VISHAL BHAVE

Challenged Coasts

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The coast is the interface between the sea and the land, a space that is constantly changing in time and space. Coastal areas harbour a variety of ecosystems such as mangroves, coral reefs, seagrass beds, mudflats, and sandy shores where a variety of floral and faunal species abound. It is intact coastal ecosystems – dense mangrove forests, wide sandy shores, healthy coral reefs – that provide the buffer between the elements of nature and human beings.

Coastal areas play an important role in the socio-economic development of a country primarily because seaborne trade remains the cheapest method of transporting large quantities of goods over long distances. Globalization demands movement of large quantities of raw materials and finished goods, and consequently there is strong emphasis on the development of ports and harbours. Concomitantly, areas around ports come under development pressure from industries, settlements, and tourism. The natural ecosystems in coastal areas, therefore, come under stress, resulting in a breakdown or deterioration of ecosystem services, as well as loss in biodiversity.

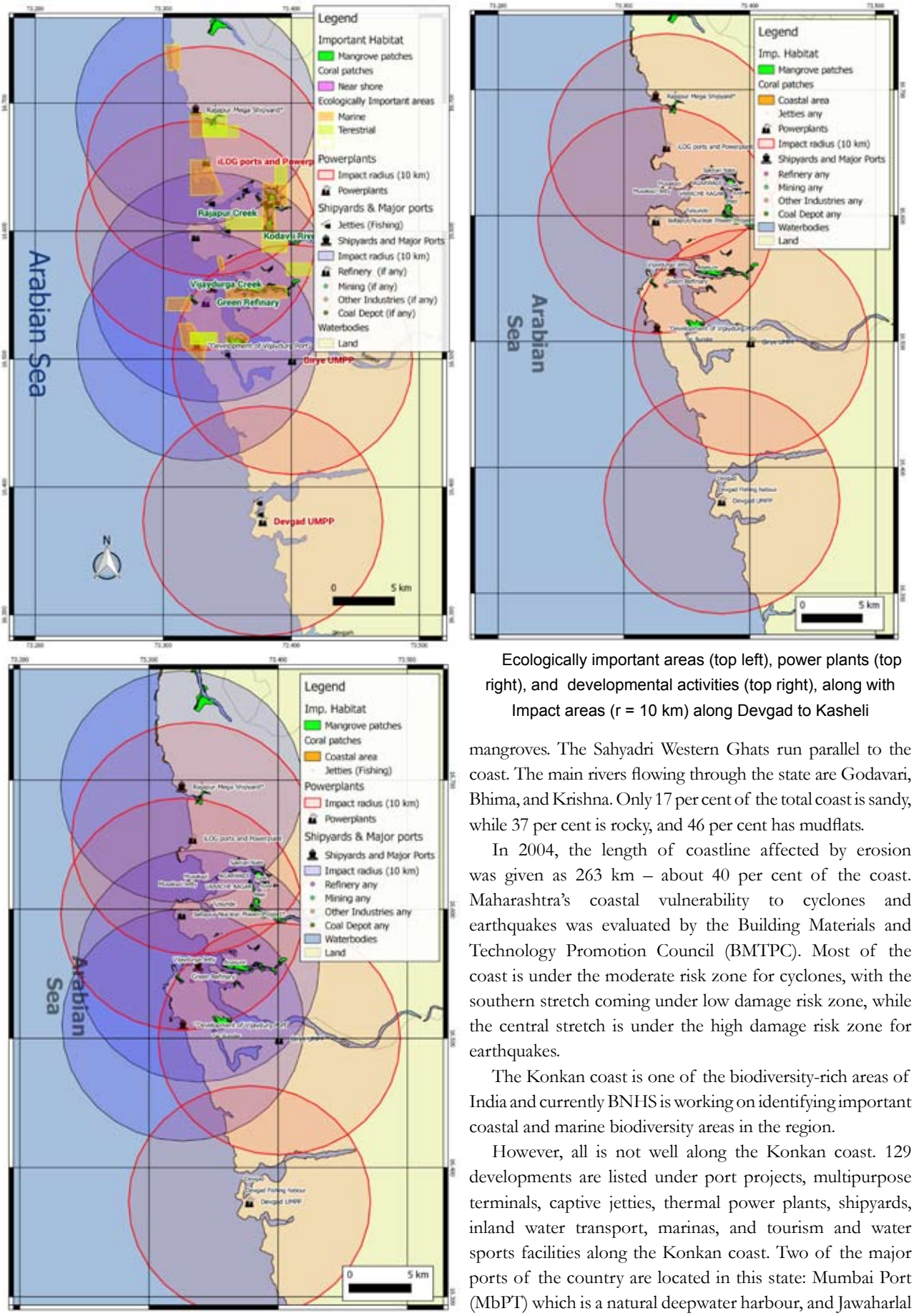
Destruction of habitats has been reported as one of the major causes for the loss of biodiversity, according to the Convention on Biological Diversity. India's mainland has a coastline of more than 7,000 km, a fraction of the world's coastline, but 14.2 per cent of the world's population, according to the 2014 census, lives in India. Of this, over a quarter lives within 50 km of the coastline. On the Indian mainland, there are nine maritime states and two union territories with a coastline. There are 73 coastal districts (of a total of 593); 77 cities and towns are located on the coast, including the urban agglomerations of Mumbai, Chennai, Kolkata, and rapidly expanding cities like Kochi and Visakhapatnam.

