



SAND MINING AND ITS IMPACT ON ECOLOGY OF AGHANASHINI ESTUARY UTTARA KANNADA DISTRICT, KARNATAKA



Introduction

- Sand constitutes an important abiotic component in aquatic ecosystems like rivers. It provides suitable substrates for many benthic organisms.
- It is an unavoidable component for psammophilic fishes as it provides breeding, spawning, feeding and hiding grounds.
- Sand is important economic resource much in demand for a great variety of uses.
- It is a source of silica for making sodium silicate, a chemical compound used for manufacture of both common and optical glasses.
- Sand quarried from river channels floodplains, seashores and deserts is major source of construction sand and for variety of industrial purposes.
- Sand budgeting is necessary to solve ecological problems of rivers and coastal zone-the latter especially covering the sea beaches and estuarine environments.

Impact of sand mining on ecosystem

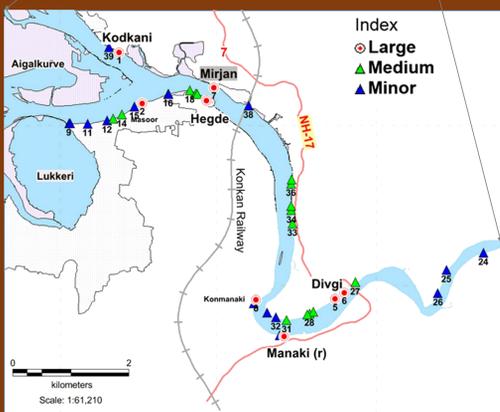
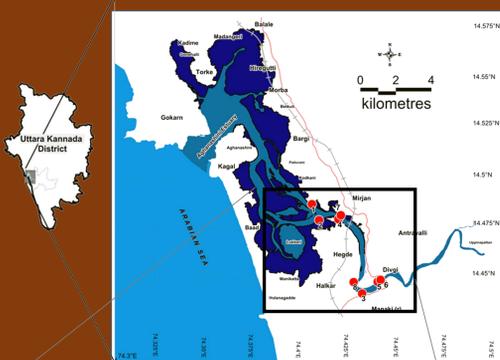
- Bank erosion and valley widening
- Reduced ground water recharge
- Deepening of rivers and estuaries, enlargement of river mouths and coastal inlets, saline-water intrusion.
- Destruction of aquatic and riparian habitat
- Alters the local hydrology and damage to organisms or through habitat degradation and disruption of food web.

Objective of the Study

Profiling of sand mining in the coastal zone, from the upstream portion of an estuary, which experiences relatively lower salinities during the post and pre-monsoon times and to portray the extraction and loading sites and to quantify the extracted sand.

Study Area

The present study conducted in the upstream of Aghanashini estuary of Uttara Kannada district in Karnataka. The estuary lies between latitude. 14.391° to 14.585° and longitude 74.304° to 74.516° in the Kumta taluk. The main water spread area (including the floodplain) of the estuary is aligned parallel to the sea coast, leaving a narrow strip of land 1-1.5 km wide constituted of sand and alluvium, between Arabian Sea and the estuary.



Sand mining zone and landing stations

The sand mining blocks are situated in the narrower part of the estuary between the low lateritic hills, where the water during the rainy season, most of it running down the escarpment of the Western Ghats, mainly through tributary streams, and from the largely denuded lateritic landscape towards the coast, as clear runoff water, create a gradation of sands within this extraction zone.

Station wise projected quantity of sand (in tons) expected to be transported for 2015-16

Station	Location Name	Extraction in tonnes/ year	Station characterization*
St 1	Kodkani	10860.4	Minor
St 2	Masoor	16449.5	Minor
St 3	Manaki	35389.0	Medium
St 4	Hegde	104591.0	Large
St 5	Divigi I	35759.9	Medium
St 6	Divigi II	7946.6	Minor
St 7	Mirjan	89399.7	Large
St 8	Konmanaki (Hegde)	53970.9	Large

*Large: > 50,000 t/yr; Medium: 25- 50,000 t/yr; Minor: < 25,000 t/yr

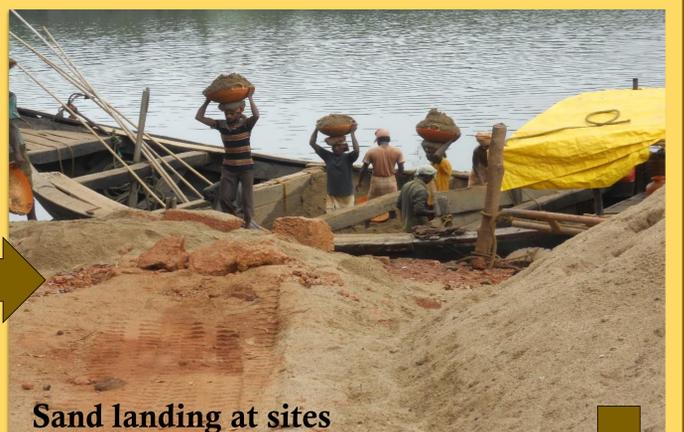
Soil Transportation to Banks



Sand Scooper



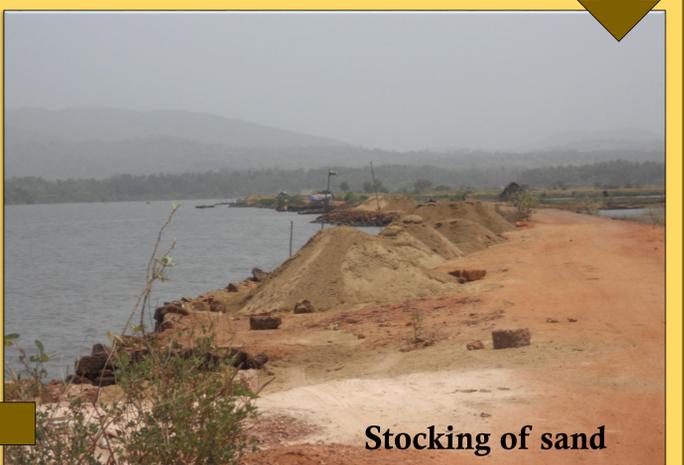
Sand Mining



Sand landing at sites



Transportation using heavy duty vehicles



Stocking of sand

Results and Discussion

- The sand extracted mainly from an 8 km stretch of upper estuary with low salinity in summer.
- The landing sites are convenient locations with road connectivity along the estuarine banks.
- The landing places observed had boards detailing details of lessees, GPS details of extraction area and name of the storage area. The sampling stations are classified into *large*, *medium* or *minor* depending on the quantities of sand moving out from them.

Details of projected extraction of sand from upper estuarine region of Aghanashini

Station category	Total no.	Daily average tonnage transported	Average tonnage 2015-16 (260days)	Total projected output in tons (260 days)
Large	6	317	82657	495942
Medium	16	136.8	35574	569184
Minor	18	45.2	11752	211536
Total projected sand output for the year 2015-16				1276662

Srikanth Naik, M. D. Subhash Chandran & T. V. Ramachandra
 Energy and Wetland Research Group, Centre for Ecological Sciences,
 Indian Institute of Science, Bangalore 560012
 Email: cestvr@ces.iisc.ernet.in, Phone: 080 22933099
 Web: <http://ces.iisc.ernet.in/energy>

