

Trend Analysis of GHG Emissions of ANDAMAN & NICOBAR ISLANDS

GHG Platform India is a civil society initiative providing an independent estimation and analysis of India's Greenhouse Gas (GHG) emissions across key sectors.

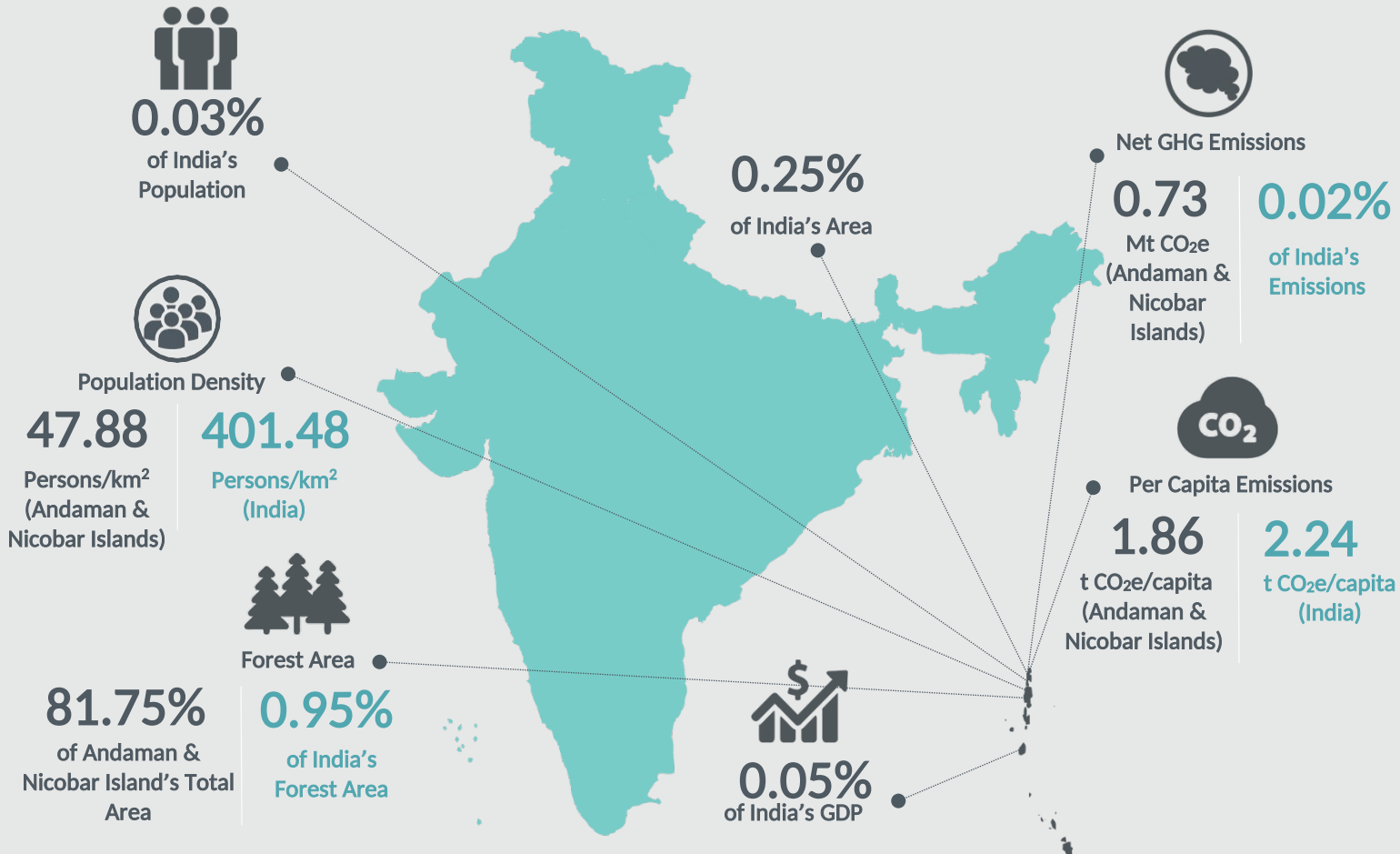
The Platform seeks to add value to the various ongoing GHG emissions estimation efforts by helping address existing data gaps and data accessibility issues, extending beyond the scope of national inventories to state inventories, and by increasing the volume of analytics and policy dialogue on India's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

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



* Fuel combusted for captive electricity generation (auto-producers) and direct fuel combustion (industrial energy) has been reported under energy sector.

