

Trend Analysis of GHG Emissions of TRIPURA

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 aims to add value to the various ongoing GHG emissions estimation efforts by addressing existing data gaps and data accessibility issues, broadening the scope of national inventories to include state inventories, and 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*



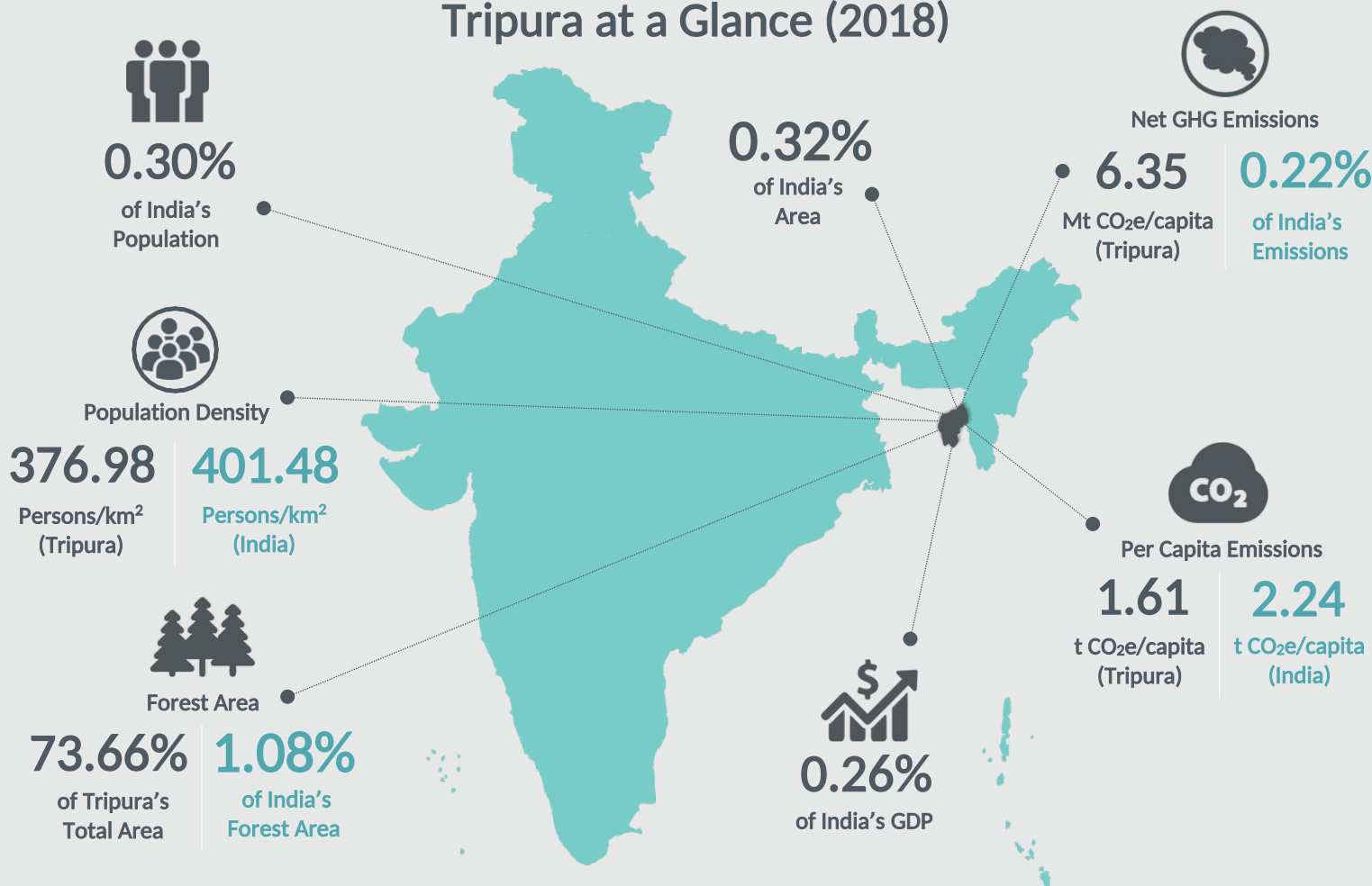
AFOLU



WASTE

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

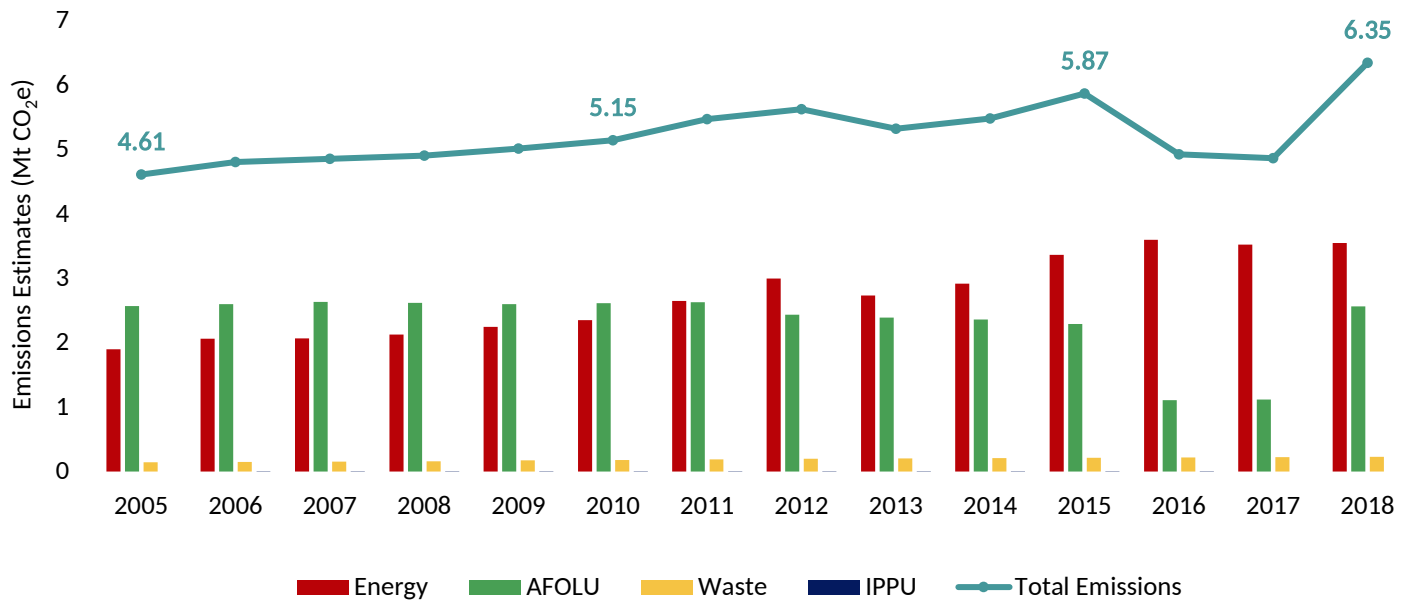
Tripura at a Glance (2018)



*The map represents the data for 2018

Economy-wide Emissions Estimates

Figure 1: GHG Emissions Estimates of Tripura (2005 to 2018)



