

# **Mangroves for the Future - Small Grant Facility**

## **Final Report**

### **1. Project Details**

Project Title:	Developing a practicable model through corporate-community participation for successful Mangrove restoration activities in Kachchh, Gujarat	
Project Number:	77663-OIA	
Project Duration:	Start date	10 <sup>th</sup> December, 2013
	Original End date	10 <sup>th</sup> June 2015
	Final End date	10 <sup>th</sup> August 2015
Project Budget:	MFF Contribution INR 11,38,500/-	Counterpart funds INR 77000/-
Name of Organization:	Gujarat Institute of Desert Ecology, Bhuj-Kachchh, Gujarat	
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Date of Report Submission:	25.08.2015	
Reporting period (check which apply):	Final Report- December 2013- August 2015	

### **2 Executive Summary (max 2 pages)**

Kachchh coast of Gujarat harbors the largest mangrove formations of the west coast of India with a total extent of 789 sq.km constituting 71.5% of Gujarat's 1103 sq.km of mangroves. Mangroves are among the most carbon-rich forests known for its high sequestration ability besides other ecological and economic services. Kachchh mangroves offer the opportunity to achieve dual goals of poverty reduction and protection of marine carbon sinks if the ongoing plantation efforts by coastal industries are properly linked with the dependent coastal communities. Other factors such as intensive industrial development in coastal realm of Kachchh, recurring

drought and very high dependence of coastal communities on mangrove resources further strengthens the need to have a strong linkage between coastal industries and the communities which will foster a long term conservation of mangroves. Lack of technically skilled work force available for plantation activities by industries, least involvement of local community and proper guidance from mangrove field biologist are some of the lacunae that afflicts the present plantation efforts. In consideration of these facts, this project mainly aims to empower a fully mangrove dependent community and a coastal industry to have a linkage for long lasting conservation of mangroves in which the industry will fund the plantation and the community will create the plantation and take care of it in a sustainable and long term manner. In this process a skilled local work force through a village level community organisation (CBO) is created and its capacity is built on different aspects of mangrove plantation and post plantation care; awareness is generated among the community including industries on technical aspects of mangrove plantation, post plantation care, climate change and carbon economics potential of mangroves.

To begin with a coastal industry, namely Coastal Gujarat Power Ltd., (CGPL-a Unit of TATA Power) was identified as the partnering industry due to their willingness to fund mangrove plantation in an area of 30 hectare (which was later reduced to 10 hectare due to lack of funds) without any ministerial mandate and to work with a coastal community in the village Modhva at Mandvi Taluka of Kachchh district. The identified community at Modhva village is solely mangrove dependant by way of fisheries as the majority of the villagers are fishers fishing in open waters and creek systems of Mandvi. In addition, they are amenable to awareness and training programs and readily accepted project goals and objectives. It was decided to strengthen the already existing CBO, Modhva Coastal Area Committee (*Modhva Dhariya Vikas Samiti*) instead of creating a new structure since the existing samiti's objectives and activities were akin to the project objectives. A core member group was created within the existing CBO who were extensively trained in different aspects of project objectives.

A three party agreement was signed between industry (CGPL), implementing

agency (GUIDE) and the village community. This agreement reiterates the willingness of the industry to fund plantation through the implementing agency, to work closely with the community for the purpose of implementing mangrove plantation in an area of 10 hectare, and participate in all community level awareness programs. The community's responsibility includes executing plantation through the existing CBO with the participation of villagers. The community also expressed its willingness to take care of post-plantation maintenance of the created resources. The implementing agency, for its part co-ordinated all these activities and acted as a linkage between the industry and community and constantly worked for strengthening the linkage.

A technically suitable coastal stretch very close to the outfall channel of the stakeholder industry has been identified and selected for the purpose of carrying out plantation. Since this coastal stretch belongs to the revenue department, application with all the required cadastral maps and other details of the coastal stretch was submitted to the district collector for permission to carry out plantation. This process of obtaining permission has proved to be a major hurdle and took unduly long time and permission even after clearing several administrative levels was not forthcoming till the end of the project; however, positive response was obtained from the district administrative office. Due to this official delay, it was decided to request the Tragadi village panchayat (the local village body under whose jurisdiction the land falls) to pass a resolution permitting plantation activities. Obliging this request Tragadi village panchayat passed a resolution permitting mangrove plantation activities in their village coastal stretch. Based on this Panchayat resolution plantation through Tragadi and Modhva villagers has been implemented in an area of 10 hectare with the financial support of industry and IUCN funds.

