

# **GEIA 2020 WEB Conference**

## ***ASSESSMENT OF PARTIAL CARBON FOOTPRINT OF MOBILE TOWERS IN INDIA***

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# Introduction

**Why Mobile sector  
Emission ?**



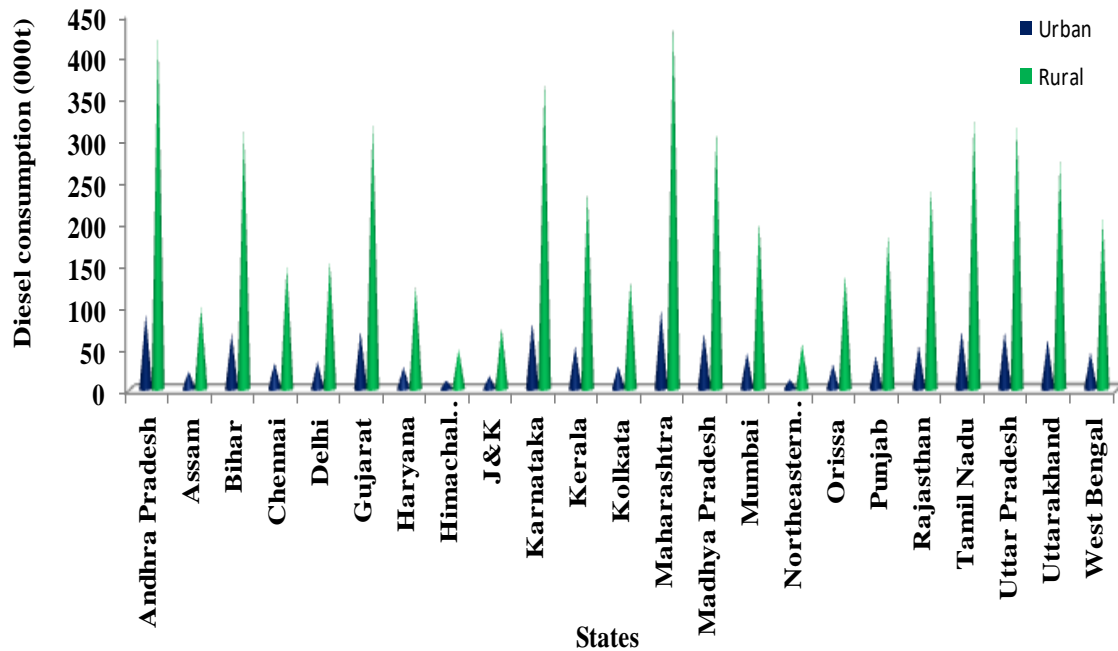
The GHG emission inventories for energy sector available for India have so far not been able to adequately capture the GHGs emissions from diesel consumption in generator sets used in the mobile communication industry.

- At present, India is the second largest global telecom market after China.
- Indian mobile telecom industry had 584.3 million subscribers in 2010-2011 with an annual growth rate of 49%.
- This growth has a bearing on climate due to the CO<sub>2</sub> and other air pollutants' emissions associated with the diesel fuel used in this sector for meeting the power requirements.
- The Mobile Towers (MTs) in India consumed 14 KWh of electricity annually to power its network infrastructure, which is projected to grow further in future.
- The diesel generators used in MT are of 10-15 kw capacity which consumes about 2 liters of diesel per hour per set.



## Previous studies

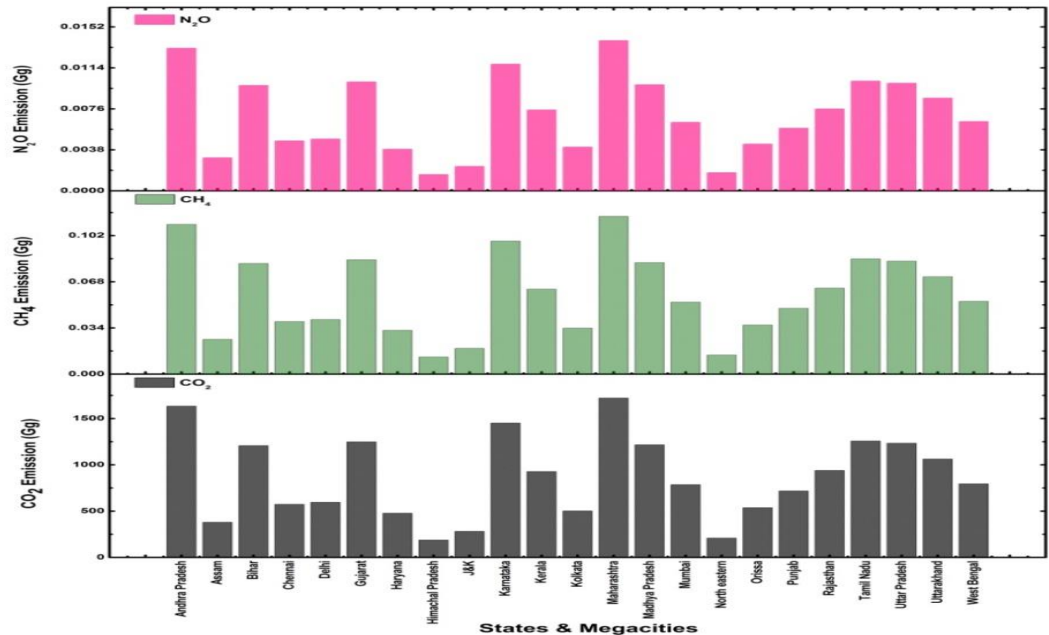
References	Activity data	Emission factor used	Methodology	CO <sub>2</sub> Emission
Gopal et.al (2011)	18,000 million litres	N/A	E= AD*EF	6 million tons
Panigrahi (2011)	2 billion litres	2.68Kg CO <sub>2</sub> /lt	E=AD*EF	10 million tons
TRAI (2011)	2 billion litres	2.68kg CO <sub>2</sub> /lt	E=AD*EF	Carbon 5.3 million tons
Krishnan et.al (2012)	169 PJ	N/A	E=AD*EF	32.9 million tons
Sahu et.al (2014)	7.5 billion litres	Different literature	E=AD*EF	27.9 million tons
Present study	No. Of tower and diesel consumption	IPCC default emission Factor	IPCC (2006) default methodology	19.9 million tons