Tripura’s emissions increased at a rate of 2.49% (compounded annually) from 4.61 Mt CO₂e in 2005 to 6.35 Mt CO₂e in 2018. The Energy sector was the major contributor to Tripura’s total economy-wide emissions across the reference period (see Figure 1).

In 2005, the share of AFOLU sector in the total economy-wide emissions of Tripura was ~56%, while the Energy, and Waste sectors accounted for ~41% and ~3%, respectively. In 2018, the share of emissions from Energy and Waste sectors increased to ~56% and 4%, respectively, while that of the AFOLU sector declined to ~40% (see Figure 2). No IPPU emissions were reported from Tripura during the reference period.

Figure 2: Sector-wise Contribution (Mt CO₂e) and Percentage Share in Total Economy-wide GHG Emissions of Tripura

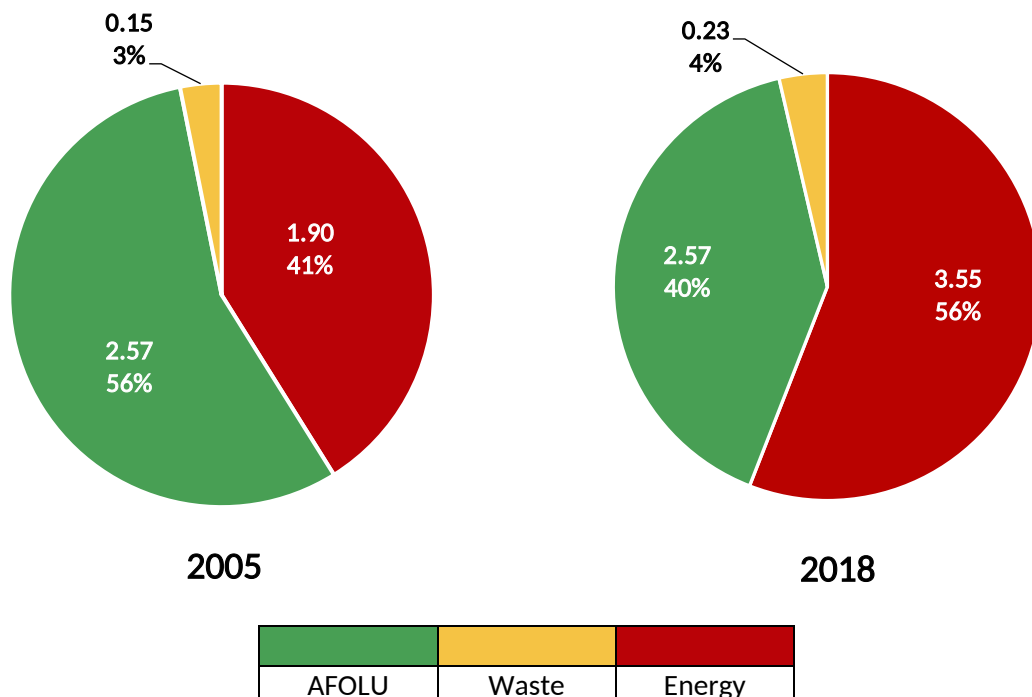
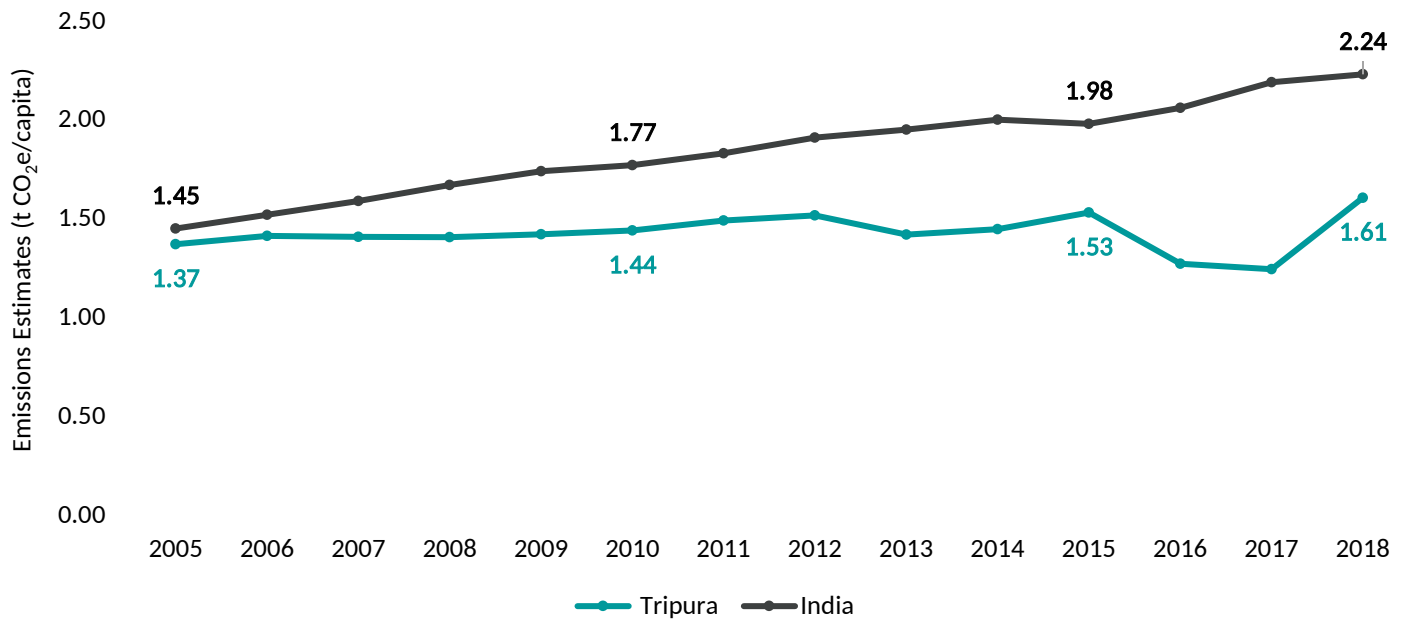


