GHG Platform INDIA

Trend Analysis of GHG Emissions in DADRA & NAGAR HAVELI

GHG Platform India is a civil society initiative providing an independent estimation and analysis of India's Greenhouse Gas (GHG) emissions across key sectors, namely- Energy, Industrial Processes and Product Use (IPPU), Agriculture, Forestry & Other Land Use (AFOLU) and Waste.

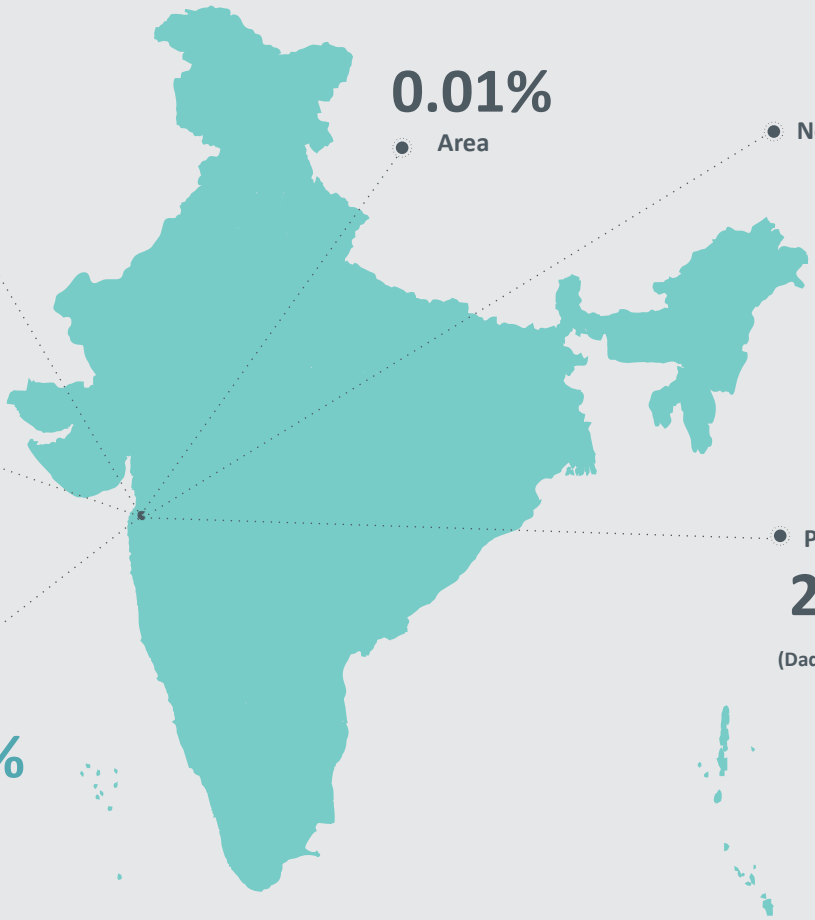
The Platform seeks to add value to the various ongoing GHG emission estimation efforts by helping address existing data gaps and data accessibility issues, extending beyond the scope of national inventories to state inventories, and by increasing the volume of analytics and policy dialogue on India's GHG emissions sources, profile, and related policies.

The initiative estimates and assesses GHG emissions and removals from the following sectors:

ENERGY | IPPU* | AFOLU | WASTE

*Fuel combusted for Captive Electricity Generation (Auto-Producers) has been reported under Energy sector.

Dadra & Nagar Haveli at a glance (2013)



Population
0.03%

0.01%
Area

Net GHG Emissions
0.03%

Population Density
698 Persons/Sq.Km (Dadra & Nagar Haveli)
382 Persons/Sq.Km (India)

Per Capita Emissions
2.15 tCO_2e (Dadra & Nagar Haveli)
1.93 tCO_2e (India)

Forest Area
42% (Of Dadra & Nagar Haveli's Total Area)
0.03% (Of India's Forest Area)

Economy-wide Emission Estimates

Emissions of Dadra & Nagar Haveli grew at a CAGR[1] of 3.19% from 0.63 $MtCO_2e$ in 2005 to 0.81 $MtCO_2e$ in 2013[2] as illustrated in Figure 1. The GHG emissions trend of the UT was highly uneven owing to variations in the emissions of all the sectors. The emissions peaked to their highest at 1.03 $MtCO_2e$ in 2008 while they dipped to their lowest at 0.40 $MtCO_2e$ in 2010. In 2005, ~60% of the GHG emissions emanated from the Energy sector, ~30% from the IPPU sector, and the remaining 10% belonged to the AFOLU (~8%) and Waste (~2%) sectors respectively. When compared to 2005 emissions, the share of Energy and AFOLU sectors increased to ~70% and ~16% respectively in 2013. The IPPU sector emissions reduced to ~11% respectively, from 2005 to 2013, whereas, the share of Waste sector emissions increased only slightly to ~3% whereas as illustrated in Figure 2 below.

