

## Title: Time series GHG emission estimates for residential, commercial, agriculture and fisheries sectors in India

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### Abstract

Green House Gas (GHG) emissions are the major cause of global warming and climate change. Carbon dioxide (CO<sub>2</sub>) is the main GHG emitted through human activities, at the household level, by burning fuels for cooking and lighting. As per the 2006 methodology of the Inter-governmental Panel on Climate Change (IPCC), the energy sector is divided into various sectors like electricity generation, transport, fugitive, 'other' sectors, etc. The 'other' sectors under energy include residential, commercial, agriculture and fisheries. Time series GHG emission estimates were prepared for the residential, commercial, agriculture and fisheries sectors in India, for the time period 2005 to 2014, to understand the historical emission changes in 'other' sector. Sectoral activity data, with respect to fuel consumption, were collected from various ministry reports like Indian Petroleum and Natural Gas Statistics, Energy Statistics, etc. The default emission factor(s) from IPCC 2006 were used to calculate the emissions for each activity and sector-wise CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O and CO<sub>2e</sub> emissions were compiled. It was observed that the residential sector generates the highest GHG emissions, followed by the agriculture/fisheries and commercial sector. In the residential sector, LPG, kerosene, and fuelwood are the major contributors of emissions, whereas diesel is the main contributor to the commercial, agriculture and fisheries sectors. CO<sub>2e</sub> emissions have been observed to rise at a cumulative annual growth rate of 0.6%, 9.11%, 7.94% and 5.26% for the residential, commercial, agriculture and fisheries sectors, respectively. In addition to the above, a comparative study of the sectoral inventories from the national inventories, published by Ministry of Environment, Forest and Climate Change, for 2007 and 2010 was also performed.

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