Figure 3: Per Capita GHG Emissions of Tripura and India (2005 to 2018)



As seen in Figure 3, the per capita emissions of Tripura were lower than the per capita emissions of India, across the reference period. Tripura's per capita emissions increased at a compounded rate of 1.23% from 1.37 t CO₂e/capita in 2005 to 1.61 t CO₂e/capita in 2018, which was much lower than India's CAGR (~3.41%).

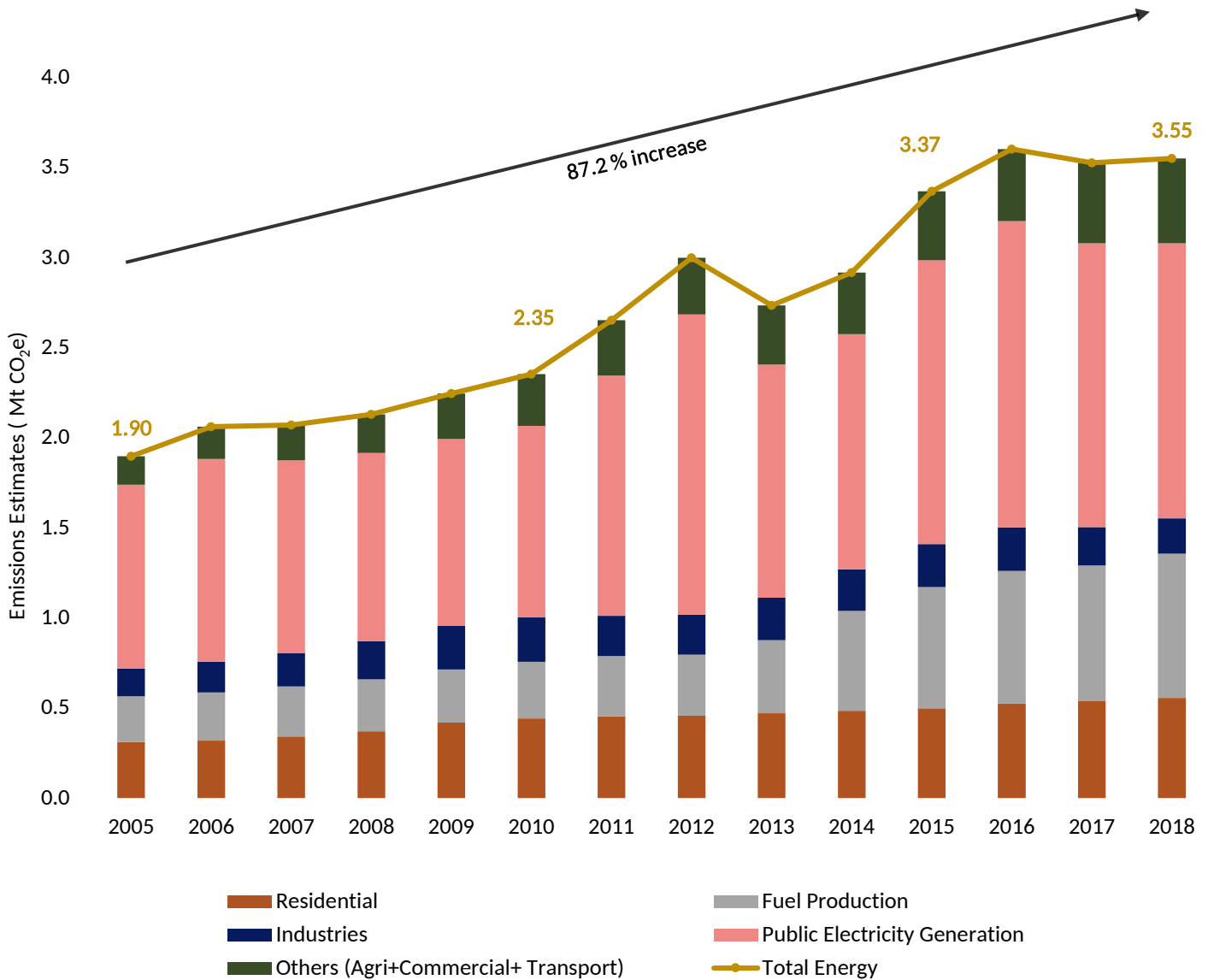
Energy Sector



The Energy sector emissions comprise of emissions from Fuel Combustion and Fugitive Emissions. Fuel Combustion includes emissions from Public Electricity Generation, Transport, Captive Power Plants, Industries, Agriculture, Commercial, and Residential categories. Fugitive Emissions are due to Fuel Production.

The Energy sector of Tripura accounted for ~56% of the total economy-wide emissions in 2018. Emissions from the Energy sector increased at a CAGR of 4.94% from 1.90 Mt CO₂e in 2005 to 3.55 Mt CO₂e in 2018 as shown in Figure 4.

