CHAPTER 5

5.1 Fishing settlements along the coast of Alibag tahsil

Viewed from a distance, all these Fishing villages appear deceptively simple. A cluster of mud-plastered walls shaded by a few trees, set among a stretch of green or dun-colored fields, with a few people slowly coming or going, ox carts creaking, cattle lowing, and birds singing all present an image of harmonious simplicity. The seagull, Sandpipers and egrets are some of the common birds that are seen in large number in the vicinity of all these fishing villages. In actuality, life in fishing villages is far from simple. Each village is connected through a variety of crucial horizontal linkages with other villages and with urban areas both near and far.

Throughout most of this coastal part of Alibag tahsil, village dwellings are built very close to one another in a nucleated settlement, with small lanes for passage of people and sometimes carts. Village fields surround the settlement and are generally within easy walking distance. In hilly tracts in the nearby areas of almost every fishing village, dwellings are more spread out or more dispersed but the boundaries of these villages are not vague. Teachers, truckers, clerks, shopkeepers, physicians who render different types of services don’t stay in these fishing villages. Most of them commute from the nearby towns like Alibag, Pen, Rewas, and Mandva etc. At slack seasons that are from June to September the village life can appear to be sleepy, but usually these villages are humming with activity. The work ethic is strong, with little time out for relaxation, except for numerous divinely sanctioned festivals and rite-of-passage celebrations. Residents are quick to judge each other, and improper work or social habits receive strong criticism. Villagers feel a sense of village pride and honor, and the reputation of a village depends upon the behavior of all of its residents.

The topographical sheets (47B/13 and 47B/14 on scale of 1:50000) have been referred to collect information about the physical and cultural features of Alibag tahsil and the geomorphic Maps of three selected fishing settlements of this tahsil have been prepared. Three fishing settlements 1 Bodni from the northern part of Alibag Tahsil 2 Varsoli from the middle part of Alibag tahsil and Rewdanda from the southern part of
Alibag tahsil that have grown in the vicinity of Alibag (Within the range of 20 kms to the north and to the south of Alibag.) have been considered for the case studies.

Figure: 5.1 Satellite image of Study area (Source: Google earth)
In the extreme northern part of Alibag tahsil Bodni is located. Fishermen have been staying here since 1947, after The Great “Ramadas Boat’s “accident says. Shailesh Tandel, one of the old fishermen of Bodni. The total area of the village, Bodni’ is 7.41 hectares and is 17 km from Alibag. It is located on 18°48’ latitude and 72°53’18” longitude. The fishing settlement (Koliwada) called Bodni is located 6 km away from the port. Rewas and is around 20 Km from Alibag S.T. Depot. It is to the north of the headquarter Alibag. One of 48 “Minor” ports of Maharashtra, Rewas Port exists near Karanja creek at mouth of the Patalganga river about 10 km southward of JNPT and 16 km south-east of Mumbai Port. Administratively, it is controlled by state government through an agency known as “Maharashtra Maritime Board”. It is important and popular for Mumbai Launch service. The tourist of Mumbai (Bhaucha Dhakka) and Uran always travels from this way by launch and tar services. You can look Uran beach, fisher ships, Bungalows, Buildings in Mumbai from Rewas jetty. S.T. Depot is near from jetty (Dhakka). Autos are also available for journey.
Figure: 5.2 Satellite image of Bodni (Source: Google earth)
Figure: 5.3 Bodni Plan map
The analysis was carried out by referring to the topographical sheets (47B/13 and 47B/14 on scale of 1:50000) and by using Digital globe satellite image which is available from internet (2011), using on screen visual interpretation method.