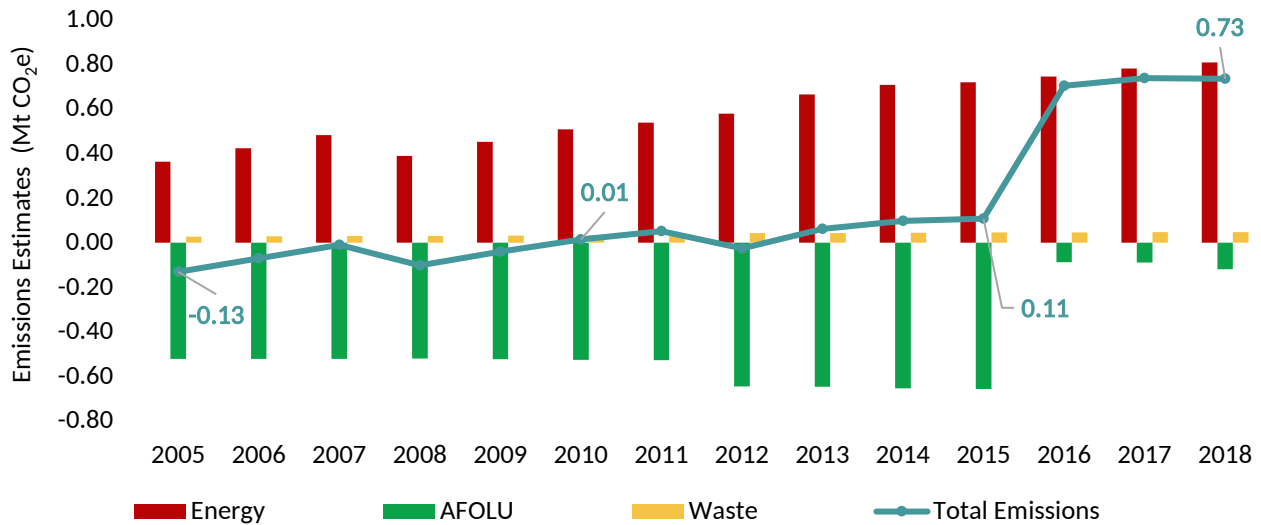
Andaman & Nicobar Islands at a Glance (2018)



*The map represents the data for 2018

Economy-wide Emissions Estimates

Figure 1: GHG Emissions Estimates of Andaman & Nicobar Islands (2005 to 2018)



Andaman & Nicobar Islands emitted close to 0.73 Mt CO₂e (net GHG emissions) in 2018. The Union Territory (UT) was a net sink of emissions till 2009 and in 2012. The UT’s overall sink declined at the rate of 26% (compounded annually) between 2005 and 2009, while total economy-wide emissions grew at a rate of 66% (compounded annually) between 2010 and 2018. As seen in Figure 1, the Energy sector was the leading contributor to the UT’s economy-wide emissions, throughout the reference period. The stark rise in net emissions of the UT from 2015 onwards can be attributed to significant reduction in sink of the Agriculture, Forestry, and Other Land Use (AFOLU) sector, although the AFOLU sector remained a sink throughout the reference period. In addition, the Energy sector emissions continued to grow slowly but surely.

In 2005, the share of Energy sector in the UT’s gross economy-wide emissions (excluding AFOLU sector) was ~93%. The remaining 7% of the gross economy-wide emissions emanated from the Waste sector. In 2018, the share of Energy sector emissions increased to ~95% of the gross economy-wide emissions, thereby reducing the Waste sector’s share (from 2005 levels) to 5%. Emissions from the Industrial Processes and Product Use (IPPU) sector were not registered in the UT throughout the reference period.

Figure 2: Sector-wise Contribution (Mt CO₂e) and Percentage Share in Gross GHG Emissions of Andaman & Nicobar Islands (excluding AFOLU sector)

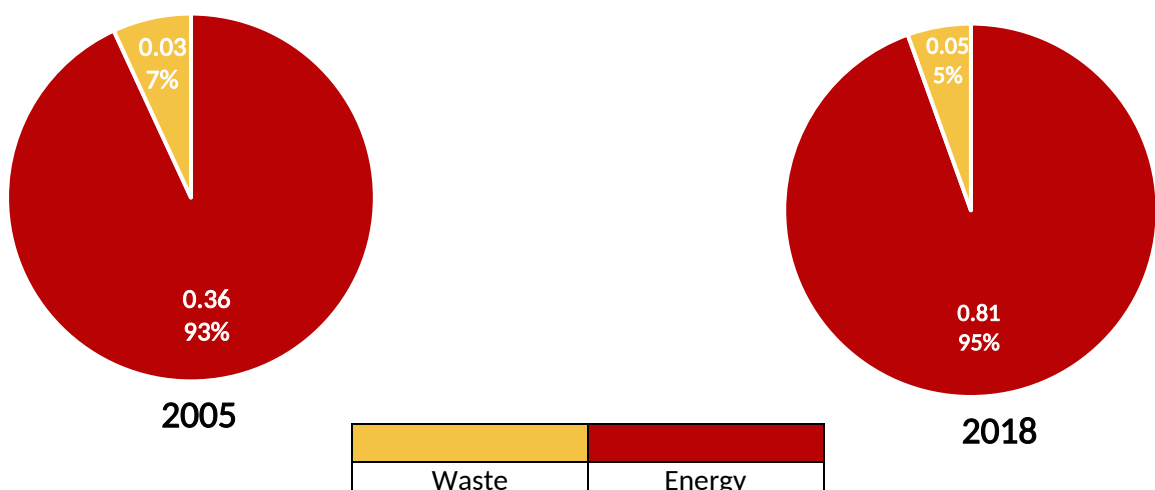
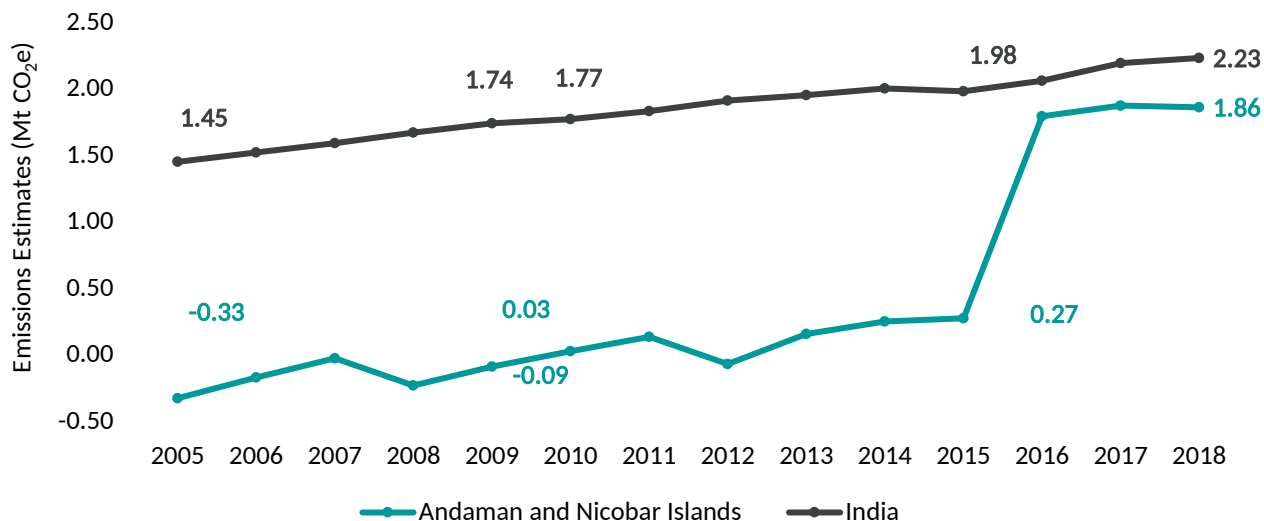


