GHG Platform INDIA

Trend Analysis of GHG Emissions in LAKSHADWEEP

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.

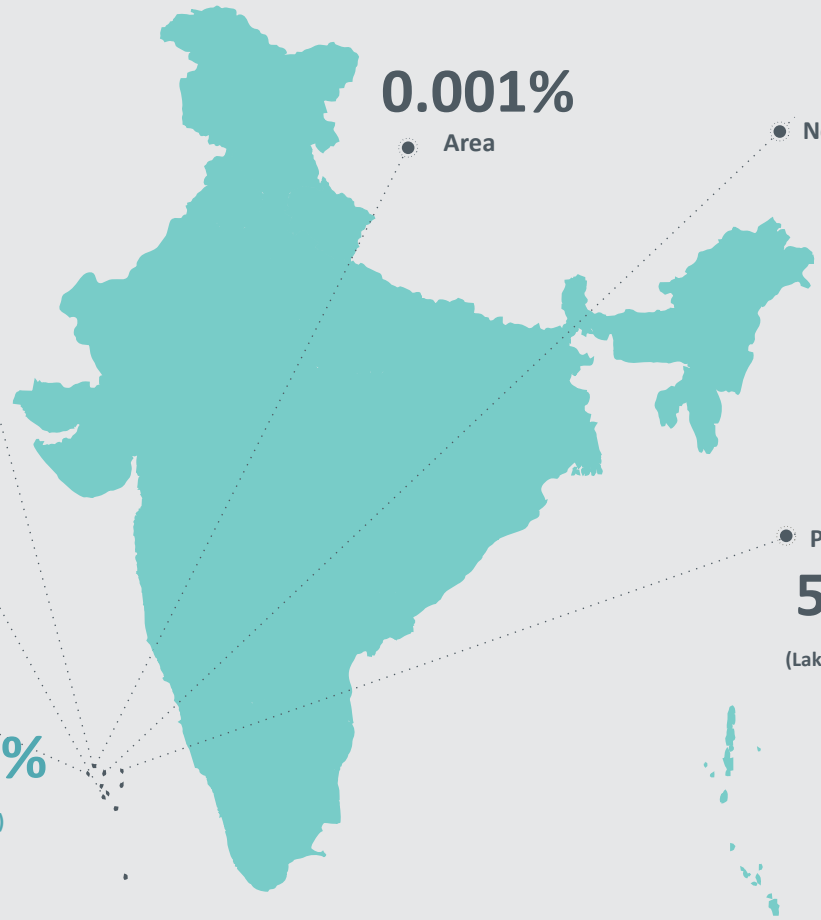
The Platform seeks to add value to the various ongoing GHG emission estimation efforts by helping address existing data gaps and data accessibility issues, extending beyond the scope of national inventories to state inventories, and by increasing the volume of analytics and policy dialogue on India's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

Lakshadweep at a glance (2013)



Population
0.01%

0.001%
Area

Net GHG Emissions
0.02%

Population Density
2013 Persons/Sq.Km (Lakshadweep)
382 Persons/Sq.Km (India)

Per Capita Emissions
5.64 tCO_2e (Lakshadweep)
1.93 tCO_2e (India)

Forest Area
85% (Of Lakshadweep's Total Area)
0.004% (Of India's Forest Area)

Economy-wide Emission Estimates

Emissions of Lakshadweep grew at a CAGR[1] of 19.28% from 0.09 $MtCO_2e$ in 2005 to 0.36 $MtCO_2e$ in 2013[2] as illustrated in Figure 1. An interim peak in the emissions was observed in 2012 owing to increased emissions of the Energy sector. Notably, no emissions were registered from the IPPU sector in the UT throughout the reference period. In 2005, ~63% of the emissions emanated from the Energy sector, ~22% from the Waste sector, and the remaining 15% from AFOLU sector. When compared to 2005 emissions, the share of Energy and the Waste sectors increased to ~71% and ~25% respectively in 2013. The AFOLU sector emissions declined significantly to ~4% in 2013 as illustrated in Figure 2 below.

Figure 1: GHG Emission Estimates for Lakshadweep (2005 to 2013)