The map shows the surrounding features around Bodni like vegetation cover, water-body, Arabian Sea, settlement area of bodni village, mud deposition, Barren area, fishing boats, internal roads etc. The total geographical area of bodni settlement is 26.475 Km². Bodni is located between two harbors i.e. Mandava and Rewas. Rewas is 6 kms away from Bodni while Mandva is 2 kms away from Bodni. There is a small rocky island near this village in the Arabian-sea locally called as ‘Khashacha Khadak’ (Rock of kasha). The island is around 3 kms away from Bodni in the sea but is seen clearly form the sea shore of Bodni. In the Toposheet this island is clearly shown and is named as Kans Island or Gull Island. The sea-route between Rewas and Mumbai passes nearby this island. The port, ‘Rewas’ is located on the mouth of the Dharmtar creek or is also known as Karanja creek. The creek is named after the names of the villages located on its bank i.e. Karanja and Dharamtar. The fishing village, ‘Bodni’ is also on the mouth of the Karanja creek. It is on the west coast of the creek. The small red squares near Mandve in the topographical sheet shows this village. The houses on the settlement have sprung up along the high tide line. The high tide line is clearly shown in blue colour. The dotted area near the high tide line towards the sea shows the mud flats and the area that remains covered with mangrove, sea grass and shrubs. Most of the part of this area becomes exposed during the period of low tide. The growth of the settlement is found along the high tide line, parallel to the coast. The fishing settlement is thus a linear type of the settlement. Bodni village is located between 0 to 40 meters height. The 40 meters contour and the 20 meters contour along the village are clearly seen on the topographical sheet. Many houses are located at the sea level. As per the Topographical sheet published in 1970 the settlement was confined within 0 to 20 meters height along the coast. The satellite images, taken recently, show the growth of the settlement even beyond the height of 40 meters. Many new houses have sprung up even on the areas of mud flat. The growth of the settlement is seen towards all directions but mainly towards the sea. It comes to know from the satellite image that growth of the village is unplanned. The houses of the fishermen are so
close to each other that there is hardly any sufficient wide place between two houses. Many houses are non-engineered and are built with simple traditional techniques. The size of many houses is also very small ranges between 300 sq. feet to 450 sq. feet. The houses are so close to each other that there is no sufficient place in the front or back part of the houses to plant the trees. Vegetation is scanty in and around the Bodni settlement. Hardly 5 to 7 double storied houses are found in the settlement. The rich fishermen in the settlement who are the owners of the large trawlers have double storied spacious houses. These fishermen have full control on the trade and political activities of the settlement. Their houses are built in stone and high grade cement, have large rooms and sufficient front yard and backyard. The satellite images obtained through the internet services on Sat. July 10, 2010 at 5.30 hours give a panoramic view of the fishing settlement, ‘Bodni’.

The road that runs from Rewas to Mandve has an offshoot little earlier of the settlement, ‘Mandve’ This offshoot of the Rewas-Mandve road turns to the north and runs through the village, ‘Bodni’ up to the sea coast. This road is very narrow (hardly 3 meters broad) and is a rough or a kacha road. Along the coast of the Bodni settlement different fishing boats are seen, anchored on the mud flat and in the shallow sea water near the coast. There is no sufficient space between the houses. The heavy concentration of houses is seen in the north. Many of these houses are on the seashore and even on the mud flat. The road that passes through the settlement is narrow. Its breadth is hardly three meters and therefore it is not properly seen in the satellite image of the settlement. The road is so narrow that heavy vehicles cannot go through the settlements properly. At many parts of the settlement cleanliness is not properly maintained. The typical odor of the dry fish prevails in the air. The heaps of waste material are seen at some places where street dogs gather. The settlement is located between the little raised land or hilly area and the sea. The green patches show the presence of vegetation. Scanty vegetation is seen. It comes to know from the very appearance of the image that the growth of the houses and other structures of the settlement are unplanned. The cluster of the houses is seen along the coast in the northern part. The traces of the footpaths in the hilly raised parts of the land to the west of the settlement are easily detected. The houses in the settlement are very close to each other and the gaps between the houses are very narrow.
The houses in the settlement get dispersed in the area that lies near the Rewas- Mandve road. Paddy rice fields are seen beyond the hilly area along the road that leads to Mandve. The raised hilly area is to the west of the settlement. The patches of the fish drying grounds, compared to Varsoli and Rewadanda koliwada are relatively very small in size and very less in number. The fish drying grounds are located towards north of the settlement and these fish drying grounds run parallel to the sea coast. Many poor fishermen and women are seen working during day time in hot sun on these grounds. In the satellite image of this area the patches of the fish drying grounds are seen to the north along the rocky sea coast. The proximity of the houses and other structures in the settlement to the sea indicates that the settlement becomes vulnerable during the monsoon season when the sea is rough. The settlement is located on the creek. Creeks are protected areas. But though Bodni is on the coast of the creek it is not much away from the open sea. It is in the area where creek ends and the area of the open sea starts. Thus the settlement many times is affected by the storms, mighty sea waves and fast blowing monsoon winds. In the coastal topographical sheet and even in the Bathymetrical chart the strips of the accumulation of sand is found on the coast but the off shore sand bars are not seen. There is a raised relief between Mandve and Varsoli. During monsoon many streams take birth in this hilly area and run on the slopes towards the sea. Thus during monsoon the settlement becomes the area of the muddy, sticky and marshy land.

