Community-Based Conservation of Mangroves for The Better Quality of Life

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Mangroves for the Future
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Contents

1. INTRODUCTION

There is growing public awareness of the conservation and rehabilitate the degraded mangrove wetlands. This awareness is growing among coastal communities, particularly because of severe storms, coastal erosion and increased awareness on linkages between mangrove and sustainable fisheries. The propagation and planting of mangrove trees is mainly done by Forest Departments. The department is involving local communities in the raising of nurseries and plantations activities mainly on turnkey basis. It is felt that involvement of locals at the sage of decision making and planning will give them sense of owner ship and make them more responsible for success of the plantation efforts. Proactive participation will also locals them alternative livelihood option.

Bharuch (also known as 'Broach') is a district in the southern part of Gujarat peninsula on the west coast of the state and lies between 21°51' North latitude and 73°01' East longitude. The climate of the district is by and large hot and dry in summers and cold in winters. It receives maximum rainfall during the monsoon period. The monsoon in this district is generally accompanied by dusty winds. Geologically, the district is mainly composed of Alluvium, blown sand, etc. The soils of the district are mainly sandy loan and black type. Agriculture is the main occupation and cotton. Jowar, rice, bajri, tobacco and groundnut are principal crops in the district.

The region also known as "bara tract" experiences very high soil salinity along with high salinity and high fluoride in ground water. This indicates domination of marine processes in the region. The presence mangrove are very critical for the shoreline stability as a study by ISRO (2001) on coastal have recorded that the area suffered erosion at the rate of 5m/year. This has exposed the locals to salinity ingress and coastal erosion.

The population residing in the area is very poor with large number of people are agriculture laborer. Presence of mangrove in coastal areas plays vital role in protecting shore from erosions and salinity ingress. They are also important source of livelihood as the villagers of the study area are dependent on mangrove as fodder,

food, and for fishing ground. Also fish mainly mudskipper, and Prawn/Shrimp is the important food for villages. Mangrove and fish play important role in their economy.

Mangrove habitat is under heavy pressure due to its collection of leaves and seeds for fodder, which has slowed down the natural regeneration capacity of mangroves. Plantation efforts were done in the past, however, due to lack of proper protection and institutional setup the region suffered heavy degradation. The present study was carried out the 3 coastal villages of Jambusar viz., Muradpor- Neja, Zamdi and Chhidra. These coastal villages form the eastern bank of the Gulf of Khambhat. The coast is located between the estuarine region of Mahi R and Dhadhar R. With average tidal amplitude of 4 m, the maximum tides of 8 m are being experienced by the region.

Being coastal plains the altitude hardly exceed 10 meter (AMSL) in the region. The mangrove is located mainly 3-4 m amsl. Being inner the Gulf the bathymetry is very shallow mostly less than 10 m. With annual rainfall of 800 to 900 mm and annual average temperature of 21°C (minimum) to 36°C (maximum), the region experience semiarid climate. As per 2011 census the villages mainly consist of by agriculture dependent communities, dominated by labors.

Village	**Neja**	**Zamdi**	**Chhidra**
Households	164	235	403
Total Population (TP)	645	1107	1546
Females per 1000 males	943	935	867
Schedule casts %% of TP	1.24	3.52	12.81
Schedule tribes % % of TP	42.95	27.73	18.56
Literate %% of TP	66.51	53.57	61.25
Total workers (TW) % of TP	35.97	36.86	47.02
Cultivators % of TW	35.78	24.75	31.64
Agri labors % of TW	53.88	63.73	56.40
Others % of TW	10.34	11.03	11.97

However census data does not gives details of about fisherman population in these villages.

2. **PROJECT OBJECTIVES**

- Creation of Biodiversity management committees in villages
- Education and Create awareness of communities in villages on mangrove conservation and its benefits to the coastal environment and livelihood
- Equal opportunities provided for men and women for supplementary livelihoods'

3. METHODOLOGY

3.1 BMC formation

Initial field visits were made to villages during which various communities were contacted to know their perception of biodiversity, its conservation and its linkages with livelihood.

The orientation workshop at Zamdi village was organized on 14th April 2015, in which locals from all three villages participated. The workshop has two objectives 1) Introduction to mangroves as plants and their ecosystems and 2) Introduction to the concept of Biodiversity Management Committee and Peoples' Biodiversity Register.

After this series of informal meetings were conducted to encourage formation of BMC for conservation of mangrove **(Annex 1)**.

Following these three villages came forward to constitute BMC and accordingly resolution to form BMC was passed in *gramsabha* and panchayat meetings held in respective villages. Seven BMC members were appointed by Sarpanch, one Chairman, 2 women members, 1 from SC/ST community, and 3 from the general category. The details of the BMC function are given as (Annex 1)

A capacity-building workshop was organized at Chidra village

Capacity Building and Skill development of BMC members were done on the following aspects **(Annex 2),**

- Preparation of PBR
- Administrative procedures of BMC
- Maintenance of accounts/audit.
- Access and Benefit Sharing issues.
- Levy of fees for collection of biological resources from their village boundaries
- Preparation of Action Plan, Project Report, Annual Report

3.2 Education and Awareness creation

To educate and generate awareness several informal meetings were organized with villagers. Small handy posters **(Annex 2)** and booklets **(Annex 3)** were prepared in local language and distributed.

The poster highlighted mangrove ecology and its role in carbon sequestration, shoreline protection, fish breeding, and prevention of salinity with photographs of biodiversity and human interaction with mangroves.

The booklets in Gujarati gave details on the importance of mangroves (fishery, salinity prevention, protection against cyclone and tsunami), economic importance (fishery, fuel wood, fodder, medicinal use), a threat to mangroves (coastal erosion, parasites and disease, pollution, cutting, overgrazing, land conversion for urban and industrial purpose), identification characters of *Avicenna marina* (local species), details of nursery creation (seed collection, processing, sowing, watering, transplanting etc.).

Drawing completions were organized among kids of 5-15 ages. The major themes were nature, mangroves, sea coast, etc. To encourage the children, a participation prize was given to all, and the winners were given school bags. One of the interesting observations was that most of the drawings depicted boats and fishing activity as they were close to the sea indicating their closeness to fishing.

3.3 PRA exercise

PRA exercise gave a perception of villagers on community distribution and use of land and other resources around the village.

Villagers were to draw a map of their village or surroundings, on a white chart paper. These included residential areas, farms, grazing land, ponds, and coastal areas.

As a part of the socioeconomic assessment, we did a questionnaire based on the survey of around 40 houses mainly engaged with agriculture labor and fishing activities. Around 36 questions on issues of standard of living, education and other

infrastructure facilities, agriculture, fishery, and migration were discussed. Other issues included,

- Caste-based distribution and living status in villages
- Annual activities of laborers and farm communities
- Fishing ground and fishing practices
- Use of Mangroves and other natural resources

3.4 Nursery creation

Villagers were sensitized for nursery creation, and a core team of representatives of BMC members was formed. A list of about 50 poor landless was finalized who can work for the nursery. Care was taken for the involvement of women who would make up around 30% of the total participation. Two teams were formed to work in different areas, each team with leaders or contact points. After a brief training/orientation, the nursery activity started. GES helped villagers purchase bags, shovels, water cans, etc. Seed collection was done by a team of 8-10 members from the tall mature mangroves. The seeds were soaked in gunny bag water overnight. Meanwhile, perforations were made in black polythene bags. They were filled with a mixture of saline and good soils. After arranging bags in the pit, seeds were pressed into the bags. Regular watering twice a day using seawater was done. Shade using a plastic net was done to protect the seedlings from desiccation due to intense heat during August-September. After the saplings matured, they were replanted into intertidal by villagers and the forest department.