A series of 15 different awareness programs have been conducted at Modhva and nearby Tragadi village to the villagers on different aspects of mangroves. This includes mangrove characteristics, Gujarat mangroves and their extent, composition and ecological services including fishery resource, basics of climate change and

carbon sequestration ability of mangroves, role of mangroves in controlling climate change and carbon trading and the various ecological and economic losses incurred due to degradation/destruction of mangroves. These awareness programs were conducted in the local language using well prepared power point presentations (PPT). Similarly, many readily available documentaries prepared by Gujarat Ecology Commission (GEC), IUCN and other agencies were screened on different aspects of mangroves like its ecology, economic services and its role in supporting fishery resources. Fairly good amount of awareness on significance of mangrove conservation was imparted through all these awareness programs.

Besides indoor awareness programs, hands on training in the field were imparted to Modhva villagers on the technique of mangrove plantation including site selection for nursery and plantation, seed collection and treatment, methods of plantation and post plantation care, etc. These field demonstrations to a great extent assisted them to understand mangrove restoration techniques very thoroughly. It was ensured that these field demonstrations impart adequate knowledge and expertise to execute mangrove plantation on their own.

Four major workshops were conducted in Bhuj, Mandvi and Jamnagar for coastal industries and village based CBOs during the project tenure. Representatives mostly from environment department of sixteen mega coastal industries who implemented or about to implement mangrove plantation and CBOs who have involved in coastal resource management activities have participated in these workshops. The major subject of discussion in all these workshops were industries' role in long term mangrove conservation in Gulf of Kachchh, Climate Change, REDD+, carbon trading and mangroves and carbon sequestration and mangroves. Academicians and mangrove ecologists who have carried out carbon sequestration studies in mangroves have been invited to deliver lectures in these workshops. Each workshop had a group discussion session in which the coastal industries shared their experience on wider subject areas including their experience in implementing mangrove plantation. Case studies of estimating mangrove carbon stock, methods for studying carbon sequestration in mangroves and salient features of carbon

trading was specially imparted to the participating industries in these workshops. Many industry representatives evinced keen interest to learn these techniques in order to carry out carbon studies in their created mangrove plantation. In one of the workshops broader guidelines for coastal industries on their responsibility towards mangrove conservation was distributed and discussed widely.

A mangrove manual entitled, “Mangrove Manual for Gulf of Kachchh” has been prepared and ready for publication. It is planned to translate these manual in Gujarati language for wider reach. This manual could be useful to a wider section of people engaged in mangrove plantation.

## **2. Background of the Project and Project Rationale**

Not more than one page: Summarize the context and the problem in your project area, and why the project was necessary.

Due to severe industrial expansion in coastal belt of Kachchh many mangrove patches are severely disturbed. Large scale mangrove plantation is continuously being carried out by state forest department, coastal industries and NGOs under different schemes. This plantation effort often fails to produce results commensurate with the monetary and labour inputs. Long term conservation and management need serious scientific, industrial and community involvement for conserving mangroves of Kachchh. Similarly, efforts to protect blue carbon stocks through Payment of Environmental Services (PES) and REDD+ initiatives are new and relatively untried in Kachchh. Lack of technically sound work force available for plantation, post plantation care, lack of awareness regarding market value and potential of carbon credits along with proper guidance from mangrove field biologist and unilateral plantation activities by industries without involving the nearby community are few potential reasons that need to be addressed to ensure long term conservation of mangroves in Kachchh. In this background, it was felt necessary that mangrove dependent village community, as a major stakeholders of mangrove habitat are to be trained and empowered to create and manage mangroves sustainably. It is equally important that industries who

undertake extensive mangrove plantation should involve the local communities for better post plantation care and long term conservation. This is possible only through a viable and functional CBO at village level with linkage with coastal industry. Likewise, awareness generation among all stakeholders to evaluate the potential for mangrove carbon revenue and its market potential by enhancing mangrove cover is also to be inculcated which will be an added impetus for conservation. Industries as one of the major mangrove planters in Kachchh should be educated to hand over mangrove plantation to trained villagers and allocate funds for the same. Hence, it is imperative that local community is to be trained in plantation and carbon trading and credits and they should be empowered to take up plantation with the financial support of industries and ensure their post plantation care and maintenance.

The rationale of the project is to ensure technically and scientifically trained village level organization (CBO) available for mangrove restoration, industries willing to carry out plantation involving this trained local community, educating and training all stakeholders in carbon trading, stocking and thereby ensuring long term conservation of mangroves.

### **3. Impacts of the project:**

Describe the impacts brought about by the project. *\*\*Describe the positive and also negative impacts the project and activities have created.\*\**

#### ***Positive Impact***

1. Though many of the coastal industries of Gulf of Kachchh are located among or in close vicinity of mangroves, awareness among corporate managers on the ecological significance of mangroves is poor. Through series of five workshops on different aspects of mangrove ecology corporate's awareness increased manifold on different ecological and economic services of mangroves along with carbon credit, carbon trading and how mangrove plantation contributes to REDD+ (Annexure 1-5). Coastal industries of Gulf of Kachchh now appreciate the significance of conserving

mangroves. These workshops have given a good opportunity to appreciate the mindset of coastal industries with regard to mangrove plantation.