A broad belt of mangrove vegetation is present from Rewas-bandar (Harbor) to Bodni. But the coast of Bodni close to the fishermen’s houses is free from the mangrove vegetation. The greenish tint in the sea water shows the presence of mangrove along the coast. The depth of the sea water; near the Coast Ranges are between 1 to 10 meters. (Source: the Bathymetrical chart). Agricultural fields, in a very small proportion are seen in the vicinity of the village. In this village proportion of villagers engaged in agriculture as a subsidiary economic activity is least. Hardly 8% of the fishermen in the village practice agriculture. (Source: Fishermen cooperative society). Some small fish drying grounds are seen but the size of the fish drying grounds is much less compared to other two settlements i.e. Rewadanda and Varsoli. At this settlement large dry fishing grounds are not seen. Large quantities of fresh fish–catch are immediately exported to Mumbai.
Many fishermen at Bodni are engaged in deep sea fishing. Many have large trawlers and reach even up to the coast of Ratnagiri. The presence of mangrove in the sea water of the coastal part of this area helps in providing good and large breeding grounds to many different fish-species. This rich belt of mangrove vegetation is more useful to the fishermen that practice coastal sea fishing. Many fishermen are of the opinion that the emergence of many projects of Reliance at Rewas will make harm to this rich belt of mangrove forest. It will ultimately destroy the natural and healthy habitat of many fish species and the number of the fish and the size of the fishing grounds near their settlement will reduce in near future. The Bathymetric chart obtained from the Maritime Board office, (Mumbai) is quite useful in this connection.

