Some key questions we seek to answer in relation to the coastal delta region of Bangladesh are:

**Who are the poor?**

- What are the key stakeholders and what are their roles?
- How and why are these Ecosystem Services changing?
- What is the role of biophysical change and Ecosystem Services?
- What implications do changes to Ecosystem Services have on the poor?
- How can policy promote the sustainability of ecosystem services?

**What are the Ecosystem Services?**

- How and why are these Ecosystem Services changing?
- What is the role of biophysical change and Ecosystem Services?
- How can policy promote the sustainability of ecosystem services?

**What are the social, environmental and governance controls on livelihoods?**

ESPA Deltas: Assessing Health, Livelihoods, Ecosystem Services and Poverty Alleviation in Populous Deltas

31 March 2012 – 31 March 2016

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Introduction

Worldwide, delta regions are very vulnerable with their large populations and ecosystems facing multiple threats. In the coming decades stresses at global (e.g., sea-level rise), regional (e.g., catchment management) and delta plain (e.g., water extraction, sediment starvation) levels could result in increasing flooding, salinization, land loss and degrading of ecosystem services. All these changes will have adverse effects on the poor. The Ganges-Brahmaputra-Meghna (GBM) Delta is one of the world’s most dynamic and significant deltas and is at increased risk of extreme weather events and sea-level rise, coupled with population growth and urbanisation.

The Project

The ESPA Deltas Project aims to provide policy makers with the knowledge and tools to enable them to evaluate the effects of environmental decisions on people’s livelihoods. This is being done by a multidisciplinary and multinational team of social and natural scientists, engineers and policy analysts using a participatory, holistic approach to formally evaluate the ecosystem services and poverty and related policy in the context of changing deltaic environments. This approach is being developed and tested in coastal Bangladesh and will be assessed for transferability in two populous deltas in India.

"Deltas are home to over 500 million people worldwide, provide rich ecosystem services and yet often experience significant levels of poverty"

Method and Expected Outcomes: Developing a dynamic model of the coastal delta

The methodology is based upon the conceptualisation of ecosystem services provision and drivers of poverty, utilising a wide range of physical and social models (e.g., climate, coastal and catchment hydrology, water quality, morphodynamics, mangroves, fisheries, demographic projections and vulnerability modelling).

In addition, a new flexible integrated analysis modelling tool will be developed that can describe complex interrelationships between the physical and social environments, their drivers and the livelihood of local populations, including feedbacks and thresholds. This will be informed by the other suite of models and address cross-cutting questions, allowing participatory application. The project structure is shown in the figure above, which recognises the integrated and iterative learning nature of the research and includes stakeholder involvement (across government and civil society) in all stages.

Outputs