

## **Economy-wide impact of climate smart agriculture in India – using a SAM framework**

Topic: Regional input-output modeling II (Chair: Vishnu Prabhu, Gokhale Institute of Politics and Economics)

Author: Ananya Ajatasatru

Co-Authors: Kakali MUKHOPADHYAY, Vishnu Sivadasa Prabhu

India is the second largest producer of emission intensive food grain crops; paddy and wheat, and, is the third largest emitter of both Methane (CH<sub>4</sub>) and Nitrous Oxide (N<sub>2</sub>O). Hence, in the context of climate change, the Indian agricultural sector treads in a certain duality. The primary aim of this study is to analyze the economy wide impact of climate smart agriculture and its implications of water and carbon footprints in India using a social accounting matrix framework. The climate smart agricultural interventions are classified into two broad categories – first, technological interventions and secondly, the shift in cropping pattern. Both these interventions influence intersectoral linkages between agriculture and non-agriculture sector and therefore, key macro-economic indicators such as, gross domestic product, farm and non-farm income of the households, employment opportunity and fiscal health of the government, also get influenced. The conventional SAM 2017-18 has been extended with climate smart technological practices that are cogent to the principle of agroecology (AE). Conservation Agriculture (CA) and Zero Budget Natural Farming (ZBNF) have been considered as climate smart practices for paddy and wheat which are two most emission intensive and vulnerable crops in India. It was seen that while adoption of the practices prescribed by the ZBNF movement provided the highest changes across the economy, CA has lesser economic multiplier effect, but has lesser labour requirements with additional capital investment requirements towards funding of mechanized inputs. A shift to alternative crops such as Maize, Sorghum and Millets have enhanced income and output effects, when compared with Wheat. Hence, a combined shift into CA based Rice-Maize cropping pattern is quite plausible. The current study would sensitize policy makers to prioritize suitable policy and institutional measures towards upscaling climate smart interventions in India.