2. Majority of the industries are reluctant to involve nearby stakeholder communities in their mangrove plantation due to various administrative, social and managerial reasons. As a case in point, the partnering industry in this project (CGPL) initially opined that CBO may not be adequately accountable for the responsibility entrusted which may ultimately fail to yield the desired result. Continued engagement with the coastal industry and further motivation in subsequent workshops brought about a perceptible change in the industry mindset who finally consented to handover mangrove plantation to trained and organised village communities. The stakeholder industry signed an MoU to this effect (Annexure- 6).
3. In all the conducted workshops a constructive dialogue on creation of a common platform for coastal industries of Gulf of Kachchh was mooted and seriously discussed. This association will solely work for long term mangrove conservation in Gulf of Kachchh in association with communities. Creation of a common fund and charting out its objectives and aims were also discussed in detail. This lead is to be followed further (Annexure- 1b, 2b, 3b, 4b, 5b).
4. Two village communities, Modhva and Tragadi are now well trained in different aspects of mangrove plantation such as mangrove seed collection, treatment, site selection for nursery and plantation and post plantation care. This will enable them to eke out a livelihood as they are fully equipped to take up mangrove plantation for any coastal industries of Gulf of Kachchh. In short, two well trained work forces who can take up and manage mangrove plantation on long term basis is in place (Annexure-7, 8, 9).
5. One major achievement was activation of the defunct *Dharia Vikas Samiti* (Coastal Area Committee) in Modhva village in order to manage all project related activities and to execute mangrove plantation (Annexure 10). Office bearers of this committee were trained on different functions of the committee including fund management. Regular functioning of the committee with good participation of village women

enabled to keep the enthusiasm of villagers alive towards mangrove plantation/conservation activities.

6. Mangrove plantation to the extent of ten (10 ha) is created by the village community with the financial support of coastal industry (Coastal Gujarat Power Ltd- TATA Power) (Annexure 11 and 12).
7. Since the inception of the project during December 2013, fifteen awareness programs have been conducted for Modhva and nearby Tragadi village communities (Annexure-7). These awareness programs significantly contributed to inculcate better knowledge on different ecological and economic significance of mangroves. Being a fishing community, the target villagers have an implicit knowledge about mangroves and its benefits to fisheries and coastal protection. These awareness programs further refined their understanding of mangroves and infused interest to take part in the project activities with more commitment and involvement. Basic understanding of mangroves' role as carbon sink and the potentials of carbon trading is further created among target villagers.
8. As a part of the project activity, attempts were made to obtain permission to carry out plantation in a revenue land falling within the boundary of Tragadi village. The implementing agency (GUIDE) in the process of obtaining permission learnt the government formalities to acquire land from revenue department and various bottlenecks and problems involved in this activity (Annexures-13, 14, 15, 16,17,18). This exposure to different government formalities to procure land will be quite useful to the implementing agency in its future activities.
9. While executing various plantation activities it was learnt that there is no manuals/handbooks for mangrove plantation/restoration and rehabilitation for Gujarat and specifically for Gulf of Kachchh. This prompted the project in Charge to prepare a manual for mangrove plantation specifically for Gulf of Kachchh region. A draft copy of the manual is ready by the time the project is completed (Annexure-19)



### ***Negative Impact***

The implementing agency (GUIDE) played a facilitating role in establishing the link between coastal communities and industries in mangrove plantation and in subsequent activities. This was projected in all the workshops conducted for industries. Many industries now want to establish the linkage with the local community only through a facilitating agency and not on their own.

#### **4. Activities completed:**

Outline the activities completed that produced the impacts in Section 4. Also, were there any changes in the planned activities and the actual activities? If yes, please explain. Was it necessary to undertake any activities that were not planned?

Explain if there were any major delays and the reasons for such delays.

#### ***Activity 1- Mobilization of Coastal Industries of Gulf of Kachchh***

Five workshops for industries, NGOs, CBOs and forest officials under this project have been conducted at Bhuj, Jamnagar and Mandvi since inception to completion of the project (Annexure- 1 to 5). Major coastal industries who have carried out or about to carry out mangrove plantation participated in these workshops. These workshops raised the overall awareness on mangrove conservation among coastal industries of Gulf of Kachchh.

#### ***Activity 2- Industry's willingness to partner with Community***

Dialogues with the stakeholder industry (CGPL) enabled to change or influence the earlier mindset of industry to carry out mangrove plantation without involving the local community and the stakeholder industry (GCPL) agreed to enter into a partnership with Modhva coastal community and the facilitating organisation by signing an MoU (Annexure- 6).

#### ***Activity 3- Proposal mooted for a Common Coastal Industries' Consortium for Gulf of Kachchh Mangrove conservation***

The proposal to launch a common platform for the major coastal industries of Gulf of Kachchh was mooted in the workshops which will have a stated objective, contributed funds and well set agenda. This proposal was discussed with different

industry representatives in the meeting and under consideration (Annexure- 1b, 2b, 3b, 4b, 5b).