Figure 4: GHG Emissions Estimates of Energy Sector - Tripura (2005 to 2018)



Within the Energy sector, Public Electricity Generation (PEG) category was the major contributor to GHG emissions with a share of ~43% of the total Energy emissions in 2018. This was followed by Fuel Production and Residential categories at 23% and 16%, respectively (see Figure 5).

Within the Fuel Combustion sub-sector, emissions from Gaseous Petroleum Fuels were the major contributor, with an average share of ~62% across the reference period (see Figure 6). Liquid Petroleum Fuels and Coal contributed average shares of ~17% and ~10%, respectively, to Fuel Combustion emissions between 2005 and 2018 (see Figure 6).

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

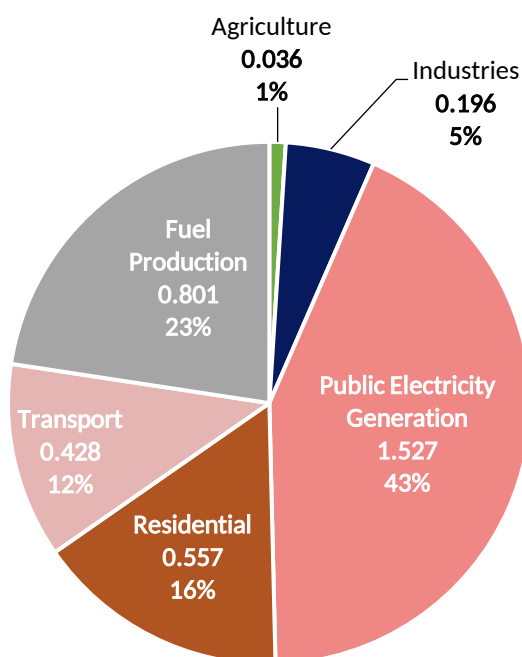
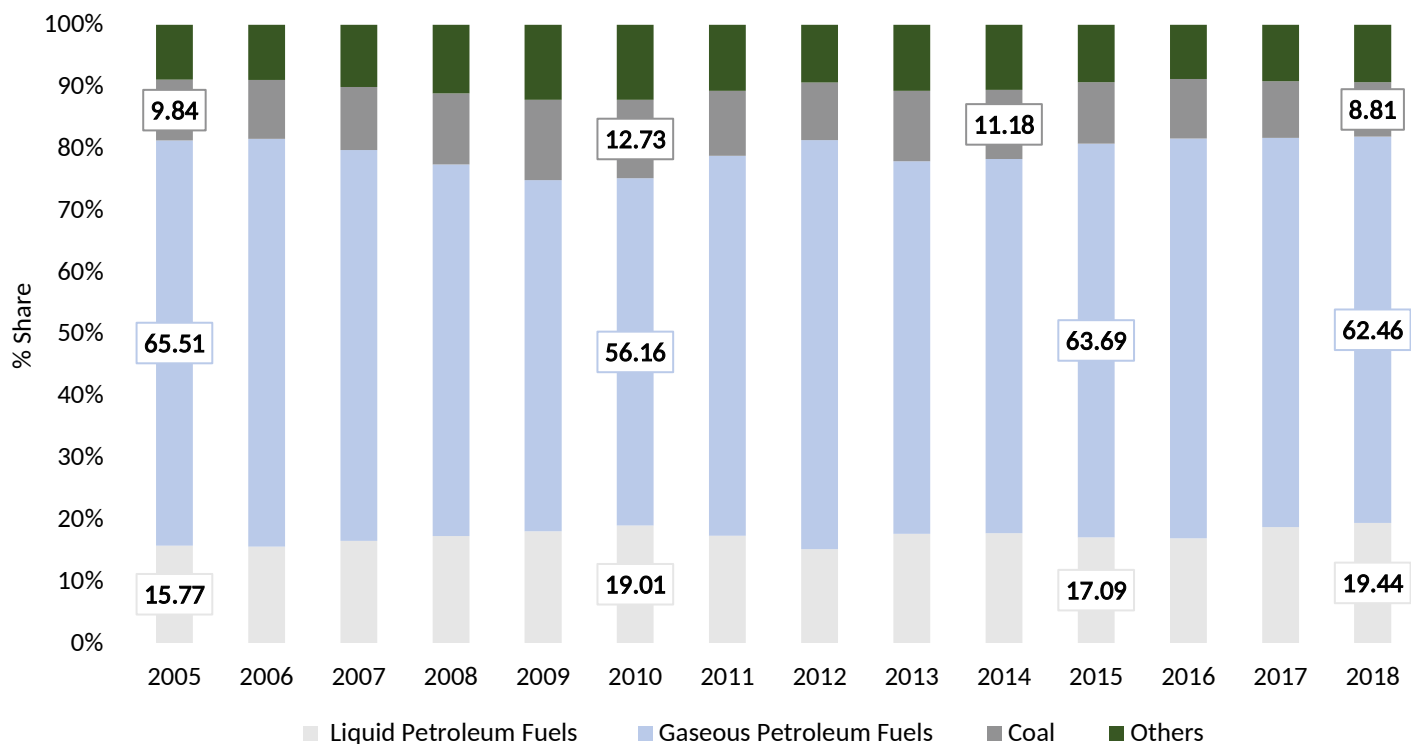


