights (2010 Edition):CO_2 emissions by sector in 2008

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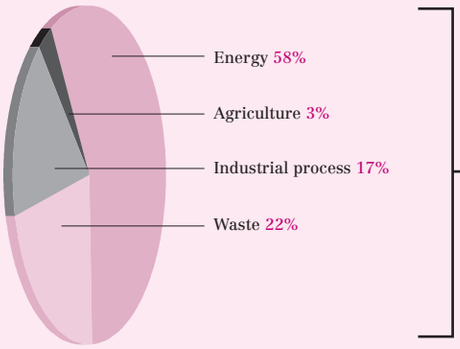
Emissions: India

The reliable esimate of India's inventory comes from the government's 2010 report produced by Indian Network of Climate Change Assessment (INCCA) – a research body commisioned by Union ministry of environment and forests. The data is pertaining to the year 2007. The government is working on its National Communication which has to be submitted to the UN secretariat in the coming years.

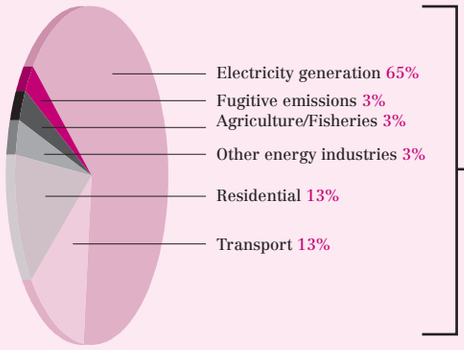


Sectoral contribution to greenhouse gases

The total net greenhouse gas (GHG) emissions from India in 2007 were 1727.71 million tonnes of CO_2 equivalent (eq) of which

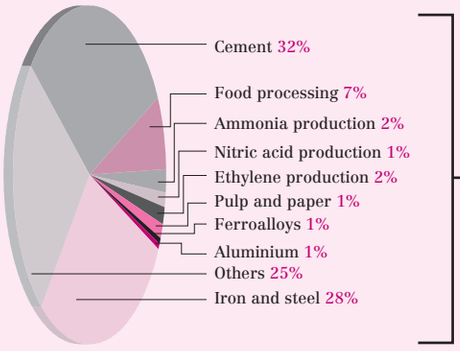
- CO_2 emissions were 1221.76 million tonnes:
- CH_4, emissions were 20.56 million tonnes: and
- N_2O emissions were 0.24 million tonnes

India's per capita CO_2 eq emissions including LULUCF were 1.5 tonne/capita in 2007.



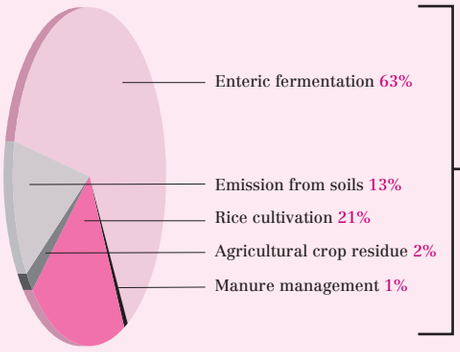
Energy

Within the energy sector, electricity generation contributed 65 per cent of the GHG emissions, transportation 13 per cent and residential and commercial 13 per cent of the energy-related emissions.



Industrial process

Within industry, the key sectors were iron and steel contributed 28 per cent, cement contributed 32 per cent, food processing contributed 7 per cent. aluminium production contributed 1 per cent of the industry-related emissions, whereas chemical production such as ammonia, ehylene and nitric acid production contributed less than 2 per cent each.



Agriculture

Within agriculture sector enteric fermentation contributed 63 per cent of the CO_2 equivalent emissions. Rice cultivation added 21 per cent and Emissions from soils added 13 per cent to the total share of emissions from agriculture.