***Activity 4- Communities trained in Mangrove Plantation and Nursery preparation.***

Three hands on training in the field and power point presentations at village hall were conducted to impart different aspects of mangrove plantation such as site selection, nursery preparation, seed collection, transplantation and post plantation care (Annexure- 7). With the assistance of power point slides villagers were taught these techniques. Besides, prepared documentaries supplied by Gujarat Ecology Commission (GEC) were screened which demonstrated mangrove plantation as a whole.

***Activity 5- Activation of CBO at Modhva***

At the stakeholder village, Modhva already existing but dysfunctional CBO Modhva Dharia Vikas Samiti (Modhva Coastal Area Committee) was activated for executing different activities of the project. This CBO created already by GEC was least functional (Annexure-10). The samiti's activities were further vitalized through this project as the agreement was signed with this samiti.

***Activity 6- Mangrove Plantation in Ten hectare completed***

Mangrove plantation in the designated coastal stretch of Tragadi was completed in 10 ha (Annexures- 11,12). This plantation was jointly executed by the villagers of Tragadi and Modhva. It was decided to involve the nearby Tragadi villagers also since the designated site falls within their coastal belt. In this activity only few villagers of Modhva were involved.

***Activity 7- Awareness Program conducted for Modhva and Tragadi villagers***

Fifteen awareness programs have been conducted at Modhva and nearby Tragadi villages to impart awareness among villagers on ecological and economical services of mangroves (Annexure-7). These programs were always conducted through power point presentation (ppt) through local gujarati language. Villagers were encouraged

to discuss and come out with questions during the presentation. In addition, documentaries supplied by other agencies (GEC, IUCN-MFF) were also screened with explanation in gujarati language.

***Activity- 8-Obtaining Land Permission from Revenue Authorities***

The implementing agency (GUIDE) gained good exposure to different government rules and norms for carrying out plantation in common land. Though this activity turned out to be very protractive and time consuming the implementing agency gained good exposure to different government rules and regulations for plantation in a common property (Annexure-13, 14,15,16,17,18).

***Activity-9- Preparation of Mangrove Conservation Manual***

On realising that there is no manual for mangrove plantation/conservation specifically for Gujarat or Gulf of Kachchh, the implementing agency (GUIDE) prepared a manual which is to be translated into gujarati. This manual could be a useful tool to different agencies taking up mangrove plantation (Annexure-19).

## 5. Achievement of Objective and Results

Intervention Logic	Objectively Verifiable Indicators (OVIs)	Source of Verification (SoV)	Progress Towards Achieving Objective and Results
<b>Goal</b>			
<b>Increased involvement of coastal Communities in coastal Resource management and its conservation</b>			
<b>Objective</b>			
<b>1. The key stakeholders of mangrove habitat in Kachchh are empowered in sustainable mangrove management.</b>	Mangrove specific CBOs in Modhva village in Mundra Taluka of Kachchh, created and registered/identified	Certificate of registration obtained (Annexure-10)	Stakeholders are committed to partake in mangrove management and conservation
<b>Result 1.1</b> Modhva village at Mandvi taluka of Kachchh identified as the stakeholder village. The already registered CBO of the village, Coastal Area Committee (Dhariya Vikas Samiti) identified as the partner to implement the project activities	Agreement with the office bearers of the village samiti to work for IUCN-MFF project	Registration document of the village samiti (Annexure-10)  Resolution of the samiti to participate in the IUCN-MFF project (Annexure-6)	One totally mangrove dependant coastal community identified and motivated to work for the long term conservation of mangroves in their coastal stretch.  Agreement reached with existing samiti to work for mangrove conservation and linkage with the nearby industry.
<b>Result 1.2</b> Coastal Gujarat Power Ltd (CGPL), a unit of TATA power identified as a industry stakeholder and	The industry has consented to be a partner in the project and work with the facilitating organisation (GUIDE) and the identified community Modhva and the village	Three party agreement document signed between industry, GUIDE and Modhva Coastal Area samiti (Annexure-6,	One coastal industry is ready to fund mangrove plantation and the community is willing execute the plantation after undergoing necessary training and awareness in mangrove plantation.