Figure 3: Per Capita Net Emissions of Andaman & Nicobar Islands and India (2005 to 2018)



Due to the overall negative economy-wide emissions of Andaman & Nicobar Islands between 2005 and 2009 as well as in 2012, the UT had negative per capita emissions in those years. As seen in Figure 3, the per capita emissions of the UT remained lower than India’s per capita emissions throughout the reference period.

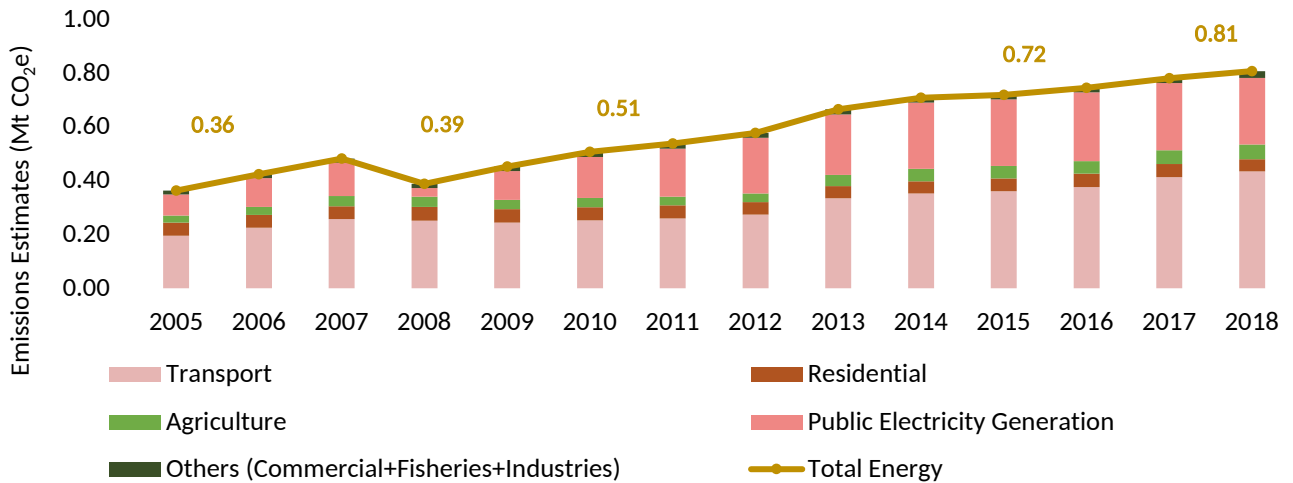
Between 2010 and 2018, the per capita emissions of Andaman & Nicobar Islands grew at the rate of 70% (compounded annually), from 0.03 t CO₂e/capita in 2010 to 1.86 t CO₂e/capita in 2018, significantly higher than India’s growth rate of ~2.94% during the same time period.

Energy Sector



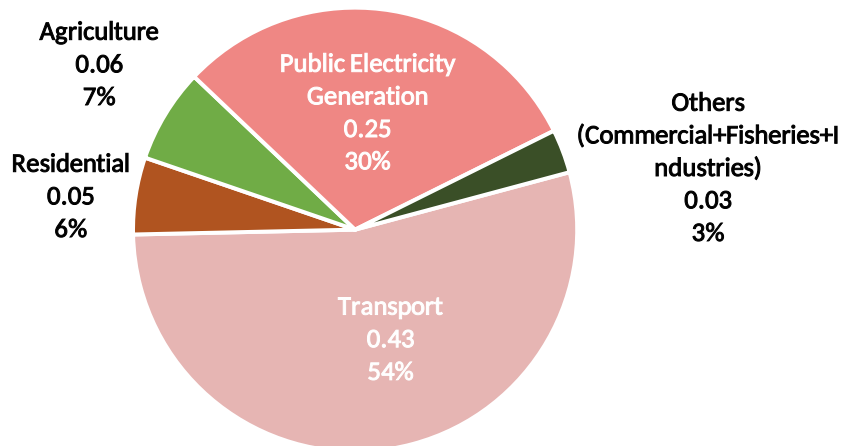
The Energy sector emissions comprise of emissions from Fuel Combustion and Fugitive Emissions. Fuel Combustion includes the categories of Public Electricity Generation, Transport, Captive Power Plants, Industries, Agriculture, Commercial, and Residential categories. Fugitive Emissions are due to Fuel Production. Energy sector in Andaman & Nicobar Islands accounted for ~95% of the gross economy-wide emissions (excluding AFOLU sector) in 2018. During the reference period, emissions from the Energy sector increased at CAGR of 6.3%, from 0.36 Mt CO₂e in 2005 to 0.81 Mt CO₂e in 2018 (see Figure 4).