The Indian coast is under tremendous pressure from population and 'development'. However, there are no assessments available at the national level to provide estimates of the extent to which the coast is actually occupied by various human activities, and their possible impacts on the coastal biodiversity.

Some major issues that are threatening the coastal ecology of India in general and Maharashtra in particular are coastal structures, thermal power plants, ports, shipyards, and sea walls.

Case study: Coastal Issues of Maharashtra

Maharashtra is the third largest state in the country, both in terms of size and population. Maharashtra is one of the most industrialized and urbanized states of India. About 42 per cent of the state's population is living in urban areas, though the levels of urbanization are uneven across regions and districts within the state. The state has a 652.6 km long indented coastline, characterized by pocket beaches flanked by rocky cliffs of Deccan basalt, estuaries, and patches of



Ecologically important areas (top left), power plants (top right), and developmental activities (top right), along with Impact areas (r = 10 km) along Devgad to Kasheli

mangroves. The Sahyadri Western Ghats run parallel to the coast. The main rivers flowing through the state are Godavari, Bhima, and Krishna. Only 17 per cent of the total coast is sandy, while 37 per cent is rocky, and 46 per cent has mudflats.

In 2004, the length of coastline affected by erosion was given as 263 km – about 40 per cent of the coast. Maharashtra's coastal vulnerability to cyclones and earthquakes was evaluated by the Building Materials and Technology Promotion Council (BMTPC). Most of the coast is under the moderate risk zone for cyclones, with the southern stretch coming under low damage risk zone, while the central stretch is under the high damage risk zone for earthquakes.

The Konkan coast is one of the biodiversity-rich areas of India and currently BNHS is working on identifying important coastal and marine biodiversity areas in the region.

However, all is not well along the Konkan coast. 129 developments are listed under port projects, multipurpose terminals, captive jetties, thermal power plants, shipyards, inland water transport, marinas, and tourism and water sports facilities along the Konkan coast. Two of the major ports of the country are located in this state: Mumbai Port (MbPT) which is a natural deepwater harbour, and Jawaharlal

List of proposed Power plants (Thermal/Nuclear), Refinery, Shipyards and Major Ports along the coast of Maharashtra, India

