



Shrinking Ecosystem Services in a Sinking Delta – Maintaining livelihoods in the Sundarbans Biosphere Reserve, India

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A range of ecosystem services provide critical direct benefits to poor households living in the Sundarban Biosphere Reserve in India. These include artisanal fishing in creeks and rivers, crab collection, prawn seed collection, brackish and fresh-water aquaculture, fuel, fodder and honey collection from forests, and marine fishing in mechanized and non mechanized boats. The roles of these ecosystem services are largely invisible to official data. Triangulating between available statistics, key informant interviews and a new household survey, we estimate that nearly 30% of the 4.6 million population, mostly poor people rely on these ecosystem services. Ecosystem services supplement traditional rainfed agriculture, providing over 30% of household livelihood requirements. The availability of these ecosystem services is declining in per-capita terms due to the rapidly rising population in addition to ecosystem degradation. The area and health of mangrove is affected by sea level rise, differential subsidence, reduction of sediment and freshwater supply due to human obstruction and abstraction, increased salinity, high intensity cyclones, monsoon instability and temperature rise. Under a business as usual scenario, sharp decline of provisioning and regulating ecosystem services available per capita by 2030 is envisaged resulting in the threatening to increase poverty in the Biosphere Reserve. We review policy options to protect and enhance these critical ecosystem services for poor households including restoration of the estuarine mangrove habitat through river reconnection and rejuvenation and fresh water provisioning and desalination, scientific plantation and shore protection using building with nature concept, regulating marine fishery and aquaculture practices, land use planning and population realignment.