Figure 4: GHG Emissions Estimates of Energy Sector - Andaman & Nicobar Islands (2005 to 2018)



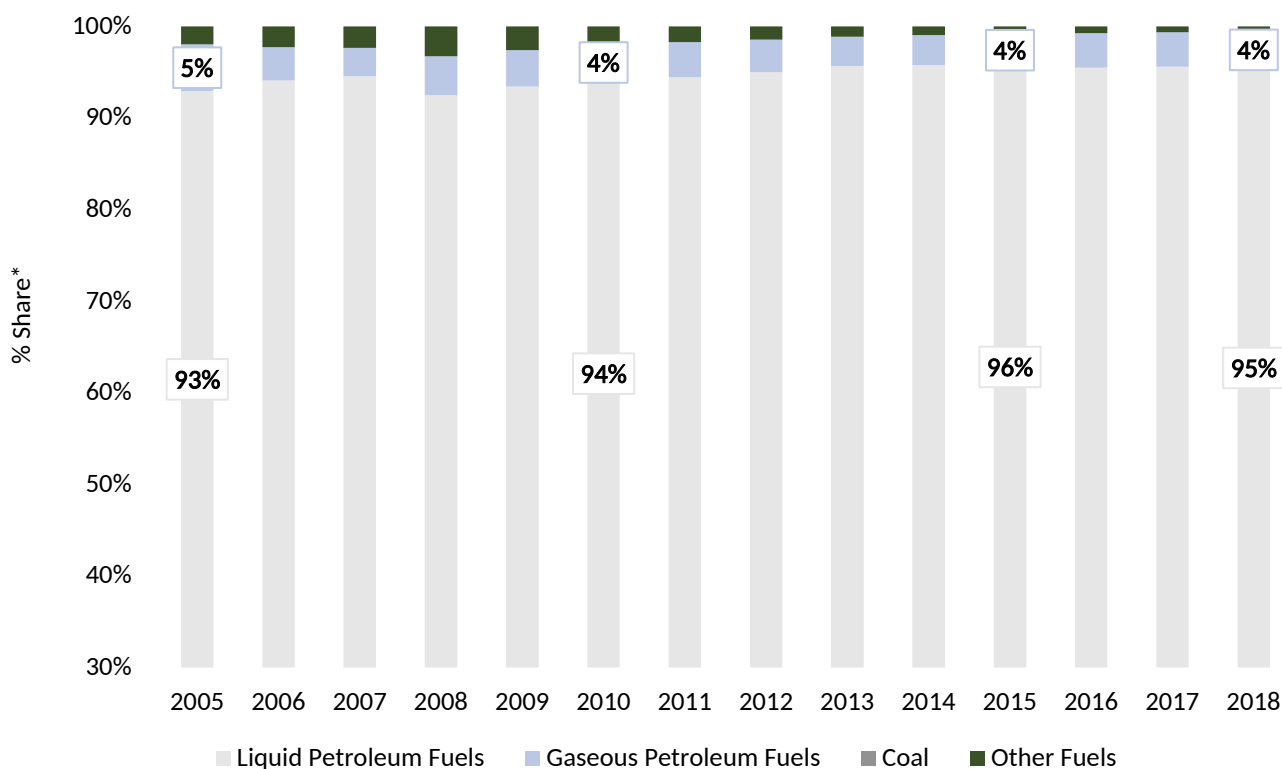
Within the Energy Sector, Transport category was the major contributor to Andaman & Nicobar Island GHG emissions with a share of 54% in 2018. This was followed by Public Electricity Generation (~30%), Agriculture (7%) and Residential (6%) categories (see Figure 5).

Figure 5: Category-wise Emissions (Mt CO₂e) and Percentage Share in Total Energy Sector Emissions (2018)



Within the Fuel Combustion sub-sector, emissions from Liquid Petroleum Fuels were the major contributor with an average share of ~95% across the reference years (see Figure 6). This was followed by emissions from combustion of Gaseous Petroleum Fuels, with an average share of ~4% between 2005 and 2018. The Other Fuels had an average share of ~2% during the reference period.

Figure 6: Percentage share of GHG Emissions by Fuel Type due to Fuel Combustion in Energy Sector (2005 to 2018)



**Notes -*

1. Coke is included in Coal because the bifurcation of pet-coke and coke was not available
2. Liquid Petroleum Fuels - ATF, diesel, kerosene, motor spirit and other liquid fuels.
3. Gaseous Petroleum Fuels - natural gas, LPG and other gaseous fuels
4. Other Fuels comprises of firewood and charcoal



IPPU Sector

Emissions from the Industrial Processes and Product Use (IPPU) sector are largely driven by Chemical, Metal, Mineral Industries and Non-Energy Products from Fuels and Solvent Use. Industrial activities as listed by IPCC to be responsible for GHG emissions from IPPU were not present in Andaman & Nicobar Islands. Therefore, no IPPU emissions were registered in Andaman & Nicobar Islands throughout the reference period.

