



## **Integrated management of water resources of Halda: a unique river of Bangladesh**

Md. Humayain Kabir (1), Md. Manzoorul Kibria (2), and Mohammad Mosharraf Hossain (3)

(1) Wegener Center for Climate and Global Change, University of Graz, Graz, Austria (humayun@ifescu.ac.bd), (2) Department of Zoology, University of Chittagong, Chittagong-4331, Bangladesh, (3) Institute of Forestry and Environmental Sciences, University of Chittagong, Chittagong-4331, Bangladesh

Bangladesh is a riverine country with more than 40 major rivers, however, Halda River is of special interest among them in recent time for being the only tidal river in the world that serves as a natural spawning ground for major Indian carps. Besides, this river serves in transportation, source of fresh and irrigation water for Chittagong, livelihood for fishermen, sand-query for the construction sector and so forth. Therefore, an integrated management and development of water, land, and related resources across sectors within its basin, in order to maximize the economic and social benefits derived from water resources is crucial. For this purpose, we used the DPSIRR (Driver-Pressure-Stressor-Impact-Recovery) approach for the whole system of Halda River basin. Primary data were collected through extensive field visits, interviewing the key informants and government officials, and focus group discussions with the local community. Besides, secondary data were collected from the relevant project reports, published research articles and newspapers. In this study, we identified that water pollution, illegal catching of brood fish, excessive sand extraction, withdrawn of water through rubber dam in the upstream, cutting of oxbow bends, use of chemicals and fertilizers in agricultural lands, tobacco cultivation and global climate change are the main drivers affecting the Halda River basin. As a result, the causative effects on ecosystem health of the Halda River include deterioration of water quality, salinity intrusion, loss of agricultural land due to riverbank erosion, decreased amount of fertilized eggs and fish fry, siltation in the river bed. To response these effects, institutions involved with the management of this river has taken some steps although we found very limited long-term strategies and policies for the conservation and restoration of the Halda River ecosystem.