Figure 6: Percentage Share of GHG Emissions by Fuel Type due to Fuel Combustion in Energy Sector (2005 to 2018)*



*Notes

1. Coke is included in coal because the bifurcation of pet-coke and coke was not available.
2. Gaseous Petroleum Fuels- Natural Gas, LPG and other gaseous fuels
3. Liquid Petroleum Fuels- ATF, Diesel, Kerosene, Motor spirit and other liquid fuels
4. Other Fuels comprise of Firewood and Charcoal



IPPU Sector

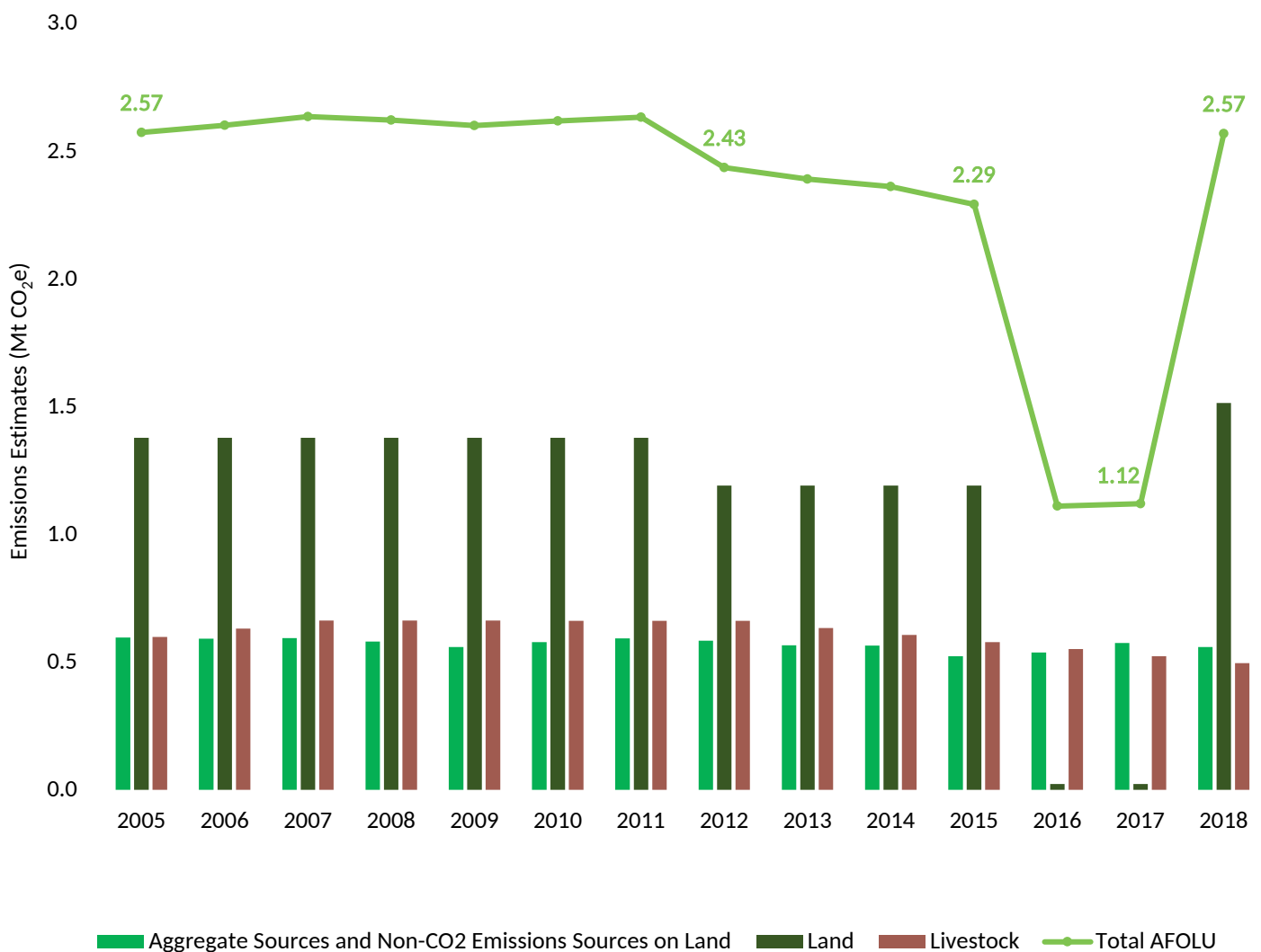
Emissions from the Industrial Processes and Product Use (IPPU) sector are largely driven by Chemical, Metal, Mineral Industries and Non-Energy Products from Fuels and Solvent Use. Industrial activities as listed by IPCC to be responsible for GHG emissions from IPPU were not present in Tripura. Therefore, no IPPU emissions were registered in Tripura 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 Tripura, the AFOLU sector represented 40% of the total economy-wide emissions in 2018. Between 2005 and 2017, AFOLU emissions declined at a CAGR of 6.7% from 2.57 Mt CO₂e to 1.12 Mt CO₂e. This decline can be attributed to reduction in emissions from the Livestock sub-sector combined with a significant decline in emissions from Forest Land category within Land sub-sector. In 2018, there was a decline in forest area as well as carbon stock density, as reported by FSI (2021)** , this led to a substantial increase in emissions from Forest Land, with a corresponding jump in AFOLU emissions for that year.