AFOLU Sector



Emissions from the Agriculture, Forestry and Other Land Use (AFOLU) sector arise from three main sub-sectors: Livestock, Land, and Aggregate Sources and Non-CO₂ Emissions Sources on Land*. In Andaman & Nicobar Islands, while the Livestock and Aggregate Sources and Non-CO₂ Emissions Sources on Land sub-sectors were net GHG emitters, the Land sub-sector was a sink across all the reference years (See Figure 7).

As the removals from Land sub-sector remained higher than the emissions from the other two sub-sectors, AFOLU sector was a net sink of GHG emissions between 2005 and 2018. The removals from AFOLU sector declined at a rate of ~11% (compounded annually) between 0.52 Mt CO₂e in 2005 and to 0.12 Mt CO₂e in 2018. A significant drop in the removals was observed in 2016. This was due to relatively smaller increase in the forest area (compared to the increase between 2005 and 2015) and reduction in the carbon stock density of the forests of Andaman & Nicobar Islands. The average annual emissions from Livestock and Aggregate Sources were 0.07 Mt CO₂e that were neutralized by CO₂ removals from the Land sub-sector which was, on average, annually removing 0.55 Mt CO₂e during the reference

Figure 7: GHG Emissions Estimates of AFOLU Sector – Andaman & Nicobar Islands (2005 to 2018)

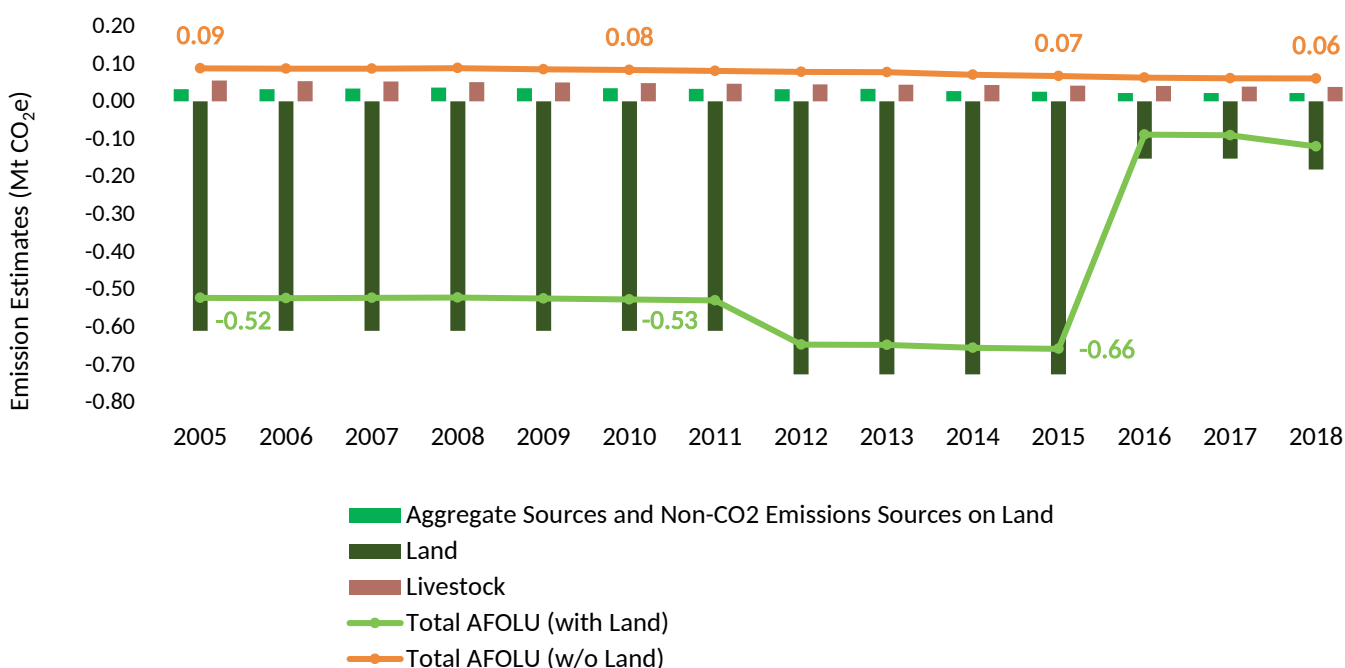
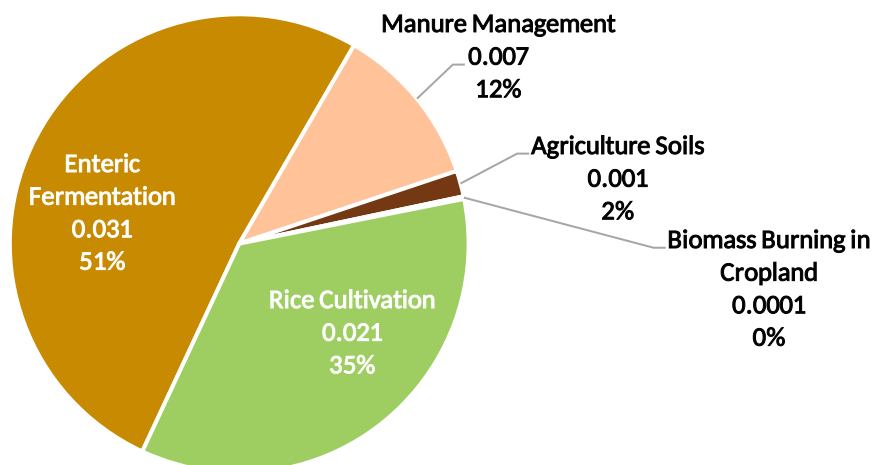