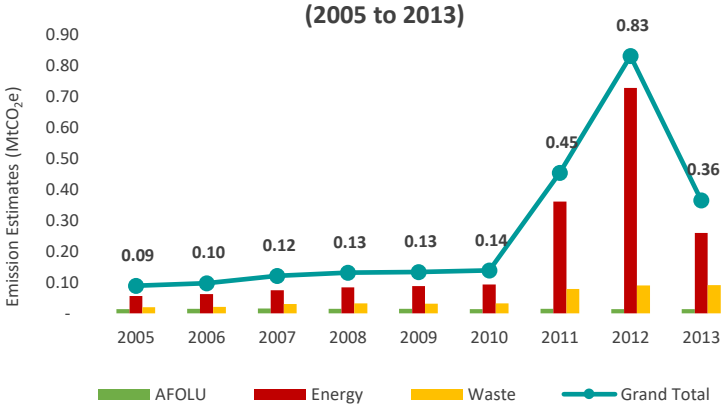


Figure 2: Sector-wise Contribution to Economy-wide GHG Emissions of Lakshadweep

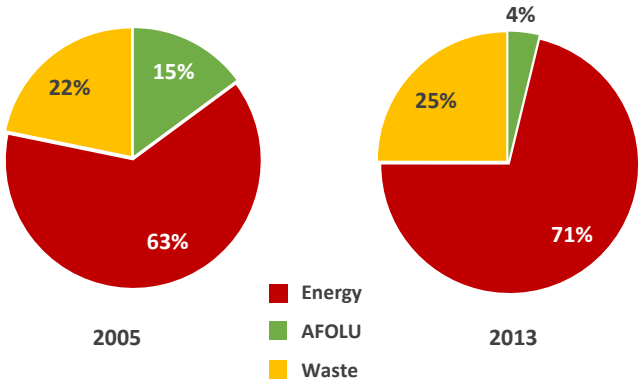
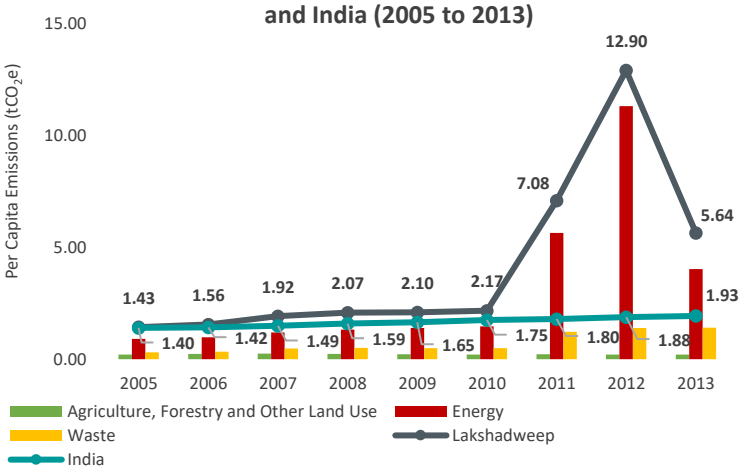


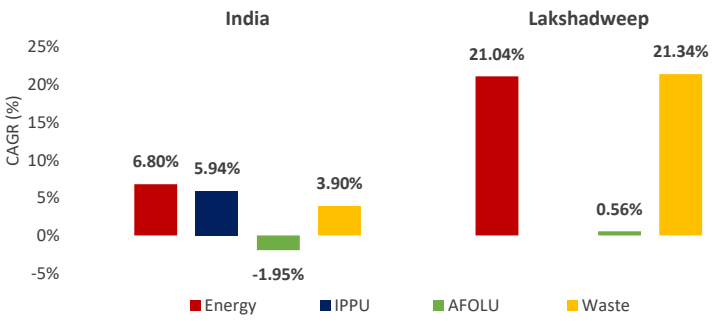
Figure 3: Per Capita GHG Emissions for Lakshadweep and India (2005 to 2013)



Per capita emissions of Lakshadweep grew from 1.43 tCO_2e in 2005 to 5.64 tCO_2e in 2013. They peaked in 2012 (12.90 tCO_2e) due to high per capita emissions from the Energy sector and declined subsequently. Though the per capita emissions of India and Lakshadweep were comparable from 2005 to 2010 the per capita emissions of Lakshadweep exploded from 2011 onwards, during the reference period and finished up rising to a level that was almost 3 times more than the rest of the country in 2013. The comparative growth rates of the per capita emissions from 2005 to 2013 were 4.07% for India and 18.71% for Lakshadweep (Figure 3).

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

These growth rates have been compounded annually.



GHG emissions from the Waste sector of Lakshadweep grew at the highest CAGR of 21.34[3]% from 2005 to 2013 amongst all other sectors (Figure 4). This was followed by the Energy sector which also recorded a high growth rate of 21.04%[4]. When compared to India's sectoral emission growth rates, both the Energy and Waste sectors of Lakshadweep registered emission growth rates that were almost spectacular. Emissions of the AFOLU sector of Lakshadweep grew at a much more sedate 0.56%, but were still higher than the negative growth of emissions of the AFOLU sector for the rest of the country (-1.95%).

[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 2008 to 2013.