Figure 7: GHG Emissions Estimates of AFOLU Sector - Tripura (2005 to 2018)



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

**FSI Report 2021, reports data for 2019.

The Land sub-sector had the maximum share of ~59% of total AFOLU sector emissions in Tripura, followed by Rice Cultivation and Enteric Fermentation categories with shares of 20% and 17%, respectively, in 2018 (see Figure 8).

Within the Livestock sub-sector, the category of Enteric Fermentation was the major contributor to total AFOLU emissions with an average share of ~24% across the reference period. Emissions from Enteric Fermentation declined at a CAGR of 1.52% from 0.52 Mt CO₂e in 2005 to 0.43 Mt CO₂e in 2018.

In the Aggregate Sources sub-sector, Rice Cultivation was the major contributor to total AFOLU emissions with an average share of ~22%, across the reference period. The emissions from this category increased at a rate of 0.49% (compounded annually) from 0.49 Mt CO₂e in 2005 to 0.52 Mt CO₂e in 2018 (see Figure 9).

Figure 8: Sub-sector/Category-wise Emissions (Mt CO₂e) and Percentage Share in Total AFOLU Emissions (2018)

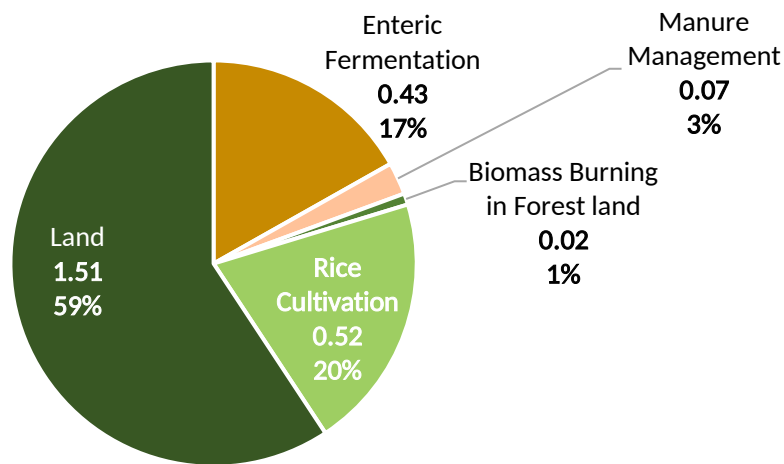
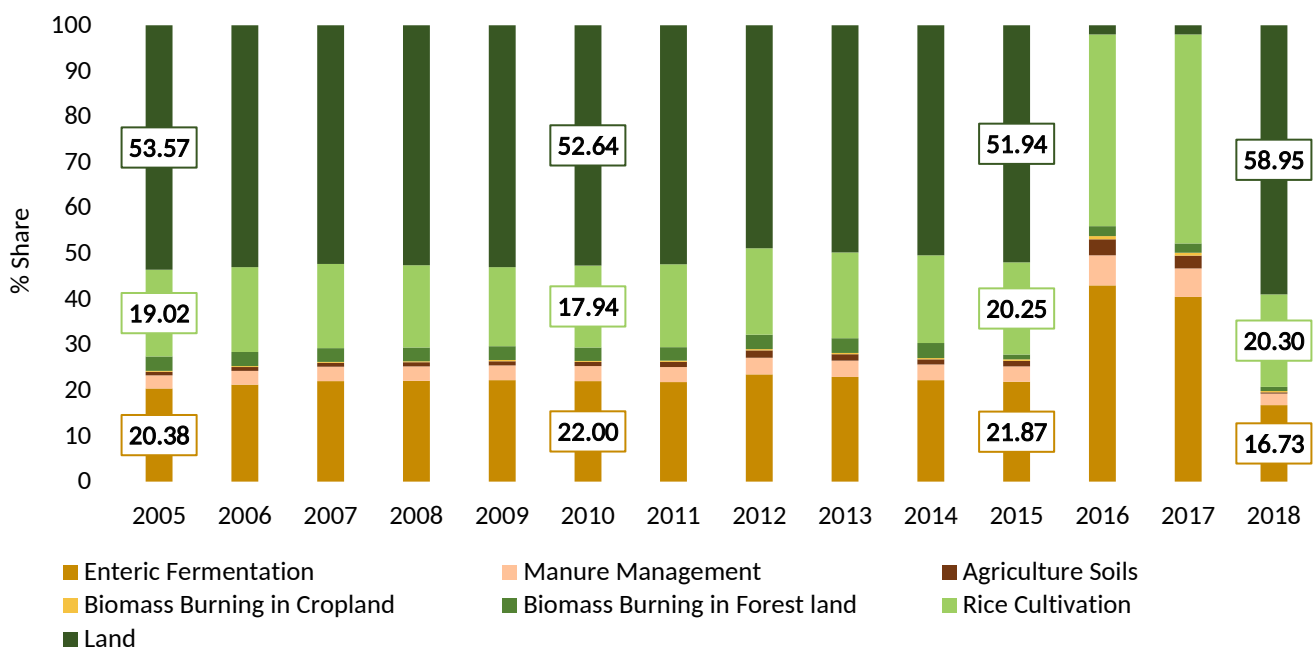


Figure 9: Sub-sector/Category-wise Share of Total AFOLU Emissions (2005 to 2018)





Waste Sector

Solid Waste Disposal, Domestic Wastewater and Industrial Wastewater are the key sources of GHG emissions in the Waste sector. The Waste sector contributed to almost 4% of the total economy-wide emissions of Tripura in 2018. Emissions from the Waste sector of Tripura grew at a CAGR of 3.62% from 0.15 Mt CO₂e in 2005 to 0.23 Mt CO₂e in 2018 (see Figure 10).