Figure 8: Category-wise Emissions (Mt CO₂e) and Percentage Share in Gross AFOLU Emissions (excluding Land sub-sector) (2018)

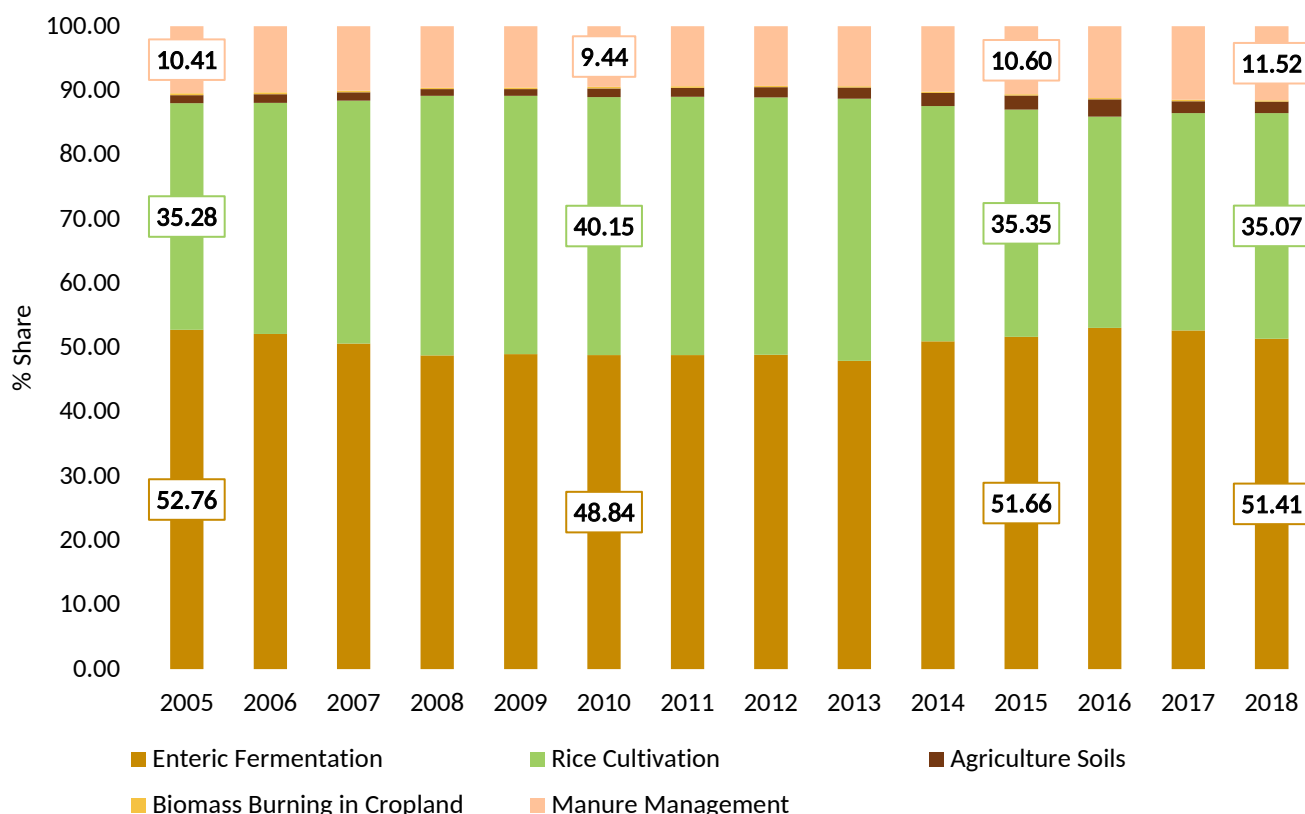


* The sub-sector called 'Aggregate Sources and Non-CO₂ Emission Sources on Land' includes emissions from Rice Cultivation, Agriculture Soils and Biomass Burning in Cropland and Forestland.

The Livestock sub-sector had the maximum share of ~63% in gross AFOLU emissions (excluding Land sub-sector) of Andaman & Nicobar Islands in 2018. Within the Livestock sub-sector, Enteric Fermentation was the major contributor to gross AFOLU emissions with a share of ~51% in 2018 (see Figure 8).

From the Aggregate Sources sub-sector, the category of Rice Cultivation was the major contributor to gross AFOLU emissions with an average share of ~37% during the reference period (see Figure 9).

Figure 9: Category-wise Percentage Share in Gross AFOLU Emissions (excluding Land sub-sector) (2005 to 2018)





Waste Sector

Solid Waste Disposal, Domestic Wastewater and Industrial Wastewater are the key sources of GHG emissions in the Waste sector. In 2018, the Waste sector contributed to almost 5% of the gross emissions (excluding AFOLU sector) of Andaman & Nicobar Islands. GHG emissions from the UT's Waste sector grew at a CAGR of 4.4% from 0.027 Mt CO₂e in 2005 to 0.047 Mt CO₂e in 2018. As seen in Figure 10, overall Waste sector emissions increased significantly in 2011 due to rise in Domestic Wastewater emissions.

