



## **Integrated socio-environmental modelling: A test case in coastal Bangladesh**

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Delta regions are vulnerable with their populations and ecosystems facing multiple threats in the coming decades through extremes of poverty, environmental and ecological stress and land degradation. External and internal processes initiate these threats/changes and results in for example water quality and health risk issues, declining agricultural productivity and sediment starvation all of which directly affecting the local population. The ESPA funded “Assessing Health, Livelihoods, Ecosystem Services and Poverty Alleviation In Populous Deltas” project (2012-16) aims to provide policy makers with the knowledge and tools to enable them to evaluate the effects of policy decisions on people’s livelihoods. It considers coastal Bangladesh in the Ganges-Brahmaputra-Meghna Delta: one of the world’s most dynamic and significant deltas. This is being done by a multidisciplinary and multinational team of policy analysts, social and natural scientists and engineers using a participatory, holistic approach to formally evaluate ecosystem services and poverty in the context of the wide range of changes that are occurring.

An integrated model with relevant feedbacks is being developed to explore options for management strategies and policy formulation for ecosystem services, livelihoods and health in coastal Bangladesh. This requires the continuous engagement with stakeholders through the following steps: (1) system characterisation, (2) research question definition, (3) data and model identification, (4) model validation and (5) model application. This presentation will focus on the first three steps. Field-based social science and governance related research are on the way. The bio-physical models have been selected and some are already set up for the study area. These allow preliminary conceptualisation of the elements and linkages of the deltaic socio-environmental system and thus the preliminary structure of the integrated model. This presentation describes these steps though the coastal Bangladesh test case.