partner in the project who will fund 10 ha of mangrove plantation	samiti (Modhva Coastal Area Committee)	Annexure-20)	Through this result two coastal communities, industry and a CBO is ready to involve in mangrove conservation activities
<b>Result 1.3</b> Core members to execute mangrove plantation identified in the village samiti	Village samiti has endorsed the list of core members who will execute mangrove plantation	List of core members of the samiti and samiti endorsement of the core members (Annexure-21)	A well constituted village samiti is in place and ready to take up mangrove plantation and their post plantation monitoring
<b>Result 1.4</b> Technically suitable land identified in the coastal stretch of Tragadi village near Modhva and efforts to obtain permission from the Revenue and village panchayat initiated	Application to district collectorate and other allied documents to procure permission submitted and the collectorate's response to the request obtained  Resolution passed in the village panchayat permitting mangrove plantation in the coastal stretch falling within village boundary	Letter to collector, Letter received from the district administration, district forest office and other government offices.  Resolution passed by the Tragadi village samiti sanctioning permission to carry out mangrove plantation in the coastal stretch of Tragadi village (Annexure-13, 14, 15, 16,17,18, 21)	Permission obtained from the village panchayat through a resolution to carry out mangrove plantation in coastal stretch of Tragadi village.  One village community and one industry now fully committed to conserve mangroves in their vicinity
<b>Result 1.5</b> Training imparted to village community on mangrove plantation, nursery development, site selection for plantation and in other details of plantation	Villagers are fully trained in the techniques of mangrove plantation, post-plantation care and overall conservation	Field Photographs of field training (Annexure 8,9)  photographs of awareness programs conducted (Annexure 7)  women members imparted special training in mangrove plantation (Annexure 7)	Villagers are now fully equipped to take up mangrove plantation on their own and post plantation care and they are prepared to implement mangrove plantation for any coastal industries in Kachchh

<b>Results 1.6</b> Mangrove plantation in an area of 10 ha executed by the villagers with the supervision and knowledge of the stakeholder industry and the implementing agency	Ten hectare of mangrove plantation completed at the designated coastal stretch by the villagers of Modhva and Tragadi with the financial support of industry and technical support of implementing agency (GUIDE)	Photographs of plantation activities, endorsement letter from the funding industry, documents of labor payment and letter from the village panchayat indicating mangrove plantation has been permitted (Annexure 12, 20, 22)	A viable mangrove plantation of 10 ha developed by the trained villagers on behalf of village samiti with the financial support of the coastal industry (CGPL) and facilitated by the implementing agency –GUIDE.  One dependant community is empowered to own and maintain a patch of mangroves
<b>Objective 2. Post plantation maintenance and resource utilization taken care of by villagers</b>			
<b>Result 2.1</b> Tragadi villagers who carried out mangrove plantation has agreed to take care of mangrove plantation in consultation with the finding industry- Coastal Gujarat Power Ltd., (CGPL)	Agreement yet to be reached between Tragadi villagers who implemented plantation and coastal industry who funded the plantation activities	-----	The objective is only partially achieved as villagers and the coastal industry is to work out the mechanism for post-plantation maintenance and the funding support for this activity. In addition, plantation was undertaken in the last phase of project due to bottlenecks in procuring permission for land.  The objective is only partially met due to official time delays procuring permission for plantation
<b>Objective 3. Awareness is generated and capacity is built among coastal communities on climate change and carbon economics potential of enhanced mangrove cover</b>			

<b>Result 3.1.</b> Out of 5 workshops conducted one major workshop was on linkage of corporate and coastal community for mangrove conservation conducted on 4 <sup>th</sup> July 2014 with the participation 16 corporate houses NGOs and CBOs at Bhuj	The linkage between coastal industries and mangrove dependant coastal communities for the long term conservation and management of mangroves discussed elaborately and fairly high awareness among participating industries and CBOs generated	Copies of photographs Copies of minute sheets Copies of Participant registration with signature (Annexure-1)	Major coastal industries and coastal CBOs are now aware of the role of mangrove cover in climate change and carbon sequestration and how conserving and protecting mangroves will serve the long term goal of controlling climate change. Both the participated CBOs and industries were exposed to the knowledge of REDD+ and carbon trading.
<b>Results 3.2</b> Awareness is built through one major workshop in collaboration with the stakeholder industry conducted on Corporate-Community Partnership for Mangrove biodiversity conservation on 14 <sup>th</sup> March 2015 at the Industry at Mandvi	Awareness on mangroves among participating industry and CBOs of Kachchh increased by group discussion and lecture session in the workshop	Minutes of the Workshop Agenda of the workshop Photographs of the workshop session (Annexure 2)	A good amount of awareness generated among participating CBOs and industries on mangrove biodiversity, their role coastal ecological services and other ecological functions of mangroves
<b>Result 3.3</b> Two major workshops conducted on Climate Change and Mangroves of Kachchh and Gulf of Kachchh during 24 <sup>th</sup> April and 19 <sup>th</sup> May 2015 at Bhuj and Jamnagar for coastal industries, communities, forest officials and other NGOs in Gulf of Kachchh	Awareness generated among coastal industries, forest officials, CBOs and NGOs of Kachchh and Gulf of Kachchh through these two major workshops. The group discussion in the workshop enabled different coastal stakeholders to share their views of mangrove conservation and other issues freely.	Minutes of the Workshop Agenda of the workshop Photographs of the workshop session (Annexure-3, 5)	Coastal industries and many mangrove stakeholders are now well aware of climate change impacts on mangroves and the mechanism of carbon trading and REDD+.