Figure 10: GHG Emissions Estimates of Waste Sector – Andaman & Nicobar Islands (2005 to 2018)

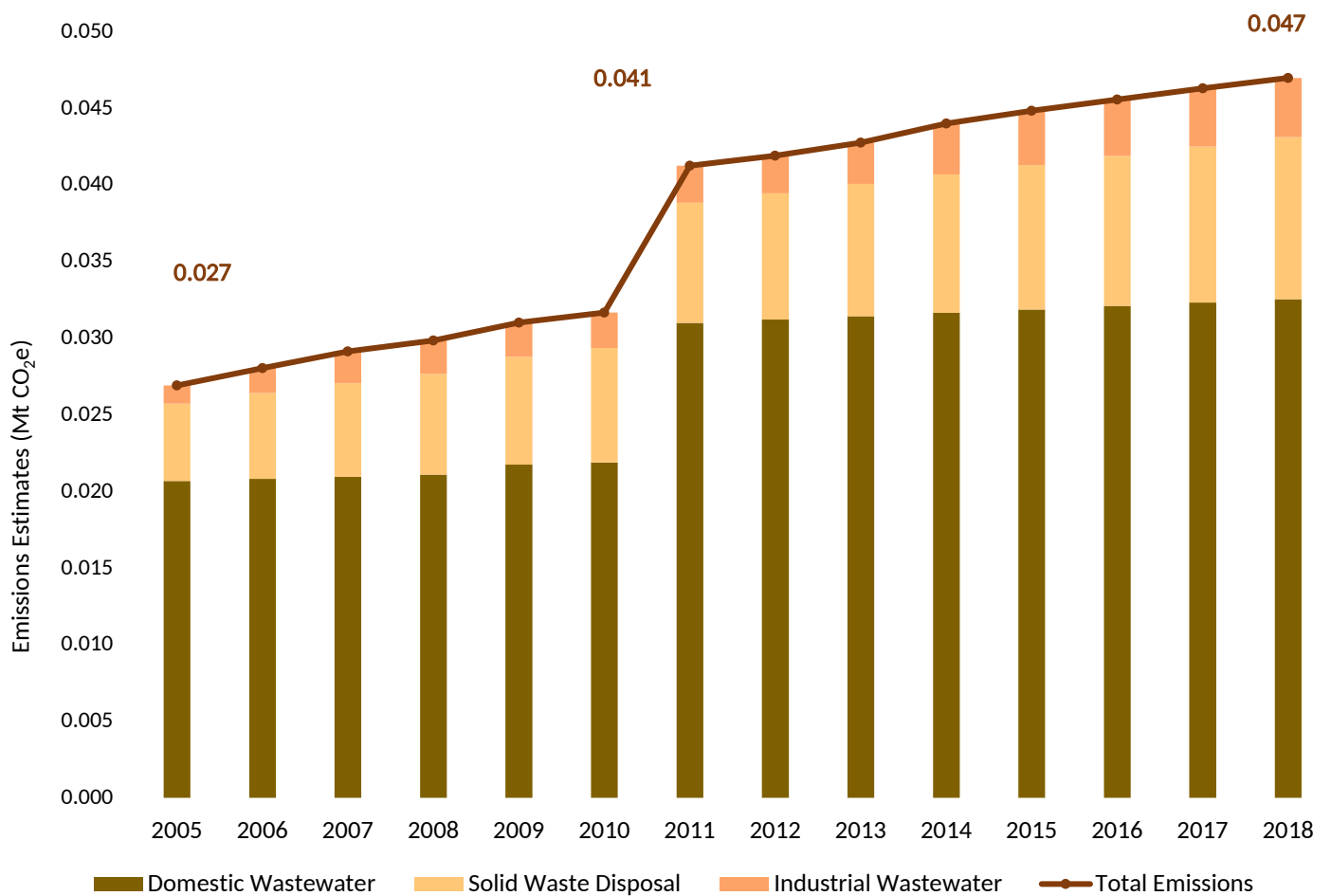
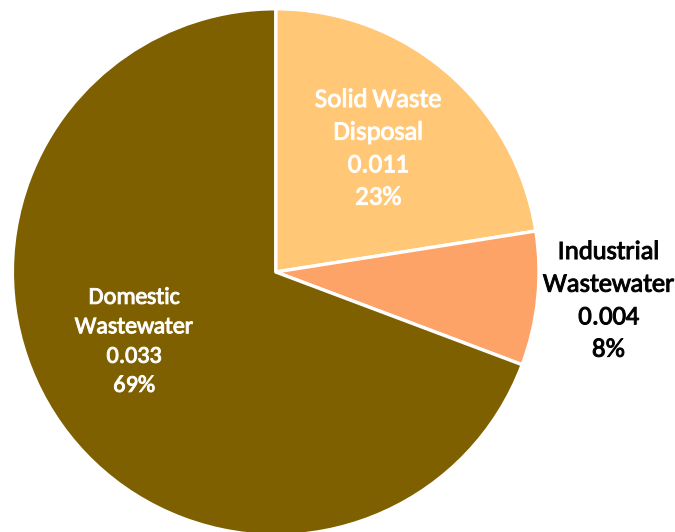