No.	Name	Village	District	By	Type	Capacity_PP	Capacity_port	Status
1	Trombay Power Station Unit 6 conversion	Mahul	Mumbai	Tata Power	PP-C	500		Permitted
2	Thakurli Powerplant by central-railways	Thakurli	Mumbai	Central Railway	PP-G	700		Revival of Old powerplant (Decommisioned in 1980)
3	Urban Energy Generation Pvt Ltd	Dronagiri, Navi Mumbai	Navi mumbai	Urban Energy Generation Pvt Ltd	PP-G	2100		0
4	Dahanu power station	Dahanu	Palghar	Reliance Infrastructure Limited	PP-C	500		Working
5	ONGC gas power plant - tokrale	Kelva - Mahim	Palghar	ONGC	PP-G	2200		Proposed
6	Bhagad powerplant 1300 MW	Bhagad	Raigad	DMICDC	PP-G	1300		0
7	Pioneer Gas Power's 388 MW Phase I & II	Bhagad, Raigad	Raigad	Pioneer Gas Power Ltd	PP-G	888		0
8	Dolvi captive power station	Dolvi	Raigad	JSW Steel	PP-C	660		Announced
9	Urban Energy Generation Pvt Ltd	Kondgaon, Roha	Raigad	Urban Energy Generation Pvt Ltd	PP-G	2100		0
10	Rewas Port	Rewas	Raigad	Reliance Industries	Port		127	Proposed (exploration phase)
11	iLOG ports and Powerplant	Ambolgad	Ratnagiri	iLOG	Port and Powerplant	450	4.5	Proposed (1st Public hearing)
12	Bhopan Power plant	Bhopan, Dapoli	Ratnagiri	GMR	PP-C	1800		0
13	Dhopave Power plant	Dhopave	Ratnagiri	NTPC	PP-C	1600		0
14	Ratnagiri Power Plant Unit 1 –4	Jaigad	Ratnagiri	JSW Energy	PP-C	1200		Operating
15	Jaitapur Nuclear Power project	Jaitapur	Ratnagiri	NPCIL	UMPP	9900		Construction phase
16	HPCL Tavsal	Tavsal	Ratnagiri	HPCL	Refinary		9	Proposed (exploration phase)
17	Dhakore-Ajgaon Power project	Dhakore	Sindhudurg	Ind Bharat power	PP-C	1050		Proposed (exploration phase)
18	Girye UMPP	Girye	Sindhudurg	Not bid - Coastal Maharashtra Power Ltd.	UMPP	4000		Proposed (exploration phase)
19	Devgad UMPP	Munge	Sindhudurg	Devgad UMPP	UMPP	4000		Proposed (exploration phase)
20	Vijaydurg port	Vijaydurg	Sindhudurg	M/s Vijaydurg Port Private Limited (VPPL)	Port		75	Proposed (exploration phase)
21	Nandgaon port	Nandgaon	Thane	JSW	Port		16.7	Proposed (exploration phase)
22	Jaigad port (Dhamankhol bay)	Dhamankhol, Jaigad	Ratnagiri	JSW	Port		18	Proposed (exploration phase)
23	Angre Port	Lavgan, Jaigad	Ratnagiri	M/s Chowgule Ports & Infrastructure Pvt. Ltd.	Port		16	In operation since April 2012
24	Redi Port	Redi	Sindhudurg	Redi Port (Developer: Redi Ports Ltd.) Earnest Group	Port		33	Proposed (exploration phase)
25	Karanja (Dharamtar)	Karanja	Raigad	PNP Maritime Services Ltd.	Multipurpose terminals			In operation since 1998
26	Jaigad (Lavgan)	Lavgan, Jaigad	Ratnagiri	Lavgan Dockyard Ltd.	Multipurpose terminals			In operation since 2005
27	Jaigad	Jaigad	Ratnagiri	Marine Syndicate Ltd.	Multipurpose terminals			In operation since 2009
28	Panvel (Ulwa–Belapur)	Panvel	Raigad	Ambuja Cements Ltd.	Captive terminals			In operation since 1994
29	Alibag (Dharamtar)	Alibag	Raigad	Ispat Industries Ltd.	Captive terminals			In operation since 1994.
30	Revdanda	Revdanda	Raigad	Vikram Ispat Ltd.	Captive terminals			In operation since 1993
31	Ratnagiri (Pawas– Ranpar)	Pawas	Ratnagiri	Finolex Industries Ltd.	Captive terminals			In operation since 1993
32	Dabhol	Dabhol	Ratnagiri	Ratnagiri Gas and Power Pvt. Ltd.	Captive terminals			Agreement likely to be signed
33	Dharamtar – Dherand	Dharamtar	Raigad	Supreme Petrochem Ltd.	Captive terminals			Thirty years Concession Agreement signed 2004
34	Usgaon	Usgaon	Ratnagiri	M/s. Bharati Shipyard Ltd.	Shipyard			Operational
35	Bhagwati Bunder	Bhagwati	Ratnagiri	M/s. Bharati Shipyard Ltd.	Shipyard			Operational
36	Dighi	Dighi	Raigad	M/s Dighi Port Ltd. (Balaji Group)	Port		18.5	Work in progress
						34948 MW	17.7 MpTA	

PP-G: Powerplant Gas; PP-C: Powerplant Coal; UMPP: Ultra mega powerplant;