In the bathymetrical chart the village is spelled as Borni village. The depth of the sea is shown with Sign. Near the coast the depth ranges between 1 Meter to 10 Meters.
The fishing village, ‘Varsoli’ is in the Alibag tahsil of Raigad district. It is located on 18° 41’ north latitude and 72° 52’ east longitude. At Varsoli the bunch of houses is seen along the southern coast of the stream that meets the sea. It is called Varsoli creek. Man-made embankments are seen on either side of the creek. Concrete walls built to constrain a river or creek discharging across a sandy coastline. The walls help to stabilize and deepen the channel which benefits navigation, flood management, river erosion and water quality. These embankments are parallel to each other and protect the nearby fishing grounds and Varsoli- kaliwada from the spreading water of the creek especially during the rainy season. The fish drying grounds remain totally occupied by the heaps of
the dry fish. That is why in the satellite image the color of the fish drying grounds is brownish red. At one end of these fish drying grounds the ware houses and the centers where loading and unloading of the dry fish take place are located. These areas have white color. The breadth of the creek ranges between 30 to 70 meters. Large numbers of fish-drying grounds are located between the settlement and the sea that lies to the west of this settlement. Varsoli is well connected by roads with Alibag and Rewas. Beyond the creek one road leads to the fishing settlement, ‘Thal’. In Bathymetrical map the depth of the sea and the creek near Varsoli ranges between 2 meters to 12 meters. The length of the fish drying ground is nearly 450 meters while the breadth is nearly 50 meters. A belt of mangrove vegetation is located between the fish drying ground and Varsoli. The settlement is surrounded by a dense vegetation cover of the trees like coconut-tree, betel-nut tree etc. Compared to Bodni at Varsoli the proportion of Mangrove along the coast is relatively less. Some parts of the creek on the opposite bank of the creek is occupied by the mangrove vegetation. Compared to other two settlements the size of the fish drying grounds is also relatively large. The dry fish is exported mainly to Mumbai from this settlement. (Source: Fishermen’s cooperative society). A large store-house of the dry fish is constructed near the fish drying grounds where number of male-workers and female-workers are found busy in post fishing operations. Fishing boats are anchored in the mouth of the stream that meets the sea. Many fishermen at this settlement are engaged in coastal fishing. A narrow belt of dense vegetation is located between the settlement and the fish drying grounds. A narrow road is seen between the settlement and the fish drying grounds located near the muddy area along the southern bank of the stream. This is an approach road from the fish drying grounds and muddy areas to the settlement. A considerable proportion of fishermen at this settlement (30 % to 35 %) are found engaged in agricultural activities. (Source: Fishermen’s cooperative society). The agricultural fields are located to the east of the settlement. Rice cultivation is carried on during monsoon season when fishing is almost totally stopped. Thus the rice cultivation is a supporting subordinate economic activity of some fishermen at this settlement. Compared to other two settlements the standard of living of many fishermen at this settlement is
high. The fresh-fish and the dry fish have high demands in the local market as well as in the market areas of Mumbai and other places.
Figure: 5.5 Varsoli Plan map
The analysis was carried out by referring to the topographical sheet and by using Digital globe satellite image which is available from internet (2011), using on screen visual interpretation method.

The map is showing the surrounding features around Varsoli like vegetation cover, water-body, Arabian Sea, settlement area of varsoli village, mud deposition, river mouth, internal roads etc. The total geographical area of varsoli settlement is 25.426 acres.

Alibag is a sea-side resort and receives good flow of tourists. Because of the fast growth of Alibag during recent years Varsoli has become part of Alibag. But the natural set up of Varsoli is better than the crowded parts of Alibag town. That is why many tourist accommodations are emerging in the vicinity of Varsoli–koliwada. Some fishermen at Varsoli provide fresh fish to the hoteliers. No adverse effect of tourism of any kind has so far noticed. In the topographical sheet (47 B/14), Varsoli appears like a linear type of settlement that runs parallel to the sea coast. Rice mills are shown in the southern part of the settlement. Forest office; the famous magnetic observatory of Alibag and court hospital are located between Alibag and Varsoli. To the east 7 to 10 kilometers away from Alibag and Varsoli dense mixed forest is found in the hilly areas where the height of the place is 336 feet from the sea level but the area in the vicinity of Varsoli is at the sea level. To the east of Varsoli near Gaulawadi a lake is located. Palm, Bamboo, Betel nut and other trees are seen in the vicinity of Varsoli. The condition of the fishermen’s houses at Varsoli is much better than Bodni.
Rewdanda

Figure: 5.6 Satellite image of Rewdanda
Figure: 5.7 Revdanda Plan map
The analysis was carried out by referring to the topographical sheet (47 B/14) and by using Digital globe satellite image which is available from internet (2011), using on screen visual interpretation method.

The map shows the surrounding features around Rewdanda like vegetation cover, Kundlika River, internal roads, streams Arabian Sea, settlement area of Rewdanda village, mud deposition and small settlements around Rewdanda. The total geographical area of Rewdanda settlement is 53.162 acres.