Figure 1: GHG Emission Estimates for Dadra & Nagar Haveli (2005 to 2013)

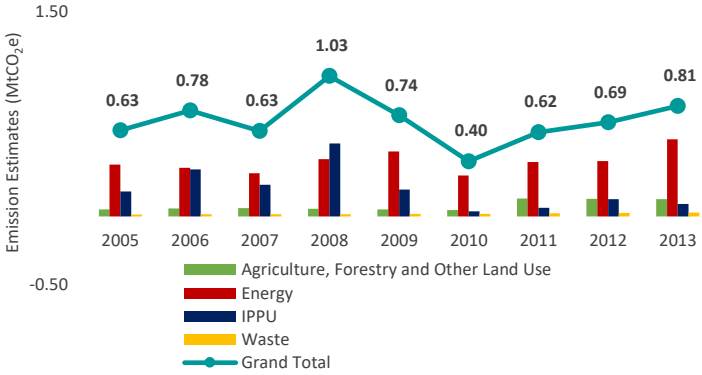


Figure 2: Sector-wise Contribution to Economy-wide GHG Emissions of Dadra & Nagar Haveli

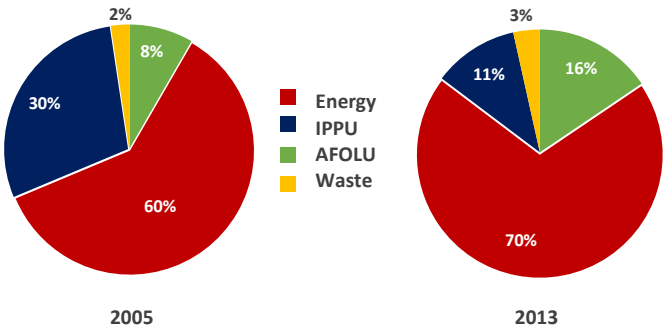
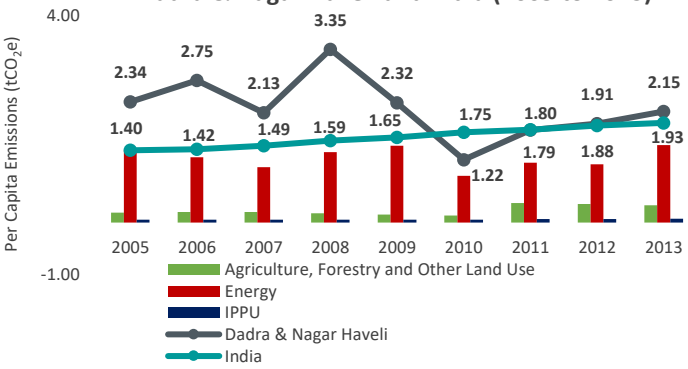


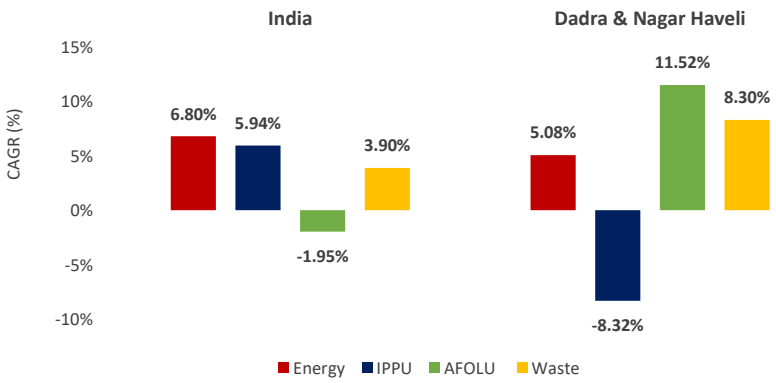
Figure 3: Per Capita GHG Emissions for Dadra & Nagar Haveli and India (2005 to 2013)



The per capita emissions of Dadra & Nagar Haveli reduced from 2.34 tCO_2e in 2005 to 2.15 tCO_2e in 2013. Dadra & Nagar Haveli recorded a highly uneven trend of the per capita emissions from 2005 to 2013 as shown in Figure 3 above. When compared to India, the per capita emissions of Dadra & Nagar Haveli remained higher than the country throughout the reference period except in 2010 when the UT recorded its lowest per capita emissions due to decline in emissions from the Energy sector. The growth rates of per capita emissions from 2005 to 2013 were 4.07% for India and -1.01% for Dadra & Nagar Haveli (Figure 3). Thus, while the per capita emissions of India were rising steadily, the per capita emissions of Dadra & Nagar Haveli were declining during the reference period.