**State wise diesel consumption (000t) in urban and rural areas in India**

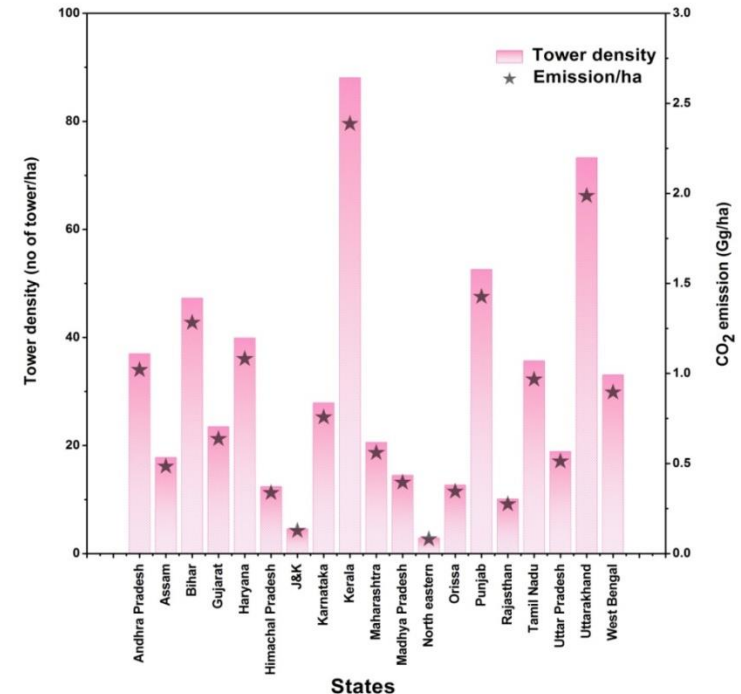
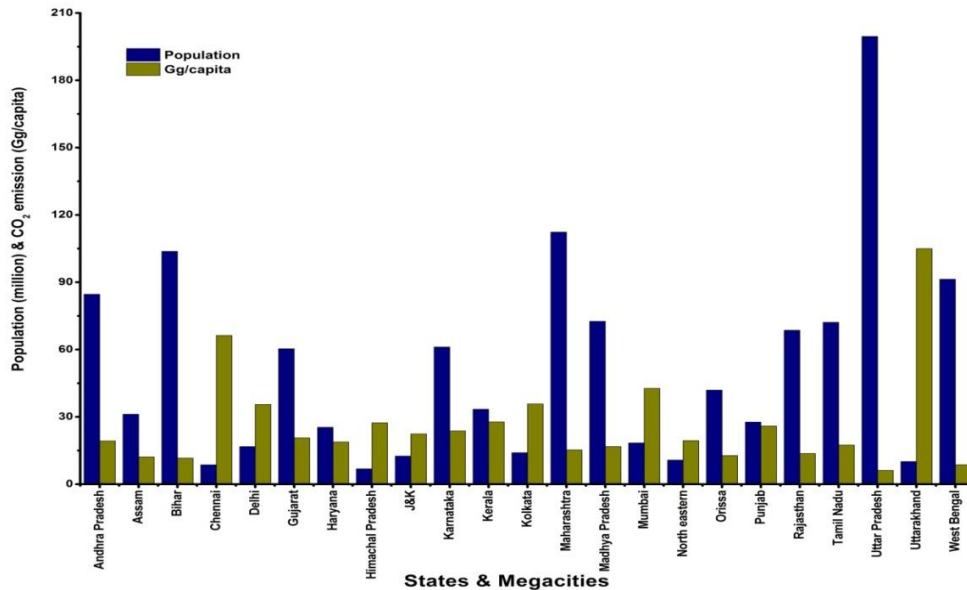
**The total GHGs emission from diesel consumption in MTs**