4 PROJECT RESULTS

4.1 PRA Activities

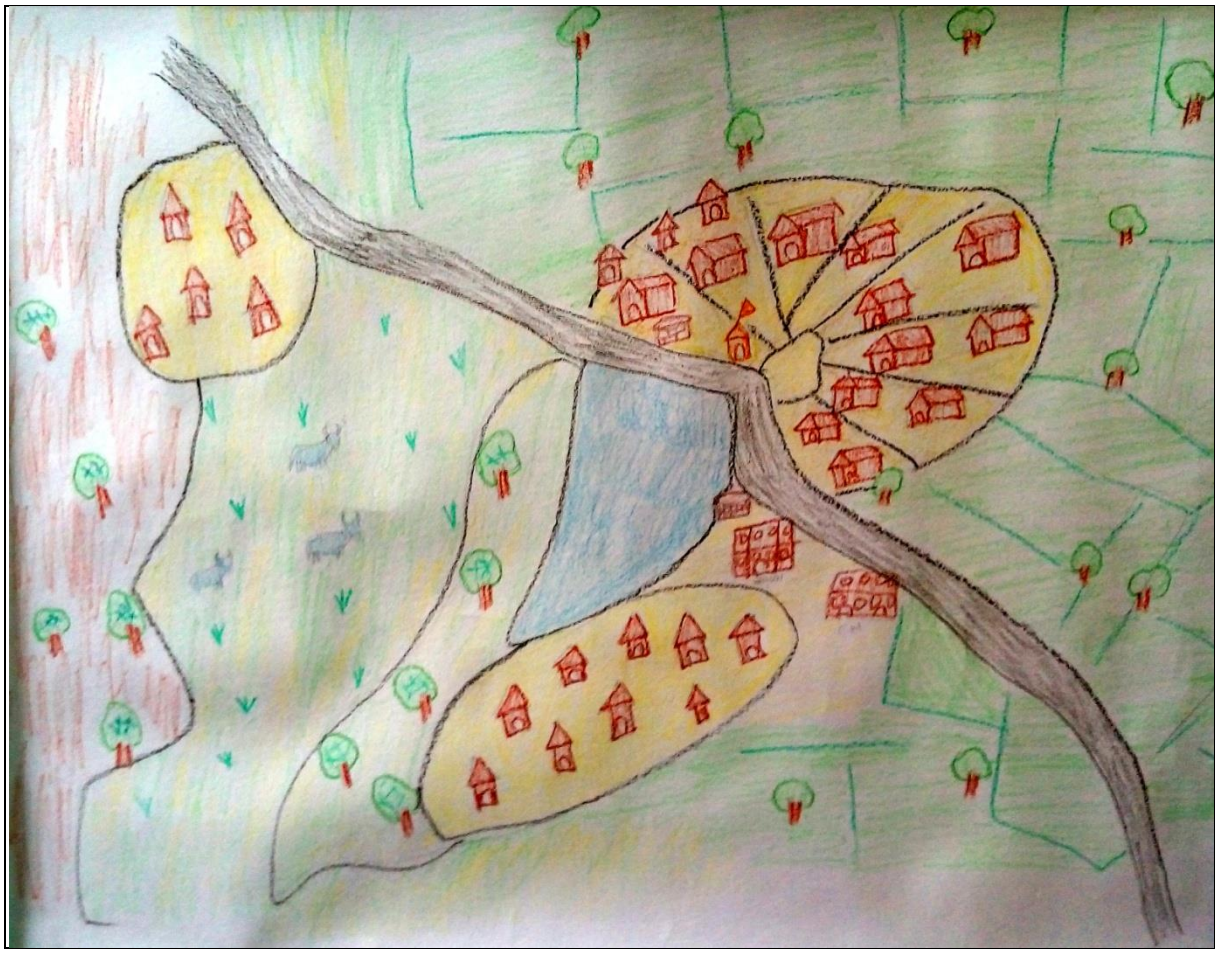
Village Zamdi

Zamdi village is located towards North West of Jambusar city. It is around 24 km away from the Jambusar city. The fishing community of the village is located in Isanpur village which is situated 5 km away from the Zamdi village.

Geographical Area of the Panchayat Samiti : 1,639.10 Ha

Population under the Panchayat Samiti : Male 572 Female: 535

(Source: as per Census-2011)



Village Map: Zamdi

Zamdi is an important village directly connected to coastal resources. This is the only village that has fishing boats. The village has cast wise-stratified population.

There are 6 major communities recorded in the village. The community is dominated by Khatriyas/Rajput fishing (locally known as Darbar) cast. The main village consists four clusters. One major cluster belongs to the Darbar community. Two belong to Rathod (SC), also known as the *Talaviya Rathod* community. Other lower caste mainly lives with Rathod community, where as other higher caste houses are in cluster dominated by Rathods. The higher caste is mainly involved in agriculture and allied activities.

The Rathod community is mainly involved in fishing activities. However, their fishery is restricted to the sea shore. One cluster, the Ishanpur hamlet, belongs to fisherman (Machi) community is located close to seashore. During the discussion it was revealed that this hamlet is lineage of a single person family which settled here long back.

Fishermen have around 20 boats and fishing are mainly done on/close to the opposite bank of the Gulf of Khambhat. With the tides they cross gulf put their nets in low tide and harvest their catch in next low tide. The tides are very difficult and tricky as maximum tides goes up to 12 meters, often receding tides are accompanied by strong currents. The fisherman doesn't have any advance gadgets of navigation and generally rely on their tradition knowledge of tides and currents.

Water supply to Ishanpur is provided by tankers, as groundwater in the coastal region is saline. People of Ishanpur are not much dependent on main village for their livelihood. They spend 12-18 hours in offshore fishing. The fish catch is mainly sold at Ishanpur, in case of large catch it is sent to Zamdi or Jambusar. The earning per family varies from 2 to 5 thousand per month. However, fishing is negligible in monsoon due to ban imposed on fishing.

Map of Fisher's Hamlet

The major land use is agriculture land distributed in North, South and Eastern part of the village. The western portion of the village, besides the sea is dominated by salt affected region (or wasteland), dotted with some wetlands. The central part of the village has human habitation, village pond and a large patch of *gauchar land*. *Gauchar land* has large thickets of *Prosopis*, locally known as "*Galiya Baval*" used as fuel wood. The village pond is the main source of water for villagers for the domestic purpose. Water for the drinking/bathing purpose is provided by two shallow wells located on the bank of the village ponds. In addition, there are four ponds for domestic purpose.

Apart from *gauchar land*, saline waste and mangrove area provide grass and fodder. Agriculture is including crops like tuver, cotton and castor. Traditionally, the region was known for its millet, pulses and wheat. However, in last ten-fifteen years population of pigs and bule bull has increased tremendously, raiding and damaging food crops in the night. Thereby, the farmers are forced to switch over to cash crops like castor from food crops.

Dependency on mangrove is moderate mainly restricted to cattle grazing and seed collection as food source.