Figure 4: Sector-wise GHG Emissions Growth Rate from 2005 to 2013

These growth rates have been compounded annually.



GHG emissions from the AFOLU sector of Dadra & Nagar Haveli grew at the highest CAGR of 11.52%[3] from 2005 to 2013 amongst all other sectors (Figure 4). This was followed by the Waste and Energy sector which recorded a lower growth rate of 8.30%[4] and 5.08%[5] respectively. Notably, the IPPU sector recorded a negative growth rate of 8.32%[6] during the reference period. When compared to India's sectoral growth rates, the Waste and AFOLU sectors recorded higher growth rates from 2005 to 2013. Further, unlike the growth of emissions of the IPPU sector (5.94%) for India, the IPPU emissions of Dadra & Nagar Haveli declined at 8.32% during the reference period.

[1] Compound Annual Growth Rate

[2] Calendar year values have been considered for this analysis. For Global Warming Potential (GWP) calculations IPCC-ARII values have been considered.

[3] The CAGR value is very high but the corresponding change in absolute emissions was only of the order of 0.07 $MtCO_2e$ from 2005 to 2013

[4] The CAGR value is very high but the corresponding change in absolute emissions was only of the order of 0.01 $MtCO_2e$ from 2005 to 2013

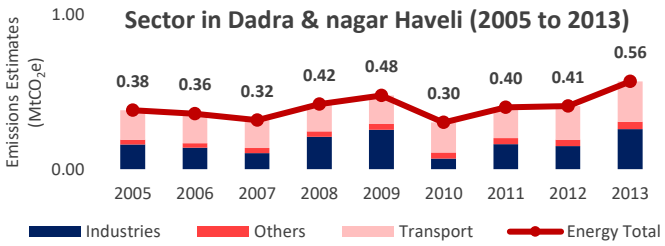
[5] The CAGR value is very high but the corresponding change in absolute emissions was only of the order of 0.18 $MtCO_2e$ from 2005 to 2013

[6] The CAGR value is very high but the corresponding change in absolute emissions was only of the order of -0.09 $MtCO_2e$ from 2005 to 2013.

Energy Sector

The Energy sector represented nearly 70% of the total emissions of Dadra & Nagar Haveli in 2013. In general, emissions from the Energy sector arise from two main sub-sectors–Fuel Combustion (Public Electricity Generation, Transport, Industries and Agriculture, Commercial and Residential categories) and Fugitive. However, emissions from the UT were only registered from the Fuel Combustion sub-sector. The overall emissions from the Energy sector rose at a CAGR of 5.08% from 0.38 $MtCO_2e$ in 2005 to 0.56 $MtCO_2e$ in 2013 (Figure 5).

Figure 5: GHG Emisssions Estimates for Energy Sector in Dadra & nagar Haveli (2005 to 2013)

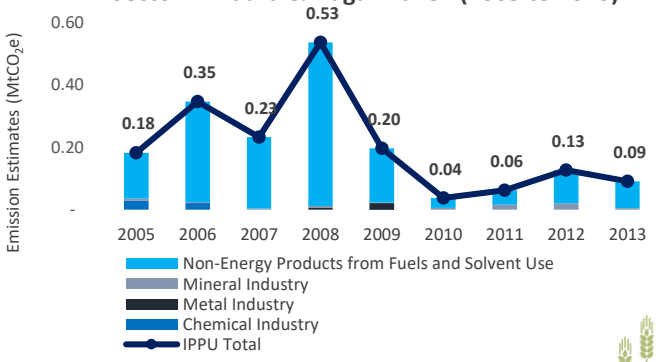


Transport was a major contributor of GHG emissions under the Fuel Combustion sub-sector across all the reference years except 2008 and 2009 when the Industries category emerged as the maximum emitter of GHGs. Under the Transport category, almost all the emissions emanated from Road Transportation for all the reference years. The high variations in annual emissions estimated from the Industrial category was primarily due to inconsistent activity data reported by the Non-Ferrous Metals Industries.