The fishing settlement to the extreme south of the Alibag tahsil is Rewdanda-koliwada. Rewdanda is a village near Alibag-tahsil. It is 17 km away from Alibag and 125 km away from Mumbai. To the extreme south of Alibag tahsil near the mouth of the Kundlika- River Rewdanda - koliwada is located. It is located on the 18° 33’ latitude and 72° 56’ longitude. The mouth of the Kundlika River is a prominent feature near this settlement. This fishing settlement is unique of its kind. Almost all other fishing settlements in Alibag tahsil are on the sea coast or even on the sea shore but this settlement is sufficiently away from the sea coast and from the mouth of the Kundlika river in safer part of the coastal area. It is nearly 2 kilometers away from the mouth of the Kundlika River. Till a few years ago the coastal road that goes south from Alibag used to terminate at Rewdanda where it encountered the Kundalika creek. A bridge now spans the creek and the whole stretch southward of Rewdanda up to Murud-Janjira has now become accessible. Rewdanda is a pretty little place. Part of the town is situated within the premises of an Old Portuguese fort.

The beach has very little shade and the sand is made up of black rock, giving it an unattractive shade of dark grey.

The beauty of this place lies in the coconut and betel nut trees in this region. The plantations of coconut trees are called “naralachi baag” or “wadi” in Marathi language. The place is also famous for a species of aromatic flower called “Bakuli” it’s a small flower with a wonderful fragrance. Apart from the plantations of coconut and beetle nut the livelihood of people in this region comes from the production of rice. The selected fishing settlement called Rewdanda-koiwada is little away from Rewdanda village. Though it is a fishing settlement it is unique of its nature in the sense that it is sufficiently
away from the Kundalika creek which is to the south of the settlement. This settlement is also parallel to the sea coast that lies to the west and is also a linear type of the settlement. A dense belt of palm trees is found between the settlement and the sea. Small rice fields are seen to the north western and western parts of the settlement. Mud flats with the patches of mangrove vegetation that become exposed during low tide are seen on either side of the settlement. The settlement is located between the sea and the stream that meets the Kundlika River. A large muddy area is seen on either side of the stream that meets the Kundlika River. Thus Rewdanda-koliwada is surrounded by mud flats and the seawater from the western side, by creek from the southern side and the water of a stream from eastern side.

Rewdanda is a very isolated beach in this region. The sand is black in color, which gives it a unique look. The beach is integral part of people in Rewdanda, is one of the places where people come to relax after day’s heavy work. As Rewdanda lies in coastal region fish curry and rice forms an important part of diet of the people of this region. The course of the Kundlika River is sufficiently broad 500 to 600 meters. The speed of the water is very slow and the depth ranges between 2 to 7 meters. In bathymetrical chart nets are seen in the course of the river. Nets are perpendicular to the direction of the flow of the river-water. The different types of fish are easily caught in these nets. A bridge on the Kundlika River that joins Alibag tahsil with Shrivardhan tahsil is clearly seen in the chart. Rewdanda koliwada is well connected with Alibag, Akshi, Murud and Shrivardhan by roads. The satellite image of this settlement obtained on 22-7-2010 clearly shows that the settlement is sufficiently away from the mouth of the Kundlika River but the post fishing activities like drying of fish, mending of the nets are carried on the bank of the Kundlika River. In the satellite image some structures are seen on the right bank of Kundlika River. The office of the co-operative society, the office of the Rewdanda harbor, warehouses where dry fish are stored are located on the bank of the Kundlika river but the houses of the fishermen are located away from this area and very close to the Rewdanda town (Field observations). The settlement is surrounded by the dense vegetation cover of the coconut trees and the betel nut trees. It is also a linear type of settlement and is parallel to the sea and to the road that runs from the Rewdanda
harbor to Chaul-Rewdanda. Chaul and Rewdanda are the twin villages. The houses of the fishermen are away from the fish drying grounds. Therefore a typical smell of dry fish that normally prevails in fishing settlements is absent at this settlement. Fishermen at this settlement have good hygienic sense and cleanliness is properly maintained in the houses and at public places like temples. Like the fishermen of Varsoli some fishermen at this settlement also practice agriculture as a subordinate supporting economic activity. Rice is cultivated during monsoon season when fishing in the sea is totally stopped. Fishing on a very small scale is carried on in the creek of the Kundlika River. A small open ground is located between the settlement and the road that passes near the settlement. A spacious platform (Par) is constructed around the trunk of a Banyan tree which is on the margin of this ground. Chairs in cement are constructed around the platform of Banyan tree where conference of the fishermen can be held. It is an open public place. On the other side of the ground, temples are located where cultural and religious programmes are conducted.