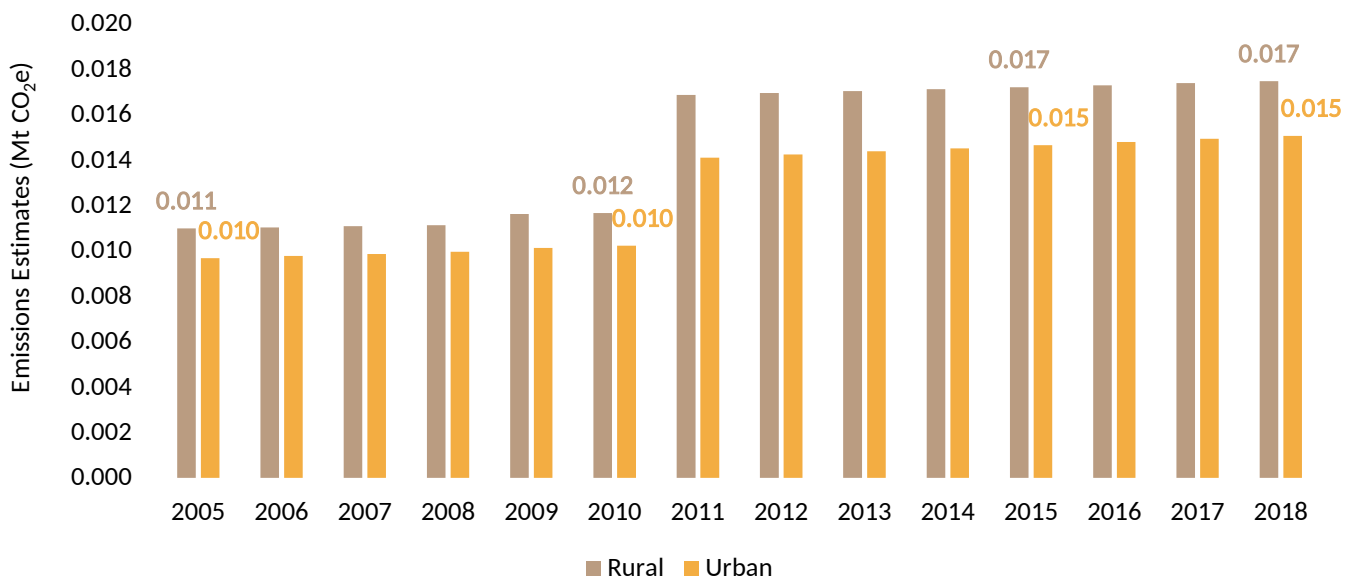
Figure 11: Sub-sector Emissions (Mt CO₂e) and Percentage Share in Total Waste Sector Emissions (2018)



Discharge of untreated wastewater and use of septic tanks are the key drivers of emissions due to Domestic Wastewater sub-sector. Domestic Wastewater had a share of 69% in the total Waste sector emissions of Andaman & Nicobar Islands in 2018. Approximately 23% of the Waste sector emissions were from Solid Waste Disposal, which grew at an estimated CAGR of 5.8% from 0.005 Mt CO₂e in 2005 to 0.011 Mt CO₂e in 2018. Industrial Wastewater accounted for nearly 8% of Waste sector emissions in 2018 and grew at a CAGR of 9.5% (0.001 Mt CO₂e in 2005 to 0.004 Mt CO₂e in 2018) (see Figure 11).

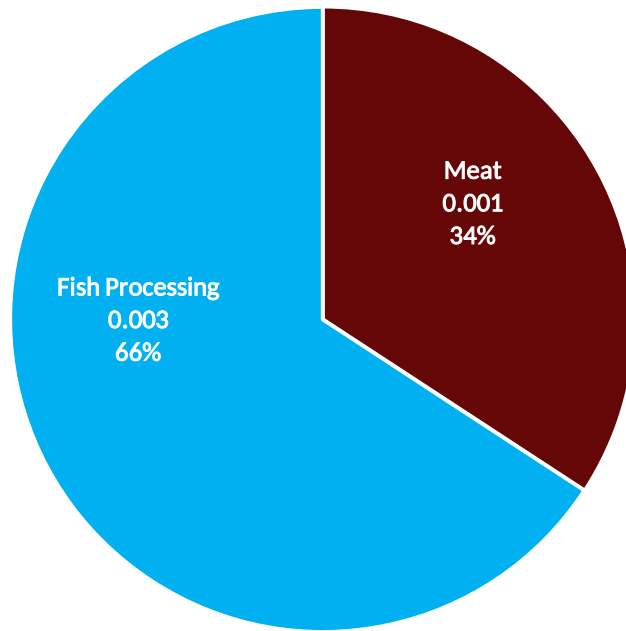
Emissions from Domestic Wastewater of both rural and urban areas grew at a CAGR of 3.6% from 0.021 Mt CO₂e in 2005 to 0.033 Mt CO₂e in 2018. Almost 54% of Domestic Wastewater emissions were from the rural areas of Andaman & Nicobar Islands in 2018 (see Figure 12).

Figure 12: Area-wise GHG Emissions Estimates of Domestic Wastewater (2005 to 2018)



Fish Processing was the major contributor to Industrial Wastewater emissions with a share of ~66% in 2018 followed by Meat Industry (~34%) as illustrated in Figure 13.

Figure 13: Category-wise Emissions (Mt CO₂e) and Percentage Share in Industrial Wastewater Emissions (2018)





The 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, IPPU, AFOLU and Waste.

The Platform comprises of the following civil society:



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.

The **International Maize and Wheat Improvement Center (CIMMYT)** is the global leader in agricultural research for development in wheat and maize-based farming systems.

Center for Study of Science, Technology and Policy (CSTEP) is a not for profit research organisation incorporated in 2005 u/s 25 of The Companies Act, 1956.

ICLEI - Local Governments for Sustainability is a leading global network of over 1,500 cities, towns and regions committed to building a sustainable future.

Vasudha Foundation, set up in 2010, is a not for profit organisation, working in the clean energy and climate policy space.

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