IPPU Sector

The IPPU sector represented ~3% of the total GHG emissions of Dadra & Nagar Haveli in 2013. Emissions from the IPPU sector are largely driven by Chemical, Metal, Mineral Industries and Non-Energy Products from Fuels and Solvent Use. Emissions from this sector declined at a CAGR of -8.32% from 0.18 $MtCO_2e$ in 2005 to 0.09 $MtCO_2e$ in 2013. However, a detailed analysis revealed that the inconsistencies were a resultant of variations in coverage of the ASI survey each year (Figure 6). Emissions, from Chemical Industries and Metal industries were registered only during 2005 to 2006 and 2008-09 respectively. Notably, emissions from Non-Energy Products from Fuels and Solvent Use was registered throughout the period as depicted in Figure 6.

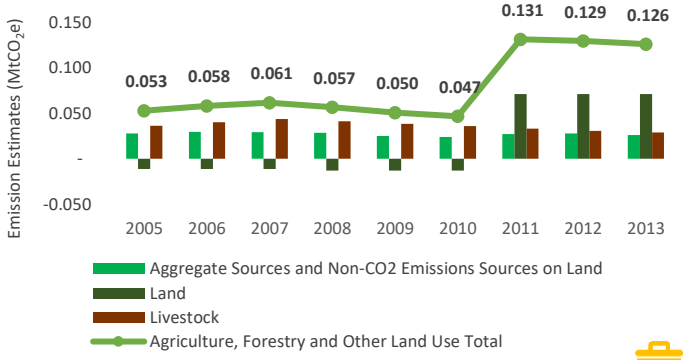
Figure 6: GHG Emission Estimates for IPPU Sector in Dadra & Nagar Haveli (2005 to 2013)



AFOLU Sector

The AFOLU sector represented ~16% of the total emissions of Dadra & Nagar Haveli in 2013. Emissions/removals from this sector arise from three main sub-sectors namely Livestock, Land and Aggregate Sources and Non-CO_2 Emissions Sources on Land. Notably, the Land sub-sector was a sink of GHG emissions from 2005 to 2010, but from 2011 onwards it became a net emitter whereas, the other two sub-sectors under AFOLU sector were emitters of GHGs across all the reference years. Emissions from this sector grew at a CAGR of 11.54% from 0.053 $MtCO_2e$ in 2005 to 0.126 $MtCO_2e$ in 2013 as shown in Figure 7. A significant rise and a gradual decline thereafter was observed in the overall AFOLU emissions in 2011 owing to the transformation of the Land sub-sector from a net sink to a net emitter of GHGs.

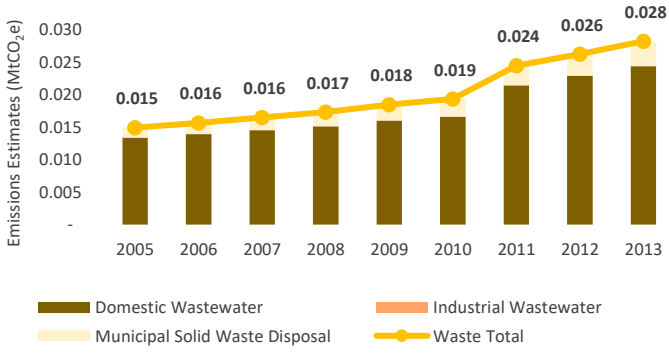
Figure 7: GHG Emission Estimates for AFOLU Sector in Dadra & Nagar Haveli (2005 to 2013)



Waste Sector

The Waste sector contributed ~11% of the total GHG emissions of Dadra & Nagar Haveli in 2013. Municipal Solid Waste [7], Domestic Wastewater and Industrial Wastewater are the key sources of GHG emissions in the Waste sector. Emissions from the Waste sector grew at a CAGR of 8.30% from 0.015 $MtCO_2e$ in 2005 to 0.028 $MtCO_2e$ in 2013. A significant rise in the overall Waste sector emissions was registered in 2011 owing to increased emissions from the Domestic Wastewater, which reflects changing trends in use of various treatment systems as reported in Census of India 2011 as depicted in Figure 8. Domestic Wastewater was the major emitter of GHGs across all the reference years. Discharge of untreated wastewater and use of septic tanks are key drivers of emissions in this sub-sector.

Figure 8: GHG Emissions Estimates for Waste Sector in Dadra & Nagar Haveli (2005 to 2013)



[7] 'Refers to emission in urban areas. Emissions from Municipal Solid Waste Disposal in rural areas are not considered, as disposal predominantly occurs in a dispersed manner and does not generate significant CH_4 emissions'

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The Platform comprises of the following civil society:

An initiative supported by

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The **Council on Energy, Environment and Water (CEEW)** is one of South Asia's leading not-for-profit policy research institutions. It uses data, integrated analysis and strategic outreach to explain – and change – the use, reuse, and misuse of resources.

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