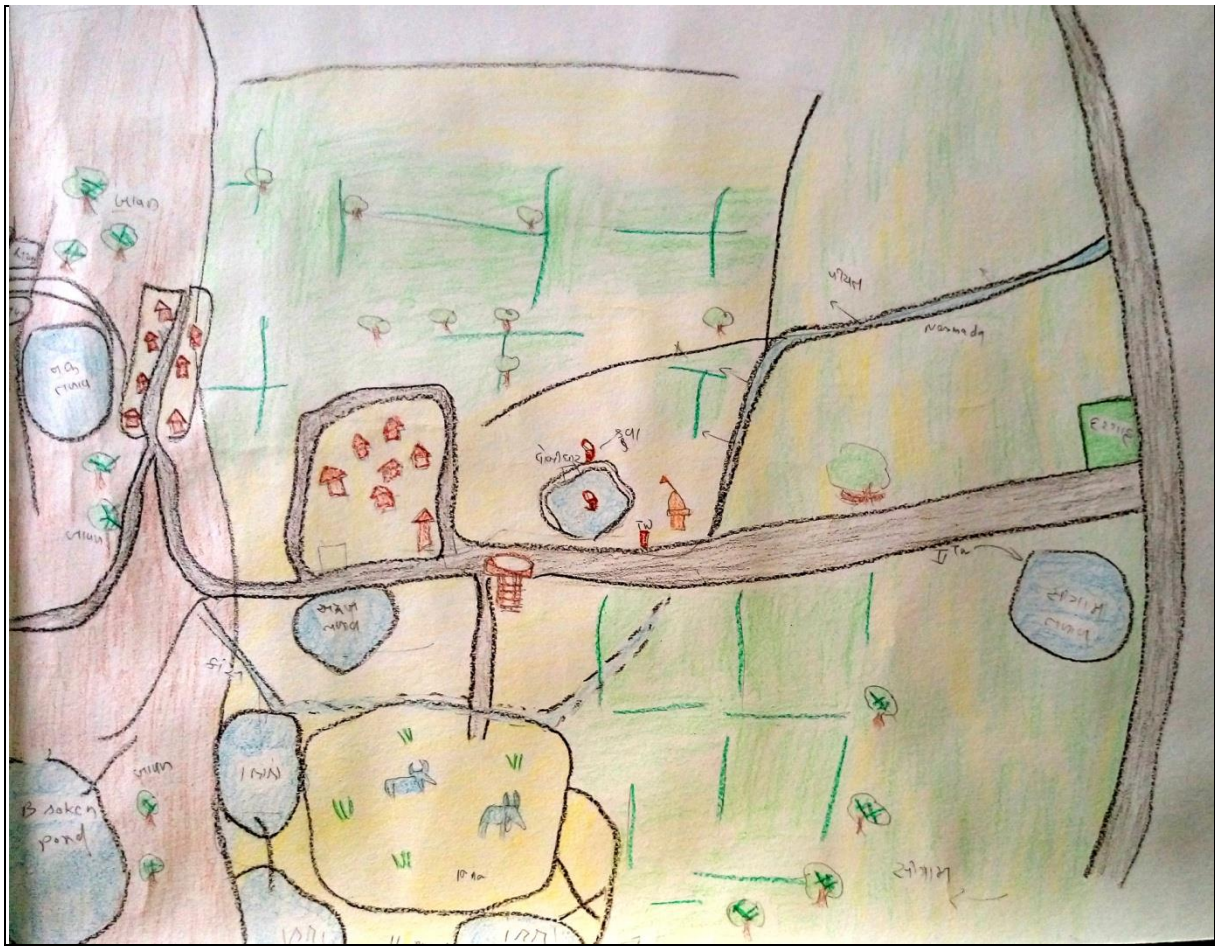
Village Neja

The village is dominated by the Patel community. The village consists of two major clusters. One major cluster belongs to Patel community. The other belong to Rathod (SC), also known as *Talaviya Rathod* community. Few fisherman (Machi community) houses are in Rathod community. The Rathod community is mainly involved in labor work.

Geographical Area of the Panchayat Samiti : 476.26 Ha

Population under the Panchayat Samiti : Male 283 Female: 277

(Source: as per Census-2011)



Village map: Neja

There are a couple of temporary shelter of belongs to fisherman community is located on the seashore. Some Rathod and fisherman are engaged in fishing mainly restricted to the sea shore. Every year the fishers and Rathod community collect mangrove seeds which are being sold to Patels during month of Shravan. There are some local recipes prepared by Patel community which are considered as delicacies. Mangroves also provide fodder for cattle in dry period.

The major land use is agriculture land distributed in North, South and Eastern part of the village. The western portion of the village, besides the sea is dominated by salt affected region (or wasteland), dotted with some wetlands. The central part of the village has human settlement, village pond and a large patch of *gauchar land*. *Gauchar land* has large thickets of *Prosopis*, used as fuel wood by villagers. The village pond is the main source of water for villagers for the domestic purpose. Water for the drinking/bathing purpose is provided by two shallow wells located on the bank of the village ponds.

Apart from *gauchar land*, saline waste and mangrove area are the major source of grass and fodder. Agriculture mainly comprises of tuver, cotton and castor. Traditionally the region is known for its millet, pulses and wheat. Patel community is mainly involved in agriculture. Compared to other villages, agriculture here is better as due to availability of irrigation water through canal.

The village has high consumption of mangroves seeds, which consume after cooking.

Village Chidra

Chhidra village is located towards north east of Jambusar city. It is around 22 km away from the Jambusar city. The village has 12 communities and includes caste like Patel (Farmers), Rajputs, Rathods, Rohits, Vankar, Rabari, Jagia van, Koli patel etc.

Geographical Area of the Panchayat Samiti : 1,199.10 Ha

Population under the Panchayat Samiti : Male 5000 Female: 2000

(Source: as per Census-2011)

The village consists of several clusters. Two major clusters belong to the Patel community, one cluster of Rajputs, and other clusters of mixed community. Agriculture is the main occupation in the village as the majority of people work as farm labor. Few people do livestock rearing, mainly belonging to Rabari caste. There is no fisherman community in the village, however, *Rathod* practice fishing in the intertidal region.

The major land use is agriculture land distributed in Eastern and Western part of the village. There are two major ponds/wetlands exits. One is on the south-western part of the village and other on the northern side. The central part of the village has human habitation. *Gauchar land* is located on south and northern part of the village, and has large thickets of *Prosopis*, used as fuel wood by villagers. The village pond is the main source of water for villagers for the domestic purpose. Water for the drinking/bathing purpose is provided by two shallow wells located on the bank of the village ponds.

Just like neighboring villages, major crops include *tuver*, cotton and castor. Though village is not directly connected to sea, its farm lands are adjacent to creeks and saline wastelands. The *Rabaris* are dependent on mangrove, as fodder and *Rathod* do fishing and harvest mangrove seeds to sale it to other communities.

Due to high salinity agriculture has almost ceased in this village. The village has good cattle populations and milk is the major business of the village and supplied to dairy in Bharuch. There is only one taluka road present in the village which joins the village to the Jambusar city. The drinking water is supplied to the villagers through borewell.

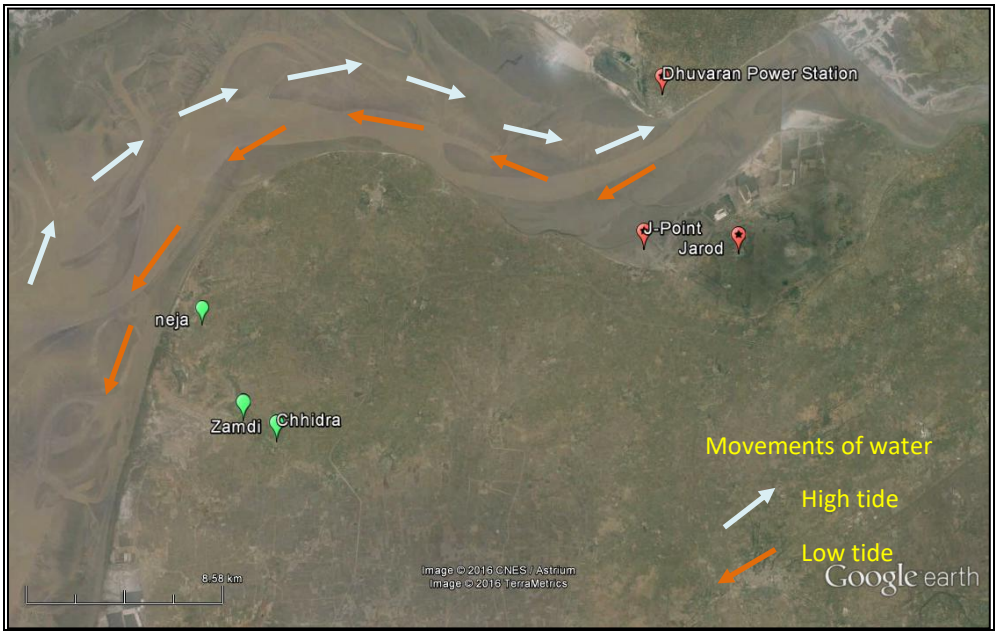
4.2 Socio-economic Assessment

The household survey was done of suggested fishing communities with boats are economically better compared to those who are doing part fishing. However, they have to stay away from the main villages and are deprived of several facilities like schooling, bus, and good quality water. The perception-based results of the household survey are given below**.**