## **5. Cross-cutting issues:**

How does the project address any of the 4 cross-cutting issues that are relevant to the project?

### ***Climate Change Impacts***

Coastal industries of Gulf of Kachchh are better informed about the role of mangroves in climate change and controlling its impact by way of carbon sequestration through the four workshops conducted as narrated in Column 6. Two major workshops conducted for coastal industries, CBOs and NGOs solely dealt with climate change and the role of mangroves in controlling climate change. These workshops included invited lectures by scientists on topics such as 'Mangrove Forest and Emission', 'Carbon Storage Potential of Mangroves' and 'REDD<sup>+</sup> and Mangroves' presenting basic information of this subject in a lucid and clear manner which enabled the participants to understand the scientific principles of climate change. Group discussion on various aspects of climate change, REDD+ and carbon trading further inculcated knowledge on this subject to industry and CBO participants. In general, level of awareness among participating stakeholders enhanced manifold through these two workshops.

### ***Gender Equality***

Right from the project inception, it was planned to ensure gender equality in all project activities like training the villagers for plantation activity, village meetings and awareness programs. In all the discussions with the CBO it was insisted that women office bearers of the CBO be present and take part actively. Similarly, all awareness and training programs target womenfolk of the village. Separate awareness programs were conducted for women through a women volunteer employed for this purpose. Additional responsibility was given to womenfolk of the village in mangrove plantation activities since womenfolk were found to be more productive and accountable in earlier plantation activities. Further it was ensured that 50% of the office bearers in this existing



Coastal Area Committee are women. Thirty percent of laborers who executed mangrove plantation were women.

### ***Property Rights and Resource Tenure***

In the course of the project implementation, the village CBO gained fairly good exposure and experience on common property rights while approaching government agencies for obtaining permission for revenue land. At local level, villagers' assistance was sought and utilized for gathering information on legal status of the earmarked coastal stretch for plantation. They are now aware of the procedure to obtain permission for land to carry out mangrove plantation.

## **6. Interesting stories (1-2):**

Each story should tell a story! Set the scene (what, who, where, when), describe what happened, and then say what was learned from the story and the conclusions so far.

The story should be “alive”, interesting and catchy. It should involve real people, so try to get direct quotes from people involved in the project (e.g., community X did such-and-such; Mrs Y learnt this and is now applying that; “As a result our family income has increased by Z%”, said Mrs Y).

### ***Story -1***

Gulf of Kachchh industries are known for their reluctance to work with local communities due to various social, economic and perceptual reasons. The coastal industries' impression is best exemplified by one executive of the stakeholder industry (CGPL) who is our liaison officer for the project matters. As the in charge for environmental division and the industry's liaison for IUCN-MFF project he was quite doubtful in the initial stages of the project about villagers' ability to execute different activities of the project such as plantation and conducting village level meetings. His often repeated retort was, "*I doubt whether they will do it or not*". It took quite an effort to convince him about villagers' ability and in due course of the project activities he was convinced

about the collective responsibility of the villagers. Towards the end of the project, a major shift in his perception could be discerned and he believes that working with community for a common environmental cause is possible.

Often it is the individual perception about an issue that plays a major role and determines to what extent collective implementation of a common goal can be successful.

### ***Story 2***

Procuring permission for land in the coastal belt of Tragadi has turned out to be major hurdle in implementing the plantation activity. For obtaining permission different government agencies such as Revenue department, forest department, pollution control board and Maritime board were approached. Though the whole issue was marked by official procrastination, proactive approach of one revenue officer (Deputy Collector at Mundra Taluka) is quite encouraging and interesting. Coastal Kachchh being a fast emerging industrial hub, the demand for coastal land is always high and revenue officials as in charge for common land has conflicting interests. This particular officer with a proactive attitude towards environmental issues gave a patient hearing to the project activities and evinced keen interest to know about mangroves and its environmental services. On explaining in length about different aspects of IUCN-MFF project he was quite convinced about the positive outcome of the project and paid more than adequate attention to ensure that our papers are processed in time and sent to the next level of clearance. Due to his positive attitude things moved past and approached a final level of clearance earlier.