➤ Andhra Pradesh, Maharashtra, Gujarat, Madhya Pradesh, Uttar Pradesh, Tamil Nadu, and Delhi have major contributions in total GHG emissions due to fuel consumption in MTs



## State wise per capita and per hectare CO<sub>2</sub> emissions from MTs

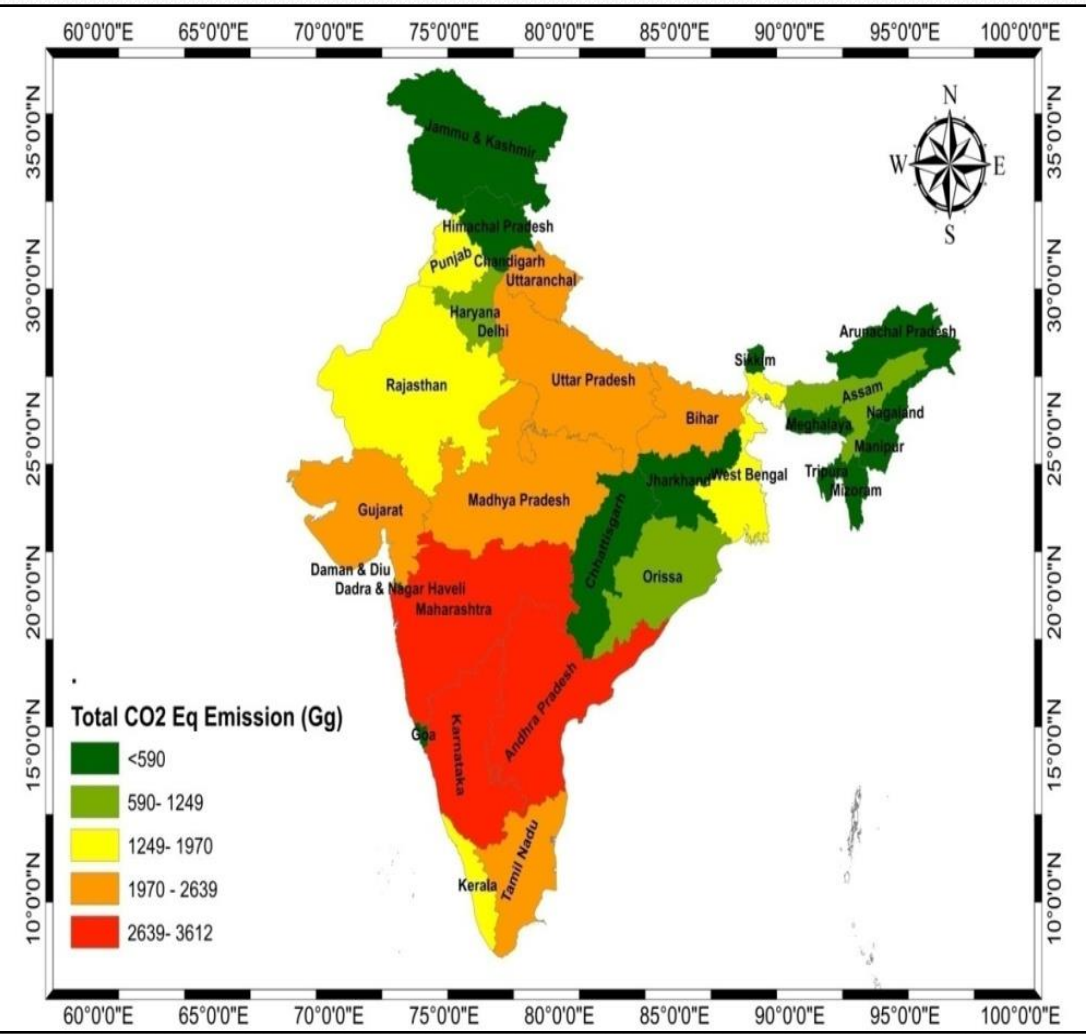
- Megacities like Delhi, Mumbai, Kolkata, and Chennai have been found to emit between 40 to 333 Gg of CO<sub>2</sub>/ha due to small geographical areas and high MTs densities.
- The per capita CO<sub>2</sub> emissions varied from 0.006 Gg to 0.12 Gg from MTs in different Indian states revealing the influence of the state's population on the per capita CO<sub>2</sub> emission.



State-wise population and per capita CO<sub>2</sub> emissions from Mobile Towers during 2012

Mobile Tower densities and corresponding CO<sub>2</sub> emissions per hectare area during 2012

## Partial Carbon footprint of Mobile Towers in Indian States



➤ The CO<sub>2</sub> equivalent emissions under scope I have been found to range from 188.3 to 1727.6 CO<sub>2</sub> eq.

➤ Scope II & III, the CO<sub>2</sub> equivalent emission have been found to range from 179.3 to 1644.8 CO<sub>2</sub> eq. and from 22.4 to 205.2 CO<sub>2</sub> eq. respectively.

➤ In the partial carbon footprint, the contribution of Scope I emissions was 48%, followed by the contribution of scope II emissions (46%) and scope III emission (6%).





***THANK YOU***