	Question	Neja	Zamdi (Ishanpur)	Chidra
1	Standard of living	Low	Medium	Low
2	Type of house	Kuccha	Kuccha	Kuccha
3	Vehicle	Byke & bicycle	Byke & bicycle	Byke & bicycle
4	change economic/ livelihood last 20 yrs.	No change	Improved	No change
5	Road/Bus facility	Yes	No facility	Yes
6	Distance of school	5 km	500 m	500 m
7	Type of school	Secondary	Primary	Secondary
8	how to improve life	More jobs	More fish catch	More jobs
9	PHC	No	No	Yes
10	Electricity	Yes	Yes	Yes
11	TV facility	Yes	Yes	Yes
12	Parents	Stay with	Stay with	Stay with
13	Fishing in young generation	No	Yes	No
14	No. of member in industry	No	No	No
15	use of herbal medicine	Yes	Yes	Yes
16	Collection from where	Wild/farm	Wild/farm	Wild/farm
17	How many people in fishing	10 to 20	250	5 to 6
18	Fishermen with boats	15	NO	NO
19	Diesel on subsidy	No	NA	NA
20	Loan for fishing nets	No	NA	NA
21	General Loans	No	Yes	Yes
22	changes in agriculture			
23	Earlier crops grown	Mung, Math, Bajari, Dangar, Kodari,		
24	Present crops	Kapas, Tuver, Mung, Bajari….		
25	Livestock changed	No		
26	Gauchar grazing land changes	No	Degraded	Degraded
27	Resources from nature	Fuel wood	Fuel wood	Fuel wood
28	Sources of water	Well/Pond/canal	Well/Pond	Well/Pond
29	water situation got better or worse	Better	Worse	Worse
30	Migrated out	Some	Many	Many
31	Mirgation for what	Job	Job	Job
32	Change in occupation	Few	Many	Many
33	People from outside	No	No	No
34	Neighbours co-operation	Yes	Yes	Yes

	Question	Neja	Zamdi (Ishanpur)	Chidra
35	Sense of community	Strong	Strong	Strong
36	Changes in weather	Yes (decline in rainfall)		

Though there is not much industrialization in the areas. Fisherman complains that Industrial pollution has affected fishery adversely due to discharge of effluent at *J*-point by Nandesari GIDC and industries of Jarod in Mahi estuary 30 km upstream of the area.



Neja and Zamdi villages observed that there is increase in aquaculture in last decade. The villagers are not aware of adverse impacts like habitat conversion; nutrients and organic matter in effluent; chemicals used in soil, water, and disease treatment; salinization; and the introduction of non-native species or genetically distinct varieties.

There is not much clarity on planning and management of water supply and effluent among the villages. Though these are small farms, very large numbers of such small-scale developments have serious cumulative environmental effects when concentrated in high densities in some locations. The impacted villages being far from the source of pollution are being ignored as the conventional EIA only considers a 10 sq km area of the impact assessment.


Aquaculture ponds
Aquaculture ponds
Image © 2016 CNES / Astrium
503 m
Neja
Google earth


Aquaculture ponds
Zamdi
Image © 2016 CNES / Astrium
1132 m
Google earth

Interacting with villagers





Summary

The areas of communities are distinctly divided for different caste. Based on house structure one can easily identify the economic/social status of community in the villages. It was observed that residential area all the three villages have distinctly habituated based on caste.

The land owners/farmers are more linked to block level intuitions come under Taluka panchayat like agriculture department, revenue, irrigation, animal husbandry and various cooperatives. The poor communities are highly dependent on Panchayat, for facilities like job, education and health. Well off community send their kids to nearby town for higher education. Issues like water supply, electricity and communication are equally important to all the communities.

While studying their annual activities, it was learnt that the labor community are jobless for a period of 4-6 months of a year, during which they migrate to nearby cities, like Jambusar, Padra, Bharuch or Vadodara.

One of the interesting findings of the exercise was an indication of the presence of a large saline wasteland that could be planted with salt-tolerant species.

Further, it was learned that there are two distinct areas for fishing one in the intertidal region of the east bank close to human habitation, and the second on the opposite bank of the Gulf of Khambhat, where there is no human habitation. The opposite bank of the Gulf is also devoid of mangrove cover.

4.3 BMC Formation

Following stockholder meetings with village representatives and various informal discussions, three villages (Zamdi, Chidra and Neja) have completed the process of BMC formation. The gram panchayat passed a resolution to form BMC with seven members, having one SC+ST member, two women, and four general members. The details of BMC resolution and BMC certificates are given in Annex 4-5.

Positions	**Village with BMC members**		
	Chidra	**Jhamdi**	**Neja**
President	Parmar Babubhai Mahijibhai	Chuhan Ranjitbhai Fatesingh	(Ms) Dharmishthaben M Patel
Lady (1)	Patel Naynaben Rajendrabhai	Makwana Kailashben Jagdish	Chanchalben Bhailal Patel
Lady (2)	Baledar Ratanben Ramanbhai	Parmar Ansutaben Arjun	Savitaben Chiman Rathod
SC/ST	Rathod Ramanbhai Chaganbhai	Rathod Ranchod Shana	Nayanbhai Madhav Rathod
Member	Yadav Dilipsingh Natavarsingh	Machi Pravin Natvar	Lakhanbhai Jesangbhai Patel
Member	Rohit Maheshbhai	Parmar Parsottam	Jayantibhai Gordhan

	Chaganbhai	Hirabhai	Patel
Secretary	Waghela Rajendrasingh Sursingh	Chuhan Sanjay B.	Mukeshbhai Lavajidas Patel

4.4 Awareness and Training

Workshop 1 – Education and Awareness workshop

An orientation workshop for villagers was organized on 14th April 2015. The orientation workshop was with two objectives 1) Introduction to mangroves as plant and their role in the ecosystem and 2) Introduction to the Biodiversity Management Committee and Peoples' Biodiversity Register

Literature prepared in local language, it includes poster, booklets, and utility things. 60 (Participants were mainly man member, two village heads, four school teachers, around 20 peoples were directly dependent on mangrove resource). Presentation *in Gujarati language* was given by Dr. Jayendra Lakhmapurkar

Introduction to mangrove as plant and its ecosystem

The presentation started with explaining the role of mangroves in 1) shoreline stability, 2) preventing salinity ingress, 3) carbon sequestration, 4) tackling cyclone and tsunamis, 5) helping fisheries and fisherman. Also, importance of mangroves due to dependence on its resources like fodder, fuel wood and honey etc. were discussed.

A brief on damage to mangroves by nature and human factors and therefore the need for its conservation was told to the participants.

When people were asked about their views, we could see that they could relate to resources like fishery, fuel, fodder, and shoreline stability. Carbon sequestration was too technical for them which we decided to take up in the future.

Introduction to Biodiversity Management Committee and Peoples' Biodiversity Register

The presentation was about the national relevance of Biodiversity Management Committees (BMC). Role of Gujarat Ecology Society in the formation of BMCs was explained to villages including its linkages with State Biodiversity Board. Procedural formalities in the

formulation of BMCs, structure of BMC, role of BMC members in biodiversity conservation, and access to benefit shearing.

The second major subtopic was about the Peoples Biodiversity Register (PBR), its structure, and the kind of data/information required for PBR. The role of villagers and PBR members in contributing to BMC and maintaining the register was explained to the people. As this is a new exercise for the people, not many issues were raised by participants. However, they assured cooperation during the project.

Awareness among kids

Awareness among kids was done through meetings and competitions. The prizes were distributed to all kids. Two sets of competition were held, one at Neja and second at Ishanpur (Zamdi), a total of 70 children participated in the competition. During the events kids were made aware of following aspects.

1. What are mangroves?
2. Resources from mangroves
3. Their role in fishery and coastal protection
4. Climate change and its impact
5. How not to harm coastal and marine biodiversity
6. What kids can do to protect the environment- land, water, biodiversity etc.….

All the participants were given consolation prizes and winners were given school bags. Awareness materials were distributed among kids.

Glimpses of the competition






Workshop 3- Training and Capacity building

The second workshop was organized on 8/12/2015, with the objective of introducing the Peoples Biodiversity Register and ABS mechanism to villagers.

Place of Workshop: Chhidra, Jambusar Community Hall

GES conducted awareness workshop on 8th March 2015 at Chhidra, Jambusar. There are total 100 people from Neja, Chhidra and Zambdi villages get benefited and participated in workshop.

Activities and discussions carried out during workshop.

- Distribution of BMC (Biodiversity Management Committee) certificate.
- Benefits of mangroves, its conservation and use.
- Formation of ABS (Access Beneficiary Systems) mechanisms.
- Discussion of traditional knowledge
- Discussion of medicinal plants and their uses
- Future plans for conservation of other plants and mangroves.
- Discussion about BMC formation, its benefits to villagers and different activities.
- Distribution of awareness related posters and literatures.

Requirements of villagers for the development and conservation plan

- They want the plantation of native species like *Dodhi, Neem, Mango, Aaval, Gokharu, Kuvech* etc.
- They want a fruit nursery, so they can earn some money during their lean period. They demanded fruit trees like Drum sticks, Custard Apples, Syzygium (Jamun) , Wood apple, Guava plant, Imali etc.
- They want to cultivate Kahari bhaji and coconut tree (Coastal vegetation) during monsoon.