## **7. Communications and knowledge products**

Please provide a table of publications, posters, brochures, photos, videos, etc. in the format below:

One mangrove manual entitled, "Mangrove Management Handbook for Gulf of Kachchh Mangroves" was prepared and ready to be published (Annexure-19).	The manual gives a complete detail about mangroves of Gulf of Kachchh on its structure, potential, methodology for undertaking
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Initially, it is planned to print 500 copies of this manual to be distributed to different coastal industries and other mangrove planters. Translation of this manual into Gujarati has also been initiated which will have wider usage among gross root forest staff, coastal industries and other mangrove planters.	mangrove plantation and issues and problems to be addressed while planting mangroves.
One guideline document entitled, " <i>Towards Responsible Mangrove Conservation in Gulf of Kachchh</i> " was prepared and distributed to all participating industries in all the four workshops conducted for different stakeholders. This guideline outlines aspects such as Sound Mangrove Management Principles, Economic Justification for conservation, and a Call for Coastal Industries to undertake mangrove conservation efforts.	This guideline document was distributed widely to all participating coastal industries and forest officials and Community level organisations

## 8. Major constraints and challenges

Please mention if there were any constraints and challenges in completing activities. Also mention if there were any positive or negative changes in circumstances that affected the activities or results/outcomes (example: political in/stability, natural, presence of other organizations doing similar works that you had not foreseen etc.)

Procuring permission for land from revenue authorities to carry out mangrove plantation in the identified coastal stretch has turned out to be a major constraint. The identified plantation site is within 1 km distance from the outfall channel of the partnering industry (CGPL) at the coastal stretch of Tragadi village at Mandvi taluka. It is about 2 km from the stakeholder village Modhva. Since this site is an unsurveyed revenue land appropriate land related documents were procured from the local panchayat office and a request signed by all the three parties (CGPL, GUIDE and Village CBO) was submitted to the district administration on 5<sup>th</sup> August, 2014. District revenue department in turn has to obtain No Objection Certificate from state departments such as Forests, Gujarat Pollution Control Board (GPCB) and Gujarat Maritime Board (GMB). This

lengthy procedure has dragged till the final days of the project. Since mangrove plantation in Kachchh is restricted to 4 months only (July-October) plantation could not be carried out during the rainy season of 2014 while the project is to be concluded before the rainy season of 2015. This forced the implementing agency to request extension for two more additional months to complete the plantation activities. Since August, 2014, all the government departments were regularly visited and the process was speeded up. Efforts to initiate plantation in anticipation of permission from revenue department did not materialize as the partnering funding industry (CGPL) felt it necessary to procure formal permission for land before initiation of plantation. To top it, land in coastal belt of Kachchh is always in high demand due to aggressive industrial developments (power plants, cement industries, mines, ports and special economic zones).

The very issue of feasibility of mangrove plantation in Kachchh was raised by the sustainability officer, Dr. Somnath Basu of the stakeholder industry (CGPL) citing numerous failure of mangrove plantation by forest department and other coastal industries. He wanted to carry out a thorough survey and feasibility study on the degree of success of plantation in Kachchh.

Ensuring involvement of women members of the CBO has proved difficult. Since Modhva village is solely a traditional Muslim community, womenfolk of the community is reluctant to take part in interactions unless a women member is present. This is resolved by ensuring the presence of Ms. Ankethaben, a woman social worker of GEC who is working closely with Modhva villagers as a part of another ongoing GEC project.

A draft MoU among three parties involved (industry, CBO and the implementing agency) has been prepared and submitted for the consideration of all the three parties during initial phase of the project. While the CBO readily accepted the MoU and consented to abide by it, the partnering industry insisted the project sponsoring agency (IUCN-MFF) should be a co-signatory in the MoU. Since the IUCN-MFF has its own norms and procedure to be a signatory

in such document (which is normally not the case) it took unduly long time to sign the MoU. It was finally decided that the sponsoring agency will issue a letter detailing its role in the project which could be included in the MoU as an annexure. This was agreed by the industry and the MoU was signed almost 8 months after project initiation.

It was agreed during the initial phase of the project that CGPL will fund mangrove plantation to the tune of 30 ha at the selected site which will be executed by the CBO with the active technical and advisory support of implementing agency, GUIDE. However, the extent of 30 hectare was later scaled down to 10 hectare by the partnering industry due to fund scarcity. It was desired by GUIDE that plantation funds at the rate of Rs.35,000/- per hectare (3.5 lakhs for 10 hectare) is to be transferred to the account of the CBO who will carry out the plantation. The industry insists that the funds will be transferred to only GUIDE and not to the CBO (Please refer Story 1 of Column 8). GUIDE on its part will be responsible for all financial transactions and accounting for the purpose of plantation. This overall exhibited industry's reluctance to deal with the community directly.

Timely release of funds for nursery preparation and labour charges was not readily forthcoming from the industry, CGPL who agreed to fund plantation. Nursery bed preparation was initiated by the CBO on 20.11.2014, the stakeholder industry till the end of September 2014 did not release funds for nursery preparation. Partial labour charges were paid by diverting the MFF funds available with the implementing agency (GUIDE). This delay has set in a chain reaction and the whole rainy season of 2014 was lost due to this delayed fund release by the industry and plantation activity was postponed to rainy season of 2015 forcing the implementing agency to request two more months project extension from IUCN-MFF.