In the topographical sheet both low tide water line and high tide water line have been shown. The fishing settlement Agrav located nearby is almost on high water line but Rewdanda koliwada is away from the high water line and is at sufficient distance from the high tide line. The yellow color indicates the presence of cultivated land around the Rewdanda settlement. Rice is cultivated during monsoon season and beans and other pulses are cultivated during winter. Power and Telephone lines are seen. These lines have covered almost all fishing settlements of the southern part of the Alibag tahsil. All fishing settlements in the tahsil have been electrified. Rewdanda is located on the sea level and no raised relief feature is seen in the vicinity of this settlement. The prominent feature near the settlement is Rewdanda fort. The houses of Rewdanda koliwada are also parallel to the sea coast. On the other side of the settlement i.e. to the east and to the north marked squares of agricultural fields are seen in the satellite images. The settlement is in the dense belt of coconut, betel nut and other trees. A belt of these trees and mangrove vegetation run parallel to the sea coast between the settlement and the sea. The mouth of the Kundlika River is to the south of the settlement and sufficiently away from the settlement. Many fishermen practice the fishing in the mouth of the river with very simple methods. The nets are erected in the flowing water of the river. Many fish species
move slowly towards the sea with the current of the river water. These species are easily caught in the nets. Fish drying grounds are located on the bank of the river where post fishing operations are carried on by fishermen and fisherwomen. The fish drying grounds are away from the Rewdanda koliwada. That is why compared to other fishing settlements the Rewdanda koliwada is relatively clean and almost free from that typical odor of the dry fish which is quite common in many fishing settlements.

Seaside Vegetation & Mangroves

According to free online dictionary the word “Mangrove” is considered to be a combination of the Portuguese word “Mangue” and the English word “grove”. Mangroves are salt-tolerant plants of tropical and subtropical inter-tidal regions of the world. The specific regions where these plants occur are termed as ‘mangrove ecosystem’. These are highly productive but extremely sensitive and fragile. Besides mangroves, the ecosystem also harbors other plant and animal species. Mangrove forests are unique tropical eco-systems occurring along the sheltered shore line with muddy to sandy bottoms. They are variously described as coastal woodland, tidal Forests and mangrove forests. Mangroves depend on terrestrial and tidal waters for their nourishment, and on coastal soils and soil deposits from up land as substrate for support. The tides nourish the forests, and mineral rich river-borne sediments enrich the swamp. Thus the mangroves derive the form and nature from both marine and terrestrial influence. Mangrove forests are among the most productive terrestrial eco systems and are natural and are a renewable resource.