4.5 Nursery creation

Around 20 persons were engaged in seed collection and collected 30 thousands seeds for nursery. Around 50 people in two teams participated in Nursery creation and 30,000 saplings were raised in the nursery.

Nursery creation


4.6 People Biodiversity Register

The brief of data generated under PBR suggest large part of village land is under barren, uncultivable waste which is saline in nature.

Land use ha	Chidra	Zamdi	Neja
Barren and uncultivable wasteland	1199.10	791.3	301.4
Cultivable wasteland	69.6	43	21.9
Current fallows	69	804.8	153
Permanent pastures	-	16.12	-

It is important to note that with large barren land mostly used for grazing, only 16.12 ha is designated pasturelands, which indicates the high vulnerability of these lands to policy change. Biodiversity suggests the domination of wild diversity over domesticated and agrodiversity, indicative of rich wilderness.

BIODIVERSITY	**Species recorded**		
	Chidra	**Zamdi**	**Neja**
Agro-biodiversity			
Crop	12	12	16
Fruits	10	10	13
Fodder crops	6	6	4
Agriculture weeds	26	28	33
Pests	18	17	17
Domesticated Diversity			
Fruits	11	6	13
Medicinal Plants	27	27	31
Ornamental Plants	18	14	21
Timber tress	16	16	18
Animals	11	13	9

Wild Diversity			
Total Wild plants	232	240	240
Wild fauna	100	129	128

The data suggest village Neja is relatively better in agro and wild diversity. Wild species of economic importance were also recorded from Chidra which included 43 medicinal plants, 5 crop relatives, 20 wild ornamental plants and 5 timber species. Similarly, Zamdi village reported 40 medicinal plants, 5 crop relatives, 11 wild ornamental plants and 4 timber species, 9 and 33 coastal and marine flora and fauna. Neja recorded 50 medicinal plants, 5 crop relatives, 23 wild ornamental plants and 6 timber species, 9 and 40 coastal and marine flora and fauna.

Wild fauna includes Nilgai, wild boar, mongoose, snakes, and large number of birds and insect species. Intertidal fauna includes crabs, mudskippers, gastropods etc.

PBR documentation

5 PROJECT SUSTAINABILITY

Continuation of project activities: *Exit strategy/ Phase-out mechanism and how project results will continue to be sustained after the funding ends.*

The BMC would have its own bank accounts and seed money would be provided by Gujarat Biodiversity Board. Thereafter, the BMC would manage the accounts and raise the amount by selling the mangrove seedlings to agencies undertaking plantation works. The amount thus generated could be used to maintain nursery and protect the mangroves.

GES is approaching industries and other funding agency to take up plantation activities of fruit yielding species in wasteland so that BMC and villagers can have regular fund as well as more livelihood options.

7 EVALUATION AND RECOMMENDATIONS

- Villagers took part in various activities related to mangrove conservation, with a primary goal of earning some livelihood during the lean period.
- Children living close to the coast are linked to activities like fishing and understand mangroves better than those who stay 8-10 km away.
- Women took part in mangrove plantations to create nurseries.
- Increasing aquaculture may replace traditional fishery in the future.
- In Gujarat recent increase in mangrove cover is mainly due to active participation of communities in afforestation drive. Though the fisherman accept that mangroves are good for fishery, they believe that other factors are becoming more dominant, like increase in industrial pollution has adversely affected fishery.

8 LESSONS LEARNED

Mangroves in the area are stunted, but support a good population of crabs, mudskipper, and bird diversity, and play a vital role in shoreline protection.

People understand the role of mangrove conservation in coastline protection, and this is the major reason behind people participate in such activities. Mangrove nursery creation by villagers increased their confidence level in creating such nurseries of mangroves and other species, by themselves.

However, poverty compels them to migrate, and look for alternative jobs in nearby urban areas, which tend to alienate them from the coast and traditional livelihood. The job in the village is very scarce. A large section of the community is poor, get livelihood through labor work, and migrates regularly for jobs.

People with fishing boats are more linked to mangrove and coastal ecosystems. Other community links them to saline wastelands. Every year decline in fish catch is reported. The locals blame industrial effluent for degrading the water quality, resulting in lower fish catch.

Aquaculture is coming up on a large scale the impact of it on the coastal water is yet to be assessed.

The degraded status of land resources is one of the main reasons behind poor livelihood. There is a need for a plan to improve yield from these degraded lands. People therefore decided to create nurseries of other species that can grow in the vast saline wasteland. However, high poverty and lack of entrepreneurship discourage to undertake initiatives.

Concentrated efforts with proper technology can improve the productivity of the saline wasteland and can create livelihood among poor villagers.

GES decided to approach industry and other funding sources to take up restoration/plantation work in saline wastelands.

Annex 1

Roles and Functions of the BMCs

- Conservation and sustainable utilization of biological resources
- Eco-restoration of the local biodiversity
- Proper feedback to the SBB on the matter of IPR, Traditional Knowledge, and local
- Biodiversity issues, wherever feasible, and essential feedback to be provided to the NBA.
- Management of Heritage Sites including Heritage Trees, Animals/Microorganisms etc., and Sacred Groves and Sacred Water bodies.
- Regulation of access to the biological resources and/ or associated Traditional
- Knowledge, for commercial and research purposes.
- Sharing of usufructs arising out of commercial use of bio-resources
- Conservation of traditional varieties/breeds of economically important plants/animals. Biodiversity Education and Awareness Building.
- Documentation, enable procedure to develop bio-cultural protocols. Sustainable Use and Benefit Sharing.
- Protection of Traditional Knowledge recorded in PBR

BMC shall hold a minimum of 4 meetings in a year, and meet once at least in every 3 months. The meetings shall be chaired by the Chairperson of the BMC, and in his/her absence, by any other member elected by the members present.

Each BMC shall prepare an Action Plan, drawing information validated in the People's Biodiversity Register.

BMCs shall generate funds through the following modes:

- Receipts (grants and loans) from NBA, SBB and State Government. In addition, BMCs may access funds from various sources including raising donations, line departments of Government of India and state governments, other Central and State Boards, institutions and corporate bodies.
- Receipts from fee, license fee, levies, royalties and other receipts.

Annex 2 Awareness Material (Chart aprox A3 size)

Annex 3 Booklet in Gujarati

Gujarat Ecology Society

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Back cover

તંવર ને ઓળખો

સૌજન્ય

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લેખન

જયેન્દ્ર લખમાપુરકર

પ્રકાશન

ગુજરાત ઇકોલોજી સોસાયટી

એપ્રીલ ૨૦૧૫

Front cover

પ્રસ્તાવના

ગુજરાત ઇકોલોજી સોસાયટી એ વડોદરા સ્થીત પર્યાવરણ ક્ષેત્રે કાર્યરત સંસ્થા છે જે મુખ્યત્વે જૈવિક વિવિધતા સંરક્ષણ અને દરિયા કાંઠાના પરીસરીય તંત્રનો અભ્યાસ કરે છે.

"મેન્ગ્રુવ ફોર થ ફ્યુચર" (આપણા ભવીષ્ય માટે તંવર) આ એક "વિશ્વ પરીયાવરણ સરંક્ષણ સંગઠન" (IUCN) અને "સંયુક્ત રાષ્ટ્ર વિકાસ કાર્યક્રમ" (UNDP) દ્વારા ચલાવવામા આવતો અંતરરાષ્ટ્રિય અનુક્રમ છે.

પ્રસ્તુત પુસ્તીકા આ કાર્યક્રમના એક ભાગ તરીકે બનાવેલ છે. જેનો મુખ્ય હેતુ લોકોમા તંવર વિશે સમજ અને જાગરુપતા ફેલાવવાનો છે.

તંવર (મેન્ગ્રૂવ) દરિયા કિનારે ઉગતા, ખારા પાણીના વૃક્ષો છે. દરિયાઇ જીવો માટે તે ભોજન અને આવાસ પુરુ પાડે છે.

કેટલાક દરીયાઇ જીવો તંવરના વિસ્તારોનો પ્રજનન માટે ઉપયોગ કરે છે. તેમના બચ્ચાઓને મેન્ગ્રુવ સુરક્ષા પુરી પાડે છે.