Figure 10: GHG Emissions Estimates of Waste Sector - Tripura (2005 to 2018)

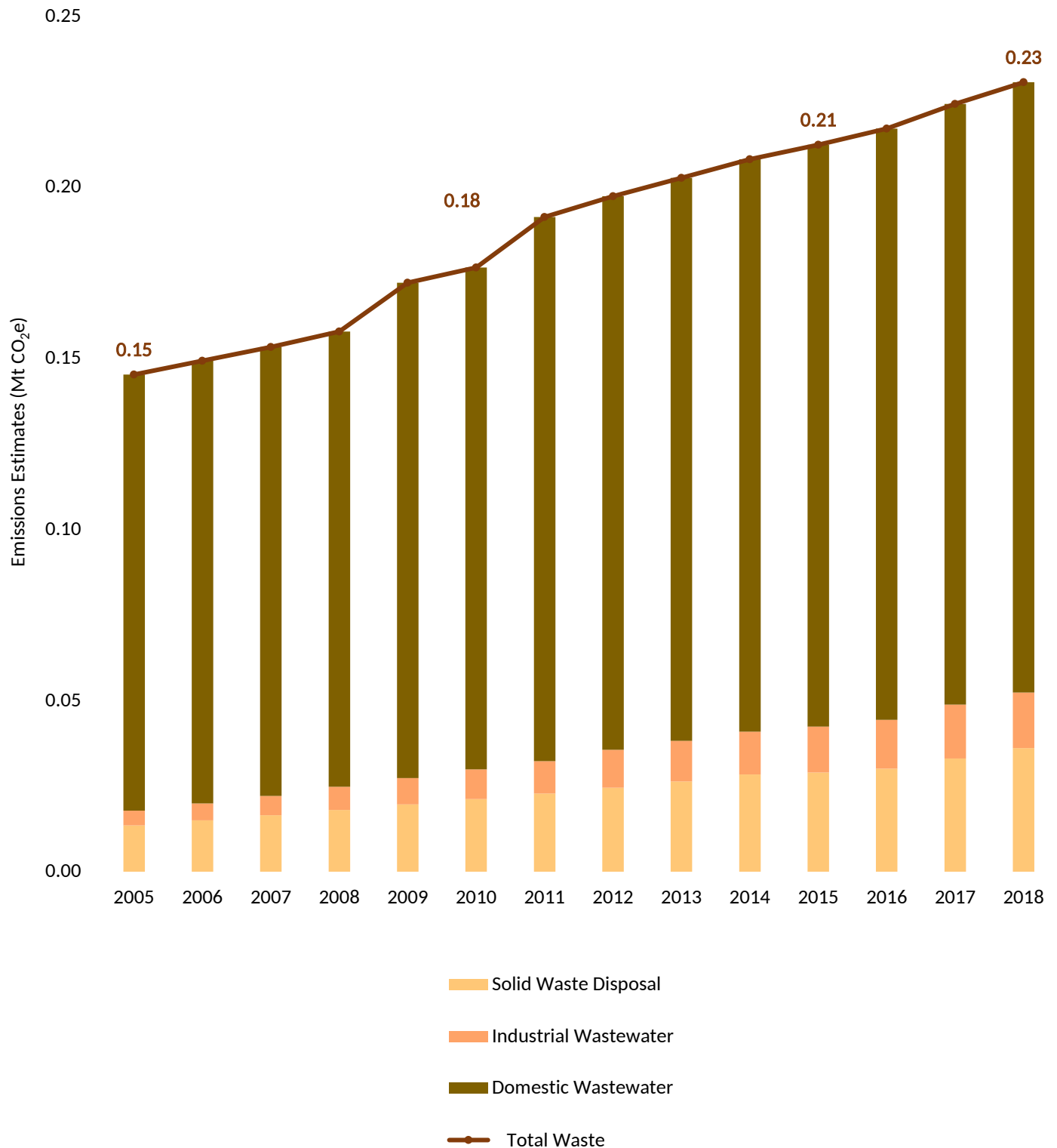
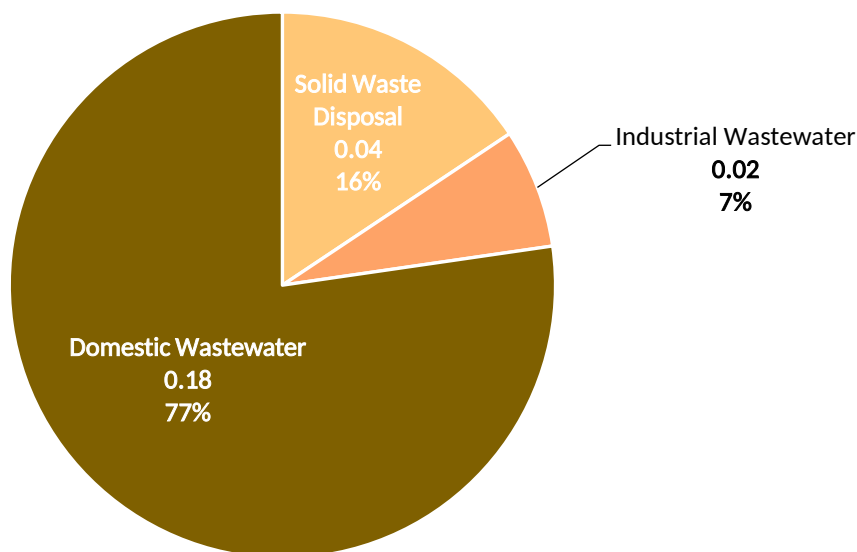