RECOMMENDATIONS

Based on the observations, the following recommendations should be considered if India is serious about protecting its natural assets. The MoEFCC, with a view to making coastal governance transparent and accountable, should:

- **Policy**: Draft a coastal policy for conservation of biodiversity in the planning stage, not at individual project level, to safeguard the rich natural resources of the country.
- **Planning**: Have an integrated approach taking into account the environmental and social concerns. Have national and regional planning based on comprehensive information, carrying capacity, cumulative impact and precautionary principles, and commitments made by India to itself and to the international community.
- **Capacity building**: Strengthen environmental governance with adequate human and financial resources for monitoring and enforcement, in keeping with the number of projects sanctioned.
- **Civil society participation**:
  a) Engage locals in decision making process at inception stage of project to make development inclusive and harmonious.
  b) Include independent specialists known for their integrity from civil society, and representation from fishing communities at all levels.
- **Assessment of damage**: Conduct at the earliest a detailed assessment of existing projects, which takes into account environmental, social, and economic impact, cumulative impact, and habitat loss, mitigation cost and current efficiency, with possibilities for upgradation.
- **EIA**:
  a) Review the EIA process for coastal projects to improve the Terms of Reference for marine and coastal EIAs.
  b) Make EIAs independent of project proponent and to be commissioned by MoEFCC.

Nehru Port Trust (JNPT), which is the largest container port in India. In addition, there are 48 minor ports which fall into five groups, namely Bandra Group (9 ports), Mora group (11 ports), Rajpuri group (9 ports), Ratnagiri group (11 ports), and Vengurla group (8 ports). At present only eight minor ports are in operation.

In order to provide multi-user port facilities, the Maharashtra government has decided to develop six minor ports: Rewas-Aware and Dighi in Raigad district, Jaigad (Dhamankhol Bay and Lavgan) in Ratnagiri district, and Vijaydurg and Redi in Sindhudurg district. Of these, the development of Rewas-Aware and Dighi ports is already in progress through private sector participation. There are three multipurpose terminals in operation: Karanja (Dharamtar), Jaigad (Lavgan), and Jaigad (Katale). Four captive terminals are in operation at Panvel (Ulwa-Belapur), Alibaug (Dharmantar), Revdanda, and Ratnagiri (Pawas-Ranpar). There are two projects in progress, and five for which permission has been given by the Maharashtra Maritime Board. Two shipyards at Usgaon in Dabhol, and Bhagwati Bunder in Ratnagiri, are in operation. Ten more have been given permission. Five sites have been shortlisted around Mumbai for Marinas: Mandwa, Belapur, Vasai Creek, Malad Creek, and Dharmantar Creek.

Maharashtra already has the maximum number of thermal power plants in the country (Table). With heavy industrial demand, a large number of companies are planning to set up coal- and gas-based projects to generate 35,000 MW. Till date, only 12 power plants with 22,565 MW capacity has been cancelled which may resurrect in future. The coastal districts of Ratnagiri, Sindhudurg, and Raigad are likely to become the power hub of the state.

Challenges and Issues in the Coastal Zone: Some of the major problems faced by the littoral zone and the shore front areas of Maharashtra coast are related to coastal erosion, siltation, pollution, destruction of mangrove swamps, coral reefs and inter-tidal areas, salt marshes, slope failure, pressure of population, industrialization, and road transport.

The Konkan coast is under grave threat of overdevelopment, with at least 15 proposed coal-fired power projects equaling 25 GW and one nuclear power plant of 10,000 MW set to be built on a narrow strip of coastal land 50 to 90 km wide and 200 km long. This represents a 200% increase in coal-fired power for the entire state of Maharashtra, a state which already has the largest total installed capacity, equal to 11 GW or 13% of nationwide capacity. Such development will also promote the development of ancillaries, apart from human settlements due to in-migration. This would completely transform the coast and result in a tremendous loss of biodiversity. In addition, there are aquaculture farms, mining, and tourism activities. All these are likely to have a cumulative impact on the biodiversity. While the 2000 report by Untawale and his coworkers gives us some idea of the biodiversity of the region, and data from WII which identified at least 10 ICMBA (Important Coastal and Marine Biodiversity Areas), BNHS is currently preparing a systematic report on the important ecologically and biologically significant coastal and marine areas and the biodiversity therein. ■

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