તંવર વિસ્તારો દુર્લભ પ્રજાતીઓ માટે રહેણાક છે. રોયલ બેન્ગાલ ટાઇગર (વાઘ)ને સુંદરવનના વિસ્તારો આવાસ પુરુ પાડે છે. આ સિવાય મગર, હરણ, સાપ, પક્ષીઓ તથા કીટકો પણ તંવર વિસ્તારોમાં જોવા મળે છે.

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તંવર દરીયા કાંઠા માટે ખુબજ મહત્વનું વુક્ષ છે.

- તેનાથી કાઠાની જમીન નું ધોવાણ ૨૦% જેટલુ ઘટે છે.
- તે જમીનને સેન્દ્રિય પદાર્થો આપી તેની ફળદ્રુપતામાં વધારો કરે છે.
- તે કાઠાની જમીનને ક્ષાર સામે રક્ષણ પુરુ પાડે છે.
- તંવરના વુક્ષો કાર્બનનુ સંગ્રહ કરી વાતાવરણને સાનુકુળ રાખવામા મદદ કરે છે.
- દરીયામા આવતા વાવાઝોડા તથા ઉંચા મોંજાથી તે સંરક્ષણ પુરુ પાડે છે. ૧૯૯૯મા ઓરિસ્સાના વાવાઝોડા દરમિયાન તંવર વિસ્તારોને સૌથી ઓછુ નુકસાન થયુ હતુ.

આર્થિક ફાયદા

- વિશ્વમા આશરે ૮૦% મત્સ્યોધ્યોગ તંવર વિસ્તારો પર આધારીત છે.

- તંવર બળતન (લાક્ડુ), કોલસો, ઇમારતી લાકડુ, મધ અને માછલી આપે છે. (૧ ટ્ન બળતન= ૫ ટ્ન કોલસો)

- તંવર દવાના સ્ત્રોત તરીકે જાણીતું છે. દા.ત. બુગેરિયાના પાંદડા રક્તદાબના નિયંત્રણ માટે વપરાય છે. તેમજ તંવરની કેટલીક પ્રજાતી પરજીવો સામે સંરક્ષણ આપે છે.

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બીજાને સંરક્ષણ આપનાર તંવરને પણ ભય છે.

- વાવાઝોડાથી
- ઉંચા મોજા દ્વારા ધોવાણ થવાથી
- પરજીવો (મુખ્યાત્વે જીવડા) દ્વારા ભક્ષણ/નુકશાન
- બળતણ, લાકડા માટે વધુ પડતી કપાઇ
- બિમારી
- પ્રદુષણ
- ઢોરો દ્વારા પાંદડાનુ વધુ પડતું ચારણ
- તવર વિસ્તરોમા ખેતી/માછલી ઉછેર
- તવર વિસ્તારોનુ બીજા ઉપયોગ (રહેઠાણ, ઉદ્યોગ, બંદર) માટે અધિગ્રહણ
- ખાવા માટે બીયાનો વધુ પડતો ઉપાડ
- આયોજન, અભ્યાસ, શિક્ષણ, જાગરુપતાનો અભાવ

<u>ઓળખો આ તંવરને</u>

એવીસીનીયા મેરિના

- સામાન્યતઃ એશિયા અને આફ્રિકા ભુખંડમા જોવા મળે છે.
- તેના વુક્ષ ૩-૧૪મી. ઉચાઇ ધરવે છે.
- થડની છાલ આછા રાખોડી રંગની હોય છે.

- પાંદડાઃ ૫-૬ સેમી લાંબા, ઉપરથી પોપટી પડતા લીલા અને નીચેથી ચમકતા સફેદ/ભુખરા રંગના, રુવાટીદાર હોય છે.
- મૂળઃ જમીનથી ઉપર વધતા, ૨૦ સે.મી. સુધી વધે છે. હવા શોષિત જે હવા માંથી ઓક્સીજન (પ્રાણવાયુ) મેળવે છે.
- ફુલઃ સફેદથી સોનેરી પીળા રંગના, ૩-૫ના ગુચ્છમા આવે છે.
- ફળઃ મોટા રસદાર હોય છે. તેમાથી બીજ નીકળી જમીન પર પડતા નવો છોડ જન્મે છે.

નર્સરી માટેઃ

- બીજ (પાકેલા) ઓક્ટોબર-ડીસેમ્બર માં ભેગા કરવા
- પાકેલા બીજ આછા પીળા રંગના, તડો ધરાવતા હોય છે.
- બીજ ને એક રાત માટે ખાડી ના ખારા પાણીથી પલાળવા, જેથી બહારનુ કઠણ પડ નીકળી જાય છે.
- બીજ રોપવા પ્લાસ્ટિક બેગનો ઉપયોગ કરવો.
- બીજ એક-બે દિવસથી વધુ સંગ્રહવા નહિ.
- પ્લાસ્ટીક બેગમા નાખતા પહેલા માટી સારી રીતે સુકાવી લેવી.
- બેગમા નાખ્યા પછી માટીને પાણી આપવું.
- બીજ થોડાજ અંદર ખોસવા, પુરા દબાયેલા બીજ સડી જાય છે.
- શરુઆતમા દિવસમા બે વાર પાણી આપવું.
- ૮ મહિનના, ૫૦ સેમી લાંબા, ૧૨થી વધુ પાંદડા ધરાવાતા છોડનો વાવેતરમા ઉપયોગમા લેવા.

Annex 4 BMC resolution taken in stack holder meetings

Village Zamdi

જોડાણ-૧

ગ્રામ પંચાયત કક્ષાએ જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિની રચના અંગેના ઠરાવનો નમૂનો

ગ્રામ પંચાયત કક્ષાએ જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિની રચના

ઠરાવ નં. [illegible] તા. [illegible]

ગ્રામ પંચાયતનું નામ [illegible] તાલુકો [illegible] જિલ્લો [illegible]

સરપંચ શ્રી [illegible] ના અધ્યક્ષ સ્થાને અને ૭ સભ્યોની/બધા સભ્યો ની સંમતિથી દિનાંક [illegible] ના રોજ સવારે/બપોર પછી [illegible] વાગ્યે ગ્રામ પંચાયતની કચેરીમાં ગ્રામ પંચાયતની બેઠક મળી હતી અને બધા સભ્યોની સંમતિથી ત્રણ/પાંચ વર્ષની મુદત માટે જૈવિક વિવિધતા અધિનિયમ, ૨૦૦૨ની કલમ ૪૧(૧) અને જૈવિક વિવિધતા નિયમો, ૨૦૦૪ના નિયમ ૨૨ અને ગુજરાત જૈવિક વિવિધતા નિયમો ૨૦૧૦ ની જોગવાઇઓ અનુસાર જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિની રચના નીચે મુજબ કરવા ઠરાવવામાં આવે છે :

સમિતિના સભ્યોની વિગતો

ક્રમ નં.	પુરું નામ અને સરનામું	ઉંમર	હોદ્દો	સહી
૧.	[illegible]	૫૦	અધ્યક્ષ	[illegible]
૨.	[illegible]	૪૦	સ્રી સભ્ય	[illegible]
૩.	[illegible]	૪૨	સ્રી સભ્ય	[illegible]
૪.	[illegible]	36	અનુ.જાતિ/અનુ.જન જાતિ. સભ્ય	[illegible]
૫.	[illegible]	૪૨	સભ્ય	[illegible]
૬.	[illegible]	૨૫	સભ્ય	[illegible]
૭.	[illegible]	35	મંત્રી	[illegible]

જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિ નીચેના કાર્યો માટે જવાબદાર રહેશે :

૧. પોતાના કાર્યક્ષેત્રમાં આવેલ તમામ જૈવિક સંસાધનોના સંરક્ષણ અને સાતત્યપૂર્ણ ઉપયોગ.

૨. પોતાના કાર્યક્ષેત્રમાંથી જૈવિક સંસાધનોના ગેરકાયદે એકત્રીકરણ અટકાવવો.

૩. જ્યારે જરૂર પડે ત્યારે વિવિધ વિષયો અંગે રાષ્ટ્રીય જૈવિક વિવિધતા સત્તા મંડળ, ચેન્નઇ અને ગુજરાત જૈવિક વિવિધતા બોર્ડને અભિપ્રાય આપવા.