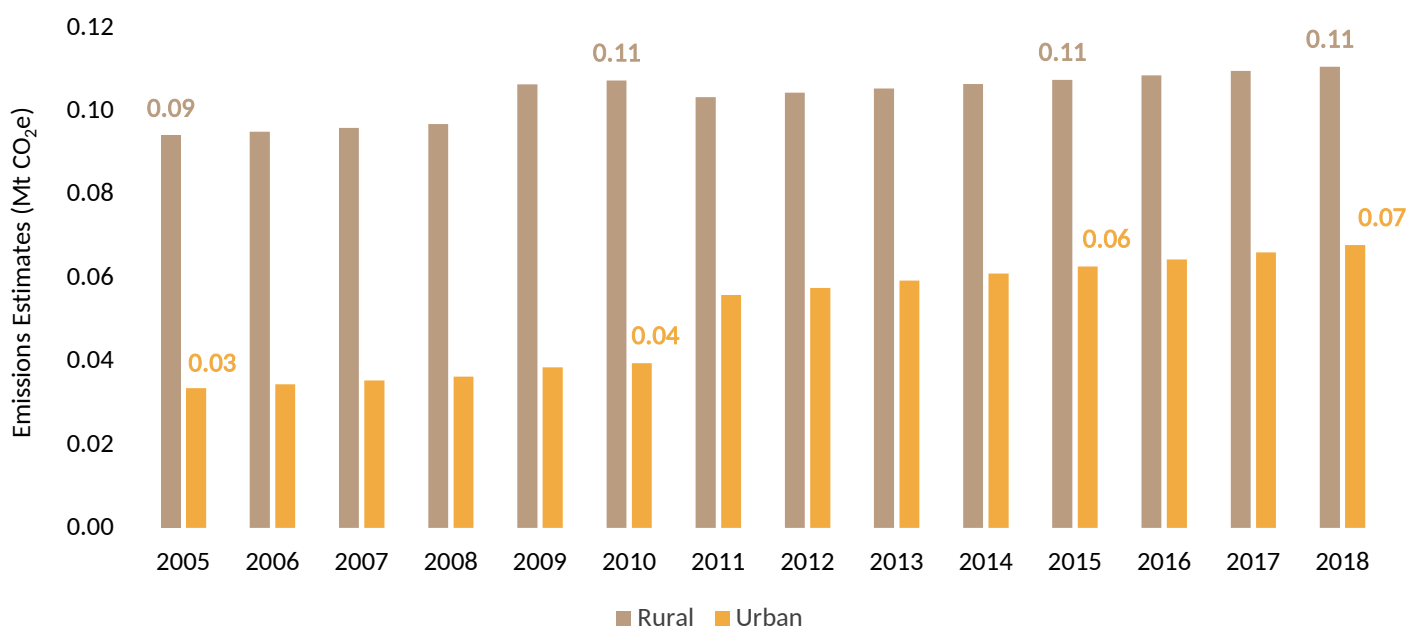
Figure 11: Sub-sector Emissions (Mt CO₂e) and Percentage Share in Total Waste Sector Emissions (2018)



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 77% in the total Waste sector emissions of Tripura in 2018. Approximately 16% of the Waste sector emissions were from Solid Waste Disposal, which grew at an estimated CAGR of 7.6% from 0.01 Mt CO₂e in 2005 to 0.04 Mt CO₂e in 2018. Industrial Wastewater accounted for nearly 7% of Waste sector emissions in 2018 and grew at a CAGR of 10.8% from 0.004 Mt CO₂e in 2005 to 0.016 Mt CO₂e in 2018 (see Figure 11).

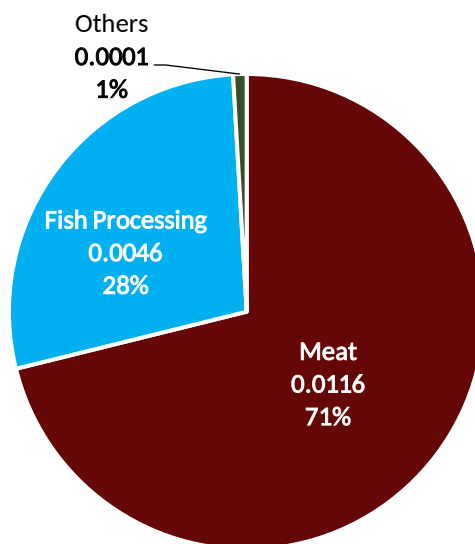
Emissions from Domestic Wastewater of both rural and urban areas grew at a CAGR of 2.62% from 0.13 Mt CO₂e in 2005 to 0.18 Mt CO₂e in 2018. Almost 68% of Domestic Wastewater emissions were from the rural areas of Tripura in 2018 (see Figure 12).

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



The Meat Industry was the major contributor to Industrial Wastewater emissions with a share of ~71% in 2018. This was followed by Fish Processing (~28%) as illustrated in Figure 13.

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