Mangroves are feeding, breeding, and nursery grounds for numerous commercial fish and shellfish. Mangrove represents the last refuse for a number of rare and endangered species. The tidal swamp is an ideal sanctuary for avifauna some of which are migratory. The importance of the resource stems from the many products taken directly from the mangroves, including wood products and non wood products. Wood products are fuel wood charcoal, construction material, timber for boats, pulp, tannin etc. The non wood products are apiculture fisheries products etc. Mangroves provide services like protection of coasts against wave and wind erosion, moderating the effects of coastal storms and cyclones, shelter and habitat for diverse wild life. (Source: Sonabai Pirojsha
Godrej Marine Ecology centre, Bombay, Maharashtra) There is 1591 ha of mangrove forest area in the Alibag tahsil. (Source: Report of the forest department, Alibag Tahsil)

The mangroves are mainly found in the Dharamtar creek, Paulo creek, Kundalika creek, and at Alibag, Kihim, Thal, Varsoli, and Rewdanda locations. All these estuaries originate from the Sahyadris hill ranges of Western Ghats and flow towards the west and join the Arabian sea. Mangrove forests inter spurs with the coastal shrubs or the principal vegetation along the coast. A rich mangrove belt is found at all the fishing villages in Alibag tahsil. Compared to Varsoli the proportion of area under the mangrove vegetation is more at Rewas and Rewdanda. This is but natural because Rewas and Rewdanda are located near the mouths of the relatively large creeks on the sea coast.

While the layout of one fishing village is different from another in some respects, the following description might be representative of all the fishing settlements in Alibag tahsil.

Most fishing villages are small and dense, with maximum small houses on either side of narrow lanes. Open drainage usually runs along those lanes, clogged and infested with mosquitoes. Except for those belonging to “upper economic classes,” homes are usually placed close to each other hardly four to five feet apart.

The pathways throughout the village are unpaved and without drainage. The typical family dwelling includes a one-room house and a yard often enclosed by a thatched fence. The houses are either small mud or thatched structures with a gable roof. In these villages, there are some larger masonry houses at various levels of completion. The yard is where most of the family activity occurs. The bathing area, kitchen, and depending on the season, beds are all outside. Some of the better-off families have a hand pump in their yard that pumps fresh water. Typically there are no proper toilets or bathing facilities in their family area and often no facilities in the entire village. Some villagers have built enclosed areas or separate masonry structures that women use for bathing with buckets of water. At Bodni no fisherman has his own garden. The same is true in case of Rewdanda but at Varsoli some fishermen have palm trees and betel-nut trees and other flowering plants in their backyards and also in the front yard.
These fishing villages have a range of sanitation problems: Many fishermen at Bodni village have no toilets, while others have a few government-built public toilets. The other villages with toilets are better off than the Bodni village. But the public toilets at Rewdanda do not work and the villagers are not comfortable while using them. The main problem is the lack of experience with operating and maintaining the toilets. The villagers complained that the toilet-areas had become mosquito breeding grounds, they require the use of sufficient water, and they smell bad. Many villagers at Bodni relieve themselves at the edge of their villages. The majority of toilets are inoperable. Many of the structures are constructed poorly. Many toilets are missing the porcelain basin, some do not have pipes connecting the basin to the tank, and other toilets have unfinished, uncovered, or unused cesspits. For these reasons, in addition to lack of knowledge of proper maintenance, the toilets remain unused. Access to proper sanitation facilities is a special concern for women and girls. According to the Indian Census, in 1995 only 15.2% of rural people had access to toilets. In these fishing villages also the percentage appeared to be closer to it. (Source: Field observations and dialogues with the villagers)

Many of the village families have built a thatched enclosure that provides privacy for the women while they bathe and dress.

