



## **Environmental change, livelihoods and poverty in coastal Bangladesh under different climatic and policy scenarios**

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Deltas represent one of the most densely populated areas in the world. This is especially true for the coastal zone of Bangladesh where more than a thousand people live in each square kilometre of land. Livelihoods, food security and poverty in Bangladesh are strongly dependent on natural resources affected by several factors including climate variability and change, upstream river flow modifications, commercial fish catches in the Bay of Bengal, and engineering interventions such as polderisation. The scarcity of fresh water, saline water intrusion and natural disasters (e.g. river flooding, cyclones and storm surges) have negative impact on drinking water availability and crop irrigation potential; thus severely affect land use and livelihood opportunities of the coastal population. Hydro-environmental changes can be especially detrimental for the well-being of the poorest households that are highly dependent on natural resources.

The Delta Dynamic Integrated Emulator Model ( $\Delta$ DIEM) couples the bio-physical environment (hydrology, fisheries, agriculture) and the (ecosystem services and non-ecosystem services-based) livelihoods of the Bangladeshi coastal populations. Here we describe and apply a new integrated model to approximate the impact of long-term climatic and environmental changes on the livelihoods, wellbeing and poverty of households. We use three climate scenarios and four policy scenarios to identify the importance of climate and governance on productivity, livelihoods, wellbeing and mobility of people. Results show that governance and policy is more important in managing the coastal system than climatic changes.