૪. અધિનિયમની જોગવાઇઓ મુજબ પોતાના કાર્યક્ષેત્રમાં રહીને વાણિજ્યિક હેતુઓ માટે જૈવિક સંસાધનો એકત્ર કરવા માટે કર વસૂલાત માટેની ફી વસુલ કરવી.

૫. જૈવિક સંસાધનો ઉપયોગ કરતા સ્થાનિક વૈદ્યો અને ઉપયોગ કરનારાઓ અંગેની માહિતી નિભાવવી.

૬. પરંપરાગત જ્ઞાન તથા જૈવિક સંસાધનોનાં વપરાશ કરવા અંગે આપવામાં આવેલ પરવાનગી, લાગુ પાડવામાં (imposed) આવેલ એકત્રીકરણ ફી અને મેળવવામાં આવેલ લાભો તથા તેની વહેંચણીની પ્રક્રીયા અંગેની વિગતો ધરાવતું રજીસ્ટર નિભાવવાનું રહેશે.

૭. જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિ જૈવિક વિવિધતા અને સંલગ્ન પરંપરાગત જાણકારીના દસ્તાવેજીકરણમાં પણ સંકળાયેલી રહેશે.

૮. રાષ્ટ્રીય જૈવિક વિવિધતા સત્તા મંડળ તથા ગુજરાત જૈવિક વિવિધતા બોર્ડ તરફથી વખતો વખત પુરી પાડેલ માર્ગદર્શક સૂચનાઓ અનુસાર જૈવિક વિવિધતા ભંડોળનો ઉપયોગ તથા વ્યવસ્થાપન કરવાનું રહેશે.

સહી [illegible]
ગ્રામ પંચાયતના સરપંચ
સરપંચ ગ્રામ પંચાયત ઝામડી

સહી [illegible]
ગ્રામ પંચાયતના તલાટી કમ મંત્રી
તલાટી કમ મંત્રી ગ્રામ પંચાયત ઝામડી

જોડાણ-૧

ગ્રામ પંચાયત કક્ષાએ જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિની રચના અંગેના

ઠરાવનો નમૂનો

ગ્રામ પંચાયત કક્ષાએ જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિની રચના

ઠરાવ નં. ૫ તા. ૨૭/૮/૨૦૧૫

ગ્રામ પંચાયતનું નામ છીદ્રા તાલુકો જંબુસર જિલ્લો ભરૂચ

સરપંચ શ્રી પરમાર (વણકર) બાબુભાઈ મફીજીભાઈ ના અધ્યક્ષ સ્થાને અને ૭ સભ્યોની/બધા સભ્યો ની સંમતિથી દિનાંક ૨૭/૮/૨૦૧૫ ના રોજ સવારે/બપોર પછી ૧૨:૩૦ વાગ્યે ગ્રામ પંચાયતની કચેરીમાં ગ્રામ પંચાયતની બેઠક મળી હતી અને બધા સભ્યોની સંમતિથી ત્રણ/પાંચ વર્ષની મુદત માટે જૈવિક વિવિધતા અધિનિયમ, ૨૦૦૨ની કલમ ૪૧(૧) અને જૈવિક વિવિધતા નિયમો, ૨૦૦૪ના નિયમ ૨૨ અને ગુજરાત જૈવિક વિવિધતા નિયમો ૨૦૧૦ ની જોગવાઇઓ અનુસાર જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિની રચના નીચે મુજબ કરવા ઠરાવવામાં આવે છે :

સમિતિના સભ્યોની વિગતો

ક્રમ નં.	પુરૂ નામ અને સરનામું	ઉંમર	હોદ્દો	સહી
૧.	પરમાર બાબુભાઈ મફીજીભાઈ	૫૨	અધ્યક્ષ	[signature]
૨.	પટેલ નયનાબેન રાજેન્દ્રભાઈ	૪૦	સ્ત્રી સભ્ય	[signature]
૩.	ભોદાર શાંતાબેન રમણભાઈ	૪૦	સ્ત્રી સભ્ય	[signature]
૪.	રાઠોડ રમણભાઈ છગનભાઈ	૫૫	અનું.જાતિ/અનુ.જન જાતિ. સભ્ય	[signature]
૫.	ચાવડા દિલીપસિંહ વખતસિંહ	૪૮	સભ્ય	[signature]
૬.	મહેશભાઈ છગનભાઈ [illegible]	૪૮	સભ્ય	[signature]
૭.	રાજેન્દ્રસિંહ સુરસિંહ વાઘેલા	૪૫	મંત્રી	[signature]

જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિ નીચેના કાર્યો માટે જવાબદાર રહેશે :

૧. પોતાના કાર્યક્ષેત્રમાં આવેલ તમામ જૈવિક સંસાધનોના સંરક્ષણ અને સાતત્યપૂર્ણ ઉપયોગ.

૨. પોતાના કાર્યક્ષેત્રમાંથી જૈવિક સંસાધનોના ગેરકાયદે એકત્રીકરણ અટકાવવો.

૩. જ્યારે જરૂર પડે ત્યારે વિવિધ વિષયો અંગે રાષ્ટ્રીય જૈવિક વિવિધતા સત્તા મંડળ, ચેન્નાઇ અને ગુજરાત જૈવિક વિવિધતા બોર્ડને અભિપ્રાય આપવા.

૪. અધિનિયમની જોગવાઇઓ મુજબ પોતાના કાર્યક્ષેત્રમાં રહીને વાણિજ્યિક હેતુઓ માટે જૈવિક સંસાધનો એકત્ર કરવા માટે કર વસૂલાત માટેની ફી વસુલ કરવી.

૫. જૈવિક સંસાધનો ઉપયોગ કરતા સ્થાનિક વૈદ્યો અને ઉપયોગ કરનારાઓ અંગેની માહિતી નિભાવવી.

૬. પરંપરાગત જ્ઞાન તથા જૈવિક સંસાધનોનાં વપરાશ કરવા અંગે આપવામાં આવેલ પરવાનગી, લાગુ પાડવામાં (imposed) આવેલ એકત્રીકરણ ફી અને મેળવવામાં આવેલ લાભો તથા તેની વહેંચણીની પ્રકીયા અંગેની વિગતો ધરાવતું રજીસ્ટર નિભાવવાનું રહેશે.

૭. જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિ જૈવિક વિવિધતા અને સંલગ્ન પરંપરાગત જાણકારીના દસ્તાવેજીકરણમાં પણ સંકળાયેલી રહેશે.

૮. રાષ્ટ્રીય જૈવિક વિવિધતા સત્તા મંડળ તથા ગુજરાત જૈવિક વિવિધતા બોર્ડ તરફથી વખતો વખત પુરી પાડેલ માર્ગદર્શક સૂચનાઓ અનુસાર જૈવિક વિવિધતા ભંડોળનો ઉપયોગ તથા વ્યવસ્થાપન કરવાનું રહેશે.

[signature]	[signature]
સરપંચ	તલાટી કમ મંત્રી
ગ્રામ પંચાયત - છીદ્રા	ગ્રામ પંચાયત - છીદ્રા
તા. જંબુસર	તા. જંબુસર, જી. ભરૂચ
સહી ગ્રામ પંચાયતના સરપંચશ્રી	ગ્રામ પંચાયતમાં તલાટી કમ મંત્રી
અને ગોળ સિક્કો	અને સિક્કો

ગ્રામ પંચાયત - છીદ્રા તા. જંબુસર, જી. ભરૂચ

Village Neja

જોડાણ-૧

ગ્રામ પંચાયત કક્ષાએ જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિની રચના

ઠરાવ નં. ૧૫૯ તા. ૨૭-૨-૧૭

ગ્રામ પંચાયતનું નામ મો. નેજા તાલુકો જંબુસર જિલ્લો ભરૂચ

સરપંચ શ્રી [illegible] ના અધ્યક્ષ સ્થાને અને [illegible] સભ્યોની/બધા સભ્યો ની સંમતિથી દિનાંક ૨૭-૨-૧૭ ના રોજ સવારે/બપોર પછી ૧૨:૩૦ વાગ્યે ગ્રામ પંચાયતની કચેરીમાં ગ્રામ પંચાયતની બેઠક મળી હતી અને બધા સભ્યોની સંમતિથી ત્રણ/પાંચ વર્ષની મુદત માટે જૈવિક વિવિધતા અધિનિયમ, ૨૦૦૨ની કલમ ૪૧(૧) અને જૈવિક વિવિધતા નિયમો, ૨૦૦૪ના નિયમ ૨૨ અને ગુજરાત જૈવિક વિવિધતા નિયમો ૨૦૧૦ ની જોગવાઇઓ અનુસાર જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિની રચના નીચે મુજબ કરવા ઠરાવવામાં આવે છે :