The men generally relieve themselves in the ocean near their boats just before heading out to sea. The women urinate behind the thatch screen next to the house and use a small pitcher of water to pour over the urine to dilute it. Still Many women in all these fishing settlements defecate in the shrubs on the outskirts of village, and do so under the cover of darkness for privacy. The rich fishermen at Bodni and relatively more number of fishermen at Varsoli and Rewdanda have the toilets of modern style in their houses. The typical structure is 5 ft x 5 ft x 7 ft tall, with three un-reinforced masonry walls (URM) and a tin roof. A porcelain squat toilet is set into a concrete slab, and the drain empties into a 3 ft diameter, below-grade septic tank adjacent to the structure. Flushing is accomplished by dumping a bucket of water into the toilet. Since no leach lines or aeration field is present, the fluid drains through the open bottom of the tank into the sand. The solids accumulate in the tank, and the gases dissipate into the air through a long pipe that extends from the top of the tank to above head-level. Other issues concerning
general sanitation include garbage/solid waste disposal and education concerning food and water contamination. Several village families store water that they pump from nearby boreholes and wells in open pots. Livestock and birds can easily access and further contaminate the water. A few families have their own bore-wells, but no village has a well for each family. Therefore, multiple families have to share a single well. (Source: The Site Assessment at the time of visit) The open wells either have no covering at all, or have chicken mesh as a covering. In both cases, there is a high risk of contamination from debris, garbage, or bird droppings entering the wells. The wells all rise above ground level 3.5 feet, and are made of concrete. The wells are four to five feet in diameter, and water is pulled up via a rope and bucket. The few wells observed have a slow recharge rate and provide decreasing amounts of water.

Education for children in the fishing villages only covers primary education. The government sends a teacher to each village, but the supplies and resources available limit the teachers’ effectiveness. The school buildings are typical, do not include a bathroom, have no running water, and lack general school supplies. During class, the children sit on the dusty ground in an overcrowded schoolroom. In several villages, the roof leaks during the monsoon.

The quality of housing varied widely throughout the villages. The construction ranged from thatched huts, with cramped living conditions, to larger homes constructed out of bricks and concrete. The village homes usually have one or two rooms with cooking areas and toilets located outside of the hut. The poorest villagers live in thatched huts. The huts typically use sticks for supports, but sometimes are supported by concrete or stone pillars. The walls and garble roofs are made of thatch material of dried palm fronds. A typical thatched house measures 12 feet by 12 feet, and consists of a one-room space. The bare ground makes up the floor. Some huts have tarps strewn across the roof to protect against rain.

Mud Houses

Houses of this construction consist of 12 inch thick by 4 feet high mud walls covered by a gabled thatched roof, with a one-room space for an entire family of six or seven people. The mud houses are about the same size as the thatched houses. Some
villages have mud houses with a circular floor plan. As with the thatched houses, tarps are placed on the roof to keep rain out, and old fishing nets are used to hold the thatch roof together. The mud huts typically have a covered porch where most of the family activities occur.

Repairs must be made regularly because of damage from annual monsoons. Layers of thatch must be replaced annually, and the entire roof must be reconstructed approximately every three years. The mud walls are also re-plastered annually because of erosion from wind and rain.

Masonry Houses (Houses built with stone-work and brick-work)

Masonry houses encountered in the fishing villages have a couple of configurations. The first configuration has a small one/two room area covered with a concrete roof. There are two doors, one in front and one in back. The houses are not much larger than the mud houses. The second configuration consists of a larger layout with a rectangular plan, windows, and concrete stairs that lead to the roof.

The walls rest on continuous stone footings with the bottom of footing extending three to four feet below grade. In some villages, the top of footing extends several feet above grade and the floor finish is above ground to prevent flooding. After construction of the walls, the floor slab is poured. Many villagers cannot afford brick houses unless they get money from money-lenders or co-operative societies. Since the money is received in portions according to the stage of construction, many houses remain unfinished. Many villagers are hesitant to leave their current homes, but would do so if they had enough money to construct a new house. Villagers do not want to abandon the houses they have due to uncertainty over whether or not they will be able to complete their new houses. If the new houses are not completed, the villagers are left with nothing.

The villages are flat laying lands and lack any drainage system. The pathways have no drainage ditches and the individual family lots are not designed to account for flooding. The villagers rely on the porosity of sandy soil to accommodate storm water flooding, but typically the villages flood during peak rainy season. At Bodni, the runoff from toilets/bathrooms and the hand pumps accumulates as standing water on the pathways, never fully drying, and lying stagnant year around.