1 INTRODUCTION

Air pollution is a global environmental issue with critical effects on human health and food security. The issue is of major concern in a developing economy such as India. There are many sources that contribute to the deterioration of air quality in India. Limitation to access of clean energy for domestic cooking and lighting, scarcity of convenient public transport facility, increasing power demand and increase in coal- based industries along with pollution related to industrial activities are the major challenges contributing to the air pollution issue in the country. Additionally, open burning of agricultural residues, road dust, operation of diesel generator sets (DG sets), construction activities, inadequate management of municipal waste/refuse, and indiscriminate use of fertilizers on croplands also contribute to deterioration of air quality in India.

The Indo-Gangetic Plain (IGP) of India shows the highest levels of air pollution due to the presence of large numbers of high-intensity emission sources, adverse meteorological condition, and high density of population. The government of India has taken several steps towards controlling air pollution vis-à-vis achieving its commitments to the Paris Agreement (COP21). Considering the dynamically changing energy use landscape in India as well as recent policy interventions taken to reduce air pollution, there is a need to update the air pollution emission inventories.

While developing emission inventories, it is always preferable to have country-specific emission factors of different air pollutants from various sector-specific activities. This helps to reduce uncertainty in estimating emissions of air pollutants from that sector. In this study, TERI has developed emission factors for open agriculture residue burning, refuse burning, road dust resuspension, and some industrial activities. Primary data was generated through the collection of samples across the country. TERI also derived emission factor for ammonia emission from different activities in India based on the secondary information available in published literature. A new indigenous emission factor database has been formulated using this new information.

The emission inventory of pollutants gives an idea of contributions in source emissions but does not reflect their shares in ambient concentration. Understanding of source contributions in ambient concentrations is important to understand the impact of air pollution—particularly on human health or agricultural activities. Again, different primary pollutants, such as NH_3, NO_x , SO_2, VOCs, etc., can react in the atmosphere to form secondary pollutants based on the meteorological and thermodynamic conditions. Thus, it is necessary to use meteorological parameters and pollutants inventories together in a chemical transport model to estimate the ambient concentration of different air pollutants. We have carried out a preliminary model run to assess pollutant concentrations in India based on the inventory prepared in this study. This project has the following objectives:

1. To update muti-sectoral emission inventory of PM, NOx, SO_2, NMVOC, CO of India for the year 2016

2. To develop an inventory of ammonia emissions for India
3. To simulate pollutant concentration using chemical transport models for identification of hotspots.