Abstract

The Ph.D thesis entitled "Coastal Urbanization and Population Pressure with Related Vulnerabilities and Environmental Conflicts - A Case Study at Medinipur Littoral Tract, West Bengal" submitted for examination includes the nature and functions of coastal urbanization over the sensitive environment at Digha, Contai and Haldia; the growth patterns of each urban centres on the diversified coastal habitats and landforms; the demographic status of urban population of the present study areas; estimation of associated risks involved within the process of urbanization in the coastal belt; observation of the urbanization-environment conflicts with related vulnerabilities; and the susceptibility of the management practices to sustain the expanding horizons of such coastal urbanizations in these parts of West Bengal coast.

The urban centre of Khadalgobra, including Digha is a census town and it has extended along the shoreline of Contai coastal plain as a beach resort. However, Contai and Haldia are expanded as statutory towns under municipality administration and located above the beach ridge plain and estuarine floodplain of Medinipur littoral tract. The built-up areas of the urban units are increased rapidly over time and space in expanses of sensitive habitats (shorelines, sand dunes, wetlands etc.) of the alluvial coast. The rapid expansion of beach tourism along the littoral tract from New Digha to Mandarmani (24 km shoreline) has created a lot of environmental conflicts between tourism infrastructure development and modification of sensitive coastal environment in the region.

The female literacy rate has increased in all three urban centres and over 75 % of people are involved in tourism and transportation-related activities in Digha and Contai urban centres of the beach fringed coast and inland dune ridge coast at present. The trend of average annual rainfall over 35 years periods though decreasing in all three urban centres of the coastal belt (Digha 1648 mm, 1982-2017; Haldia 1856 mm, 1982-2017; and Contai 1599 mm, 1973-2017) but intensities of storm rainfall for a short period create coastal floods in the low-lying areas of the coast. However, the average annual temperature for the said periods is increasing significantly. Groundwater depletion, shoreline erosion, dune degradation, saltwater inundations and conversion of natural wetlands are major impacts of the overuse of resources, population pressures and marine forcing factors (sea level rise, advancing sea and repeated cyclone landfalls) in the low-lying coastal belts at present. Dumping of untreated wastes and associated problems, urban drainage conditions during extreme events (tidal waves, storm surges and storm rainfalls), urban air pollution and saltwater encroachment into groundwater

aquifers generated complex consequences of such alarming expansion of the coastal urbanization in the present study area.

The existing Coastal Regulation Zone (CRZ) rules, the effort of Integrated Coastal Zone Management (ICZM) activities, the participation of rural people in tourism development processes and multiple activities of Digha-Sankarpur Development Authority (DSDA) are not enough to reduce the conflicts between stakeholders and resource sharing activities and to tackle the advancing sea and climate variabilities of the vulnerable coastal environment fringed with northern Bay of Bengal and the seaward extension of Hugli estuary. As the development of urban areas intensified or spread into vulnerable sites of the coastal belt, so the potential impact of hazards increased in Digha, Contai and Haldia at present as depicted in the work.

Keywords: *Coastal urbanization; Medinipur littoral tract; urbanization-environment conflicts; groundwater depletion; coastal vulnerability*