When nursery preparation was ongoing, villagers of Tragadi, which is close to CGPL and in whose coastal belt the earmarked plantation site falls raised

objection with the industry stating that the passage of their village fishermen to coast was hampered by the ongoing nursery preparation. This was discussed with the Tragadi villagers and appropriate change in the nursery site was made in order to enable easy passage of Tragadi fishermen to their fishing trips.

In many project related activities, the implementing agency did not get adequate support and response from the stakeholder industry, CGPL. For instance, GUIDE's request for direct transfer of funds meant for mangrove plantation to the CBO bank account was not entertained; instead GUIDE was asked to manage the funds as an intermediary and the plantation funds will be routed through GUIDE. Similarly, representatives of stakeholder industry often were reluctant to participate in the awareness and training programs citing lack of time. Involvement of CSR department of the industry is least or absent in many of the project activities.

## **9. Lessons learnt**

Please outline the lessons learnt from this project. The lessons learnt should reflect both technical lessons and the management lessons. If you were to do this project again, what would you improve?

The community by and large is more interested in direct monetary benefits such as labor works, benefits to CBO, etc instead of long term and indirect benefits such as better mangrove conservation in their coastal belt and increased fishery resources. No community will involve in any activity wholeheartedly unless it is clearly driven home that what are all the benefits they will accrue by involving in the project. Hence, the best way to realize the project objective is to highlight both the long term and short term immediate benefits the community as a whole will achieve. Motivating the community through sustained and strong awareness and ensuring their total involvement seems to be the best way to achieve project results. In addition, creating a friendly rapport through constant interaction, instilling total confidence on the genuineness of our efforts and its benefits and creating ownership of the project are some basic prerequisite to achieve project

results. Contrarily, arousing too much of expectations and promising unrealistic and unachievable outcome of the projects (like direct monetary benefits, immediate increase in fishery yield by creating mangroves) should be avoided. Openness and transparency should be maintained with the villages at all levels of interactions.

In any mangrove plantation initiative, the first and foremost issue to be sorted out is procurement of land and permission from relevant government agency to carry out plantation in the designated coastal stretch. As a foremost requirement procurement of land is a lengthy process and consumes much of time and energy. Hence it is of utmost importance that this issue is resolved in the initial phase itself.

It is learnt through the four training workshops conducted that continued engagement with the coastal industries and motivating them further through workshops and discussions will bring about a perceptible change in the industry mindset. Coastal industries have good potential to contribute for the long term conservation of coastal resources but a facilitating agency and well set guidelines along with strong motivation is needed.

A strong and motivated CBO in place could take up mangrove related activities directly from the industries. This again need a strong commitment and will on the part of dependant community which is to be further motivated.

Industry's reluctance to deal with the coastal community directly for mangrove plantation is one negative experience faced. This tendency is exhibited by all coastal industries in Gulf of Kachchh. In the present project, Industry as such is reluctant to hand over the whole responsibility of fund management and plantation execution to the community. Industry often perceives the community as a 'beneficiary' and not as 'Partners' in this venture. Lack of trust towards each other is palpable. This perception of both industry and community needs to be altered to achieve success of their total participation in the mangrove conservation effort. On the whole, the perception and mind-set of industry and

community towards each other calls for a shift to create a viable model of Industry-Community based mangrove conservation.

**10. Policy recommendations, if any.**

Provide recommendations, if any, for policy development.

In GoK and Gujarat mangrove conservation measures such as rehabilitation and restoration are seldom used and mostly afforestation/enrichment plantation in empty mudflats or among existing mangrove formations are invariably attempted in all government, industry and NGO mediated conservation efforts. The scope for restoration activities in mangroves of GoK is plenty. Out of 960 sq.km of GoK mangroves distributed in Kachchh, Rajkot and Jamnagar districts, moderately dense mangroves are only 147 sq.km (15.3%) while sparse mangroves constitute the bulk with 813 sq.km (84.7%). Enormous scope exists to promote this vast sparse mangrove formation into dense and healthy stand by undertaking restoration activities. Coastal industries mostly undertake mangrove plantation as a mandate to meet environmental conditions imposed by the ministry. Hence, coastal industries may be directed to take up restoration of degraded and sparse mangrove patches by appropriate management activities rather than direct plantation where success rate is often very poor. Hence, in future Environmental Clearance directives issued by ministry, equal consideration could be given to restoration as well rather than pure plantation.

Coastal aquaculture in South Gujarat is a major coastal industry and often they pose major environmental hazard by releasing organic effluents into creek systems and estuaries. These aquaculture industries by planting mangroves along their outfall effluent channels can control releasing organic load to a great extent. Marine Products Export Development Authority (MPEDA) under Ministry of Commerce is the major promoting agency for coastal aquaculture along with state forest departments. These agencies could be advised to mandate mangrove plantation along the effluent channels of all coastal aquaculture industries in all maritime states which will promote mangrove cover while acting as a filter to organic effluents released by the aquafarms.