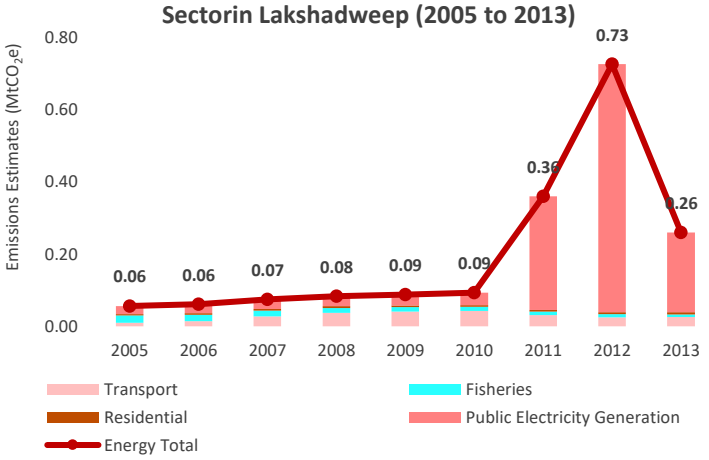
[4] The CAGR value is very high but the corresponding change in absolute emissions was only of the order of 0.20 $MtCO_2e$ from 2008 to 2013.

Energy Sector

The Energy sector represented nearly 71% of the total emissions of Lakshadweep 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. Lakshadweep's, Energy emissions emanated only from the Fuel Combustion sub-sector. The Energy sector emissions increased at an enormous CAGR of 21.04%[5] from 0.06 $MtCO_2e$ in 2005 to 0.26 $MtCO_2e$ in 2013 with a peak in 2012 (Figure 5).

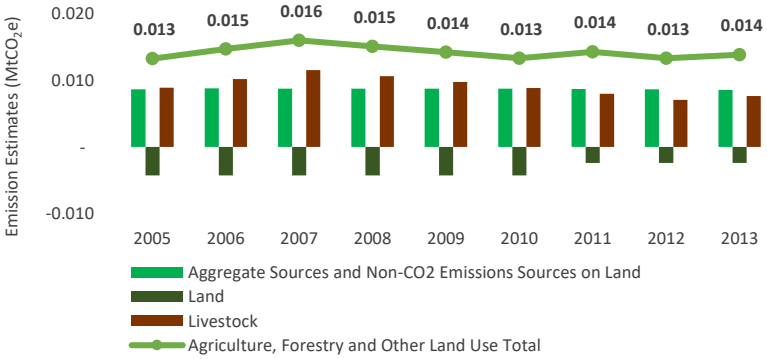
Public Electricity Generation was the major contributor of GHG emissions under the Fuel Combustion sub-sector across all the reference years. Transport and Fisheries categories also had significant contribution in the Energy emissions portfolio of Lakshadweep as illustrated in Figure 1 above.

Figure 5: GHG Emisssions Estimates for Energy Sectorin Lakshadweep (2005 to 2013)



AFOLU Sector

Figure 6: GHG Emission Estimates for AFOLU Sector in Lakshadweep (2005 to 2013)



The AFOLU sector represented ~4% of the total emissions of Lakshadweep 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 whereas, the other two sub-sectors under AFOLU were emitter of GHGs across all years from 2005 to 2013. However, the growth of emissions from this sector was quite flat with a CAGR of 0.56% from 0.013 $MtCO_2e$ in 2005 to 0.014 $MtCO_2e$ in 2013 as illustrated in Figure 6. An interim peak in the overall AFOLU emissions was observed in 2007 owing to increased emissions from the Livestock sub-sector.

Waste Sector

The Waste sector contributed ~25% of the total emissions of Lakshadweep in 2013. Municipal Solid Waste[6], Domestic Wastewater and Industrial Wastewater are the key sources of GHG emissions in the Waste sector. Emissions from the waste sector grew at an enormous CAGR of 21.34%[7] from 0.019 $MtCO_2e$ in 2005 to 0.091 $MtCO_2e$ in 2013. A significant rise in the overall Waste emissions was registered in 2011 which can be attributed to higher Domestic wastewater emissions, which reflects changing trends in use of various treatment systems as reported in Census of India 2011.

Industrial Wastewater was the major emitter of GHGs across all the reference years with a share of ~91% in 2013. Under this sub-sector, all the emissions were registered from the Meat Industries of Lakshadweep. The remaining ~9% emissions of Lakshadweep emanated from Domestic Wastewater (~8%) and Municipal Solid Waste Disposal (~1%) respectively

Figure 7: GHG Emissions Estimates for Waste Sector in Lakshadweep (2005 to 2013)

[5] The CAGR value is very high but the corresponding change in absolute emissions was only of the order of 0.20 $MtCO_2e$ from 2008 to 2013.

[6] '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'

[7] The CAGR value is very high but the corresponding change in absolute emissions was only of the order of 0.07 $MtCO_2e$ from 2008 to 2013.

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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:

An initiative supported by

SHAKTI SUSTAINABLE ENERGY FOUNDATION

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.

Shakti Sustainable Energy Foundation works to strengthen the energy security of the country by aiding the design and implementation of policies that encourage energy efficiency, renewable energy and sustainable transport solutions.

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

WRI-India is a research organization that turns big ideas into action at the nexus of environment, economic opportunity and human well-being.

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