

Food and nutrition security trends, determinants and challenges in tropical mega deltas

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It is estimated that more than 20% of the global population remains food insecure (FAO, et al 2015, Wheeler and von Braun, 2013). Due to a rise in consumption and rapidly increasing population, food demand may increase by at least 70% by 2050 (Royal Society, 2009). The challenge of meeting this increased demand is exacerbated by demographic changes, political instabilities, and environmental change, including the impacts of climate change (Poppy, 2014). These challenges are particularly pertinent to the densely populated tropical mega deltas of the global south, dubbed the 'rice bowls' of the world.

In the last 20 years many developing countries have made considerable progress towards improving food security and nutrition. However, progress across countries and dimensions of food security have been uneven (FAO, 2014). For example, in countries home to major tropical deltas such as Bangladesh and Cambodia, about a third of children are still classified as undernourished (IFPRI, 2015). While challenges to food security in the context of environmental and climate changes have been studied widely, limited evidence exists for their implications for food and nutrition security in tropical deltaic regions. Delta areas are particularly vulnerable to food insecurity and malnutrition due the specific environmental, climatic and human development factors affecting agricultural production and fisheries. These include coastal flooding and storm surges, deforestation, changes to river flow patterns and water tables, increased soil salinity and water quality degradation. Due to the large number of people living in Deltaic regions and their importance in regional food production, there is a pressing need for a better understanding on how environmental factors affect food security and malnutrition.

This study explores the potential impacts and challenges posed by environmental and climate change on food and nutrition security in three tropical mega-deltas: the Amazon, the Ganges-Brahmaputra and the Mekong delta. Socio-economic, agricultural production, environmental, nutritional, health related and demographic datasets for each region for the period 2000-2015 will be used and analysed to assess the impacts of contextual environmental variables on food security and nutrition. This includes an assessment of how these relationships vary in strength of association between the 3 deltas.. In addition, existing socio-economic- and climate change scenarios and modelling results are used to assess potential changes in food and nutrition security under plausible future pathways of development and impact. Results are framed in the context of relevant targets of the proposed Sustainable Development Goals and describe the challenges for food security and policy implications for each mega-delta.

Keywords: Delta's, Food security, Environmental change, Nutrition, Climate Change