સમિતિના સભ્યોની વિગતો

ક્રમ નં.	પુરૂ નામ અને સરનામું	ઉંમર	હોદ્દો	સહી
૧.	[illegible]	૪૪	અધ્યક્ષ	[illegible]
૨.	[illegible]	૫૫	સ્ત્રી સભ્ય	[illegible]
૩.	[illegible]	૫૦	સ્ત્રી સભ્ય	[illegible]
૪.	[illegible]	૨૯	અનુ.જાતિ/અનુ.જન જાતિ. સભ્ય	[illegible]
૫.	[illegible]	૬૦	સભ્ય [illegible]	[illegible]
૬.	[illegible]	૫૫	સભ્ય	[illegible]
૭.	[illegible]	૪૮	મંત્રી	[illegible]

જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિ નીચેના કાર્યો માટે જવાબદાર રહેશે :

૧. પોતાના કાર્યક્ષેત્રમાં આવેલ તમામ જૈવિક સંસાધનોના સંરક્ષણ અને સાતત્યપૂર્ણ ઉપયોગ.

૨. પોતાના કાર્યક્ષેત્રમાંથી જૈવિક સંસાધનોના ગેરકાયદે એકત્રીકરણ અટકાવવો.

૩. જ્યારે જરૂર પડે ત્યારે વિવિધ વિષયો અંગે રાષ્ટ્રીય જૈવિક વિવિધતા સત્તા મંડળ, ચેન્નઇ અને ગુજરાત જૈવિક વિવિધતા બોર્ડને અભિપ્રાય આપવા.

પાડવામાં (imposed) આવેલ એકત્રીકરણ ફી અને મેળવવામાં આવેલ લાભો તથા તેની વહેંચણીની પ્રક્રીયા અંગેની વિગતો ધરાવતું રજીસ્ટર નિભાવવાનું રહેશે.

૭. જૈવિક વિવિધતા વ્યવસ્થાપન સમિતિ જૈવિક વિવિધતા અને સંલગ્ન પરંપરાગત જાણકારીના દસ્તાવેજીકરણમાં પણ સંકળાયેલી રહેશે.

૮. રાષ્ટ્રીય જૈવિક વિવિધતા સત્તા મંડળ તથા ગુજરાત જૈવિક વિવિધતા બોર્ડ તરફથી વખતો વખત પુરી પાડેલ માર્ગદર્શક સૂચનાઓ અનુસાર જૈવિક વિવિધતા ભંડોળનો ઉપયોગ તથા વ્યવસ્થાપન કરવાનું રહેશે.

[illegible]

સહી
સરપંચ
ગ્રામ પંચાયતના સરપંચ
અને સિક્કો

[illegible]

તલાટીકમ મંત્રી
ગ્રામ પંચાયતના તલાટી કમ મંત્રી
તા. જંબુસર, જી. ભરૂચ
અને સિક્કો

Annex 5 BMC Certificates by Gujarat Biodiversity Board

GUJARAT BIODIVERSITY BOARD

Aranya Bhavan, "B" Wing, 5th Floor, Sector-10-A, Gandhinagar.

CERTIFICATE

Registration No. /નોંધણી ક્રમાંક : જીબીબી/જીએમસી/૨૫૧૬/બીઆરસી/ જંબુસર/ ઝામડી/૨૦૨૫-૨૬

આથી પ્રમાણિત કરવામાં આવે છે કે જૈવ વિવિધતા વ્યવસ્થાપન સમિતિ (બી.એમ.સી.)

This is to Certify that Biodiversity Management Committee (B.M.C)

ગ્રામ પંચાયત / નગરપાલીકા / મહાનગરપાલીકા ઝામડી તાલુકા, જંબુસર જિલ્લો ભરૂચ

Gram Panchayat / Municipality / Municipal Corporation Zamdi Taluka, Jambusar District Bharuch

ને જૈવિક વિવિધતા અધિનિયમ, ૨૦૦૨ અંતર્ગત બનાવેલ નિયમો ના અમલ માટે જૈવવિવિધતા વ્યવસ્થાપન સમિતિ (બી.એમ.સી.) તરીકે નોંધણી કરી ગુજરાત બાયોડાયવર્સીટી બોર્ડ, ગાંધીનગર દ્વારા

is hereby Registered by The Gujarat Biodiversity Board, Gandhinagar as a Biodiversity Management Committee (BMC) and authorised to implement Biological Diversity Act, 2002 and Rules there under.

from Date/ દિનાંક ૨૪/૦૪/૨૦૨૫ to થી ૨૩/૦૪/૨૦૩૦ સુધી અધિકૃત કરવામાં આવે છે.

Place : Gandhinagar
Date : 30/10/2025

Sr. No. : 0756

(B. K. SINHA)
Member Secretary
Gujarat Biodiversity Board,
Gandhinagar

GUJARAT BIODIVERSITY BOARD

Aranya Bhavan, "B" Wing, 5th Floor, Sector-10-A, Gandhinagar.

CERTIFICATE

Registration No. /નોંધણી ક્રમાંક : જીબીબી/જીએમસી/૨૫૧૭/બીઆરસી/ જંબુસર/ છીદ્રા/૨૦૨૫-૨૬

આથી પ્રમાણિત કરવામાં આવે છે કે જૈવ વિવિધતા વ્યવસ્થાપન સમિતિ (બી.એમ.સી.)

This is to Certify that Biodiversity Management Committee (Bmc)

ગ્રામ પંચાયત / નગરપાલીકા / મહાનગરપાલીકા છીદ્રા તાલુકા, જંબુસર જિલ્લો ભરૂચ

Gram Panchayat / Municipality / Municipal Corporation Chhidra Taluka, Jambusar District Bharuch

ને જૈવિક વિવિધતા અધિનિયમ, ૨૦૦૨ અંતર્ગત બનાવેલ નિયમો ના અમલ માટે જૈવવિવિધતા વ્યવસ્થાપન સમિતિ (બી.એમ.સી.) તરીકે નોંધણી કરી ગુજરાત બાયોડાયવર્સીટી બોર્ડ, ગાંધીનગર દ્વારા

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from Date/ દિનાંક ૨૭/૦૮/૨૦૨૫ to થી ૨૬/૦૮/૨૦૩૦ સુધી અધિકૃત કરવામાં આવે છે.

Place : Gandhinagar
Date : 30/10/2025

Sr. No. : 0755

(B. K. SINHA)
Member Secretary
Gujarat Biodiversity Board,
Gandhinagar

GUJARAT BIODIVERSITY BOARD

Aranya Bhavan, "B" Wing, 5th Floor, Sector-10-A, Gandhinagar.

CERTIFICATE

Registration No. /નોંધણી ક્રમાંક : જીજીબી/બીએમસી/૨૫૧૭/બીઆરસી/જંબુસર/છીદ્રા/૨૦૨૫-૨૬

આથી પ્રમાણિત કરવામાં આવે છે કે જૈવ વિવિધતા વ્યવસ્થાપન સમિતિ (બી.એમ.સી.)

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ગ્રામ પંચાયત / નગરપાલીકા / મહાનગરપાલીકા છીદ્રા તાલુકા, જંબુસર જિલ્લો ભરૂચ

Gram Panchayat / Municipality / Municipal Corporation Chhidra Taluka, Jambusar District Bharuch

ને જૈવિક વિવિધતા અધિનિયમ, ૨૦૦૨ અંતર્ગત બનાવેલ નિયમો ના અમલ માટે જૈવવિવિધતા વ્યવસ્થાપન સમિતિ (બી.એમ.સી.) તરીકે નોંધણી કરી ગુજરાત બાયોડાયવર્સીટી બોર્ડ, ગાંધીનગર દ્વારા

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from Date/ દિનાંક 29/05/2024 to થી 25/05/[illegible] સુધી અધિકૃત કરવામાં આવે છે.

Place : Gandhinagar
Date : 30/20/2024

Sr. No. : 0755

Gujarat Biodiversity Board Gandhinagar

(B. K. SINHA)
Member Secretary
Gujarat Biodiversity Board,
Gandhinagar