



Mangrove Planting Report Odisha

## **Background:**

Sustainable Green Initiative Foundation is a social organization focused on fighting climate- change, hunger and poverty since 2018.

Over the past 5 years, SGIF has positively impacted our environment and some of the most vulnerable communities in India by way of planting trees and creating sustainable livelihoods. SGIF is proud to have LTI Mind Tree as one of its biggest partners.

**Project Name: Planting Mangroves in Ecological Sensitive Zones in the Eastern Coasts Odisha in Kendrapara in 2023.**

## **Kendrapara:**

The Bitarkanika forest is one of the largest reserve forest and the biggest mangrove forest of Odisha. The fringes of this reserve forest is the location chosen for the project. Increasing human activity as well as climate change is making the local population vulnerable to extreme weather conditions as well as conflict with wild life. The forest is home to salt water crocodiles and their encroachment further upstream has increased drastically over the last decade. Over grazing has further reduced mangrove cover thereby hurting the fishing yield in the area.

SGIF was helped and guided by a veteran mangrove expert of the region Mr Bijaya Kabi who was recognised by the Hon. Prime Minister for his contributions to planting mangroves in the region, in the implementation of the project.

## **Plantation Activity:**

Before beginning plantation, a study is conducted to establish suitability of land, availability of permission to the planting which is typically done on community land. A mangrove management committee is formed to ensure community ownership and participation in the entire process. Land is prepared by cleaning and reviving old tidal channels to ensure irrigation is available to all saplings planted.

2023: SGIF planted 151320 mangrove saplings across 21.4 hectares in three different villages of Kendrapara district.

Names of Villages: Jagannathpur, Padmanabhpur and Dibakarpur.

## **Monitoring and Evaluation:**

The regular maintenances of the plantation sites are mainly done by the watcher recruited for the Project. The watchers are local people who have existing relationships with the communities where the plantations are done. The watchers provide feedback on any damaged fencing and other threats to the plantation so that the field team and supervisors can take appropriate action.

Day to day monitoring of the plantation sites is done by the watchers as well. They ensure plantation sites remain safe from the anthropogenic activities like releasing of the cattle & goat in the plantation sites for grazing, illegal logging of trees etc.

Project staff also carry out regular monitoring through site visits at regular intervals to each plantation sites. These visits are documented and backed by photos of the plantation sites, collecting feedback from watchers and local community to evaluate the status of each plantation site. Project staff also takes six monthly reading of survival & average height of plants.

For monitoring project staff has done random sampling, while taking photo they take photo with coordinates of that site, drone images were also collected.

Local communities are actively taking part in maintaining and monitoring the plantation sites. Through a participatory process total 7 watchers are employed to watch the plantation sites. The community participates heavily in activities like fence maintenance etc.

SGIF follows a statistically accepted way of monitoring survival. Each polygon is set up with a random plot that covers atleast 1% of the overall population. This monitoring for LTI Mind Tree has been carried out for 2022 plantation once in June 2023 and once in February 2024.

## **Impact Study**

### **Community Participation**

All of the seed collection and nursery management is carried out by community members. Other than this, all the planting as well as watching and maintaining of the plantation is carried out by local members. Without this participation it would be impossible to engage and get a buy in from the community members of where the plantation takes place.

The nursery managers are not only experts in offering advice on what the best species mix should be (to replicate a naturally occurring forest), but also great advocates to spread awareness in the community on the long term benefits of having a healthy mangrove cover around the villages that they live in.

The watchers are also local people who understand the immediate challenges of the community and are able to feedback to the project team any remedial action that needs to be taken to protect the interests of the community while protecting the plantation.

### **Income Enhancement:**

Kendrapara: SGIF has planned to distribute more than 10k fruit trees to the three communities in the planting season of 2024 to supplement income and nutrition.

### **Ecological Impact:**

A mangrove plantation takes anywhere between 4 to 7 years to stabilise. However, there are noticeable changes to the landscape that have been observed. The presence of *Nalia grass* (pioneering associate mangroves) and *Harkanch* (Associate Mangrove) have been observed in most polygons around the plantation. These grasses are critical to stabilising the soil and arresting erosion. These help not only with the survival of the new plantation but also aid in natural regeneration of other species.

Mangroves are critical to arrest the rate of sedimentation into the ocean. Mangroves aid in building a suitable habitat for crustaceans like crabs and snails. These are an excellent source of nutrition as well as fetch a handsome price in the market. Communities in some areas have already started reporting healthier vegetation along the river bank as well as an increase in the snail and crab populations.

### **Carbon Sequestration:**

While there are various ways to try and gauge the carbon sequestration attributed to mangroves, it is generally agreed that a mangrove forest more than 8 years old absorbs between 39 to 52 MT per hectare. This plantation carried out by LTI Mindtree through SGIF will take away more than 5500 MT from the environment every year.\* This sequestration caused by arrest of sediments is over and above the above quoted number.

*\*US Agency of International Development*

## Beneficiaries: 2023

People employed for planting activity

<b>Gender</b>	<b>Odisha</b>
<b>Men</b>	47
<b>Women</b>	5

Other Beneficiaries:

<b>Gender</b>	<b>Odisha</b>
<b>Men</b>	200
<b>Women</b>	50

## Survival and Plantation Health

<b>Location</b>	<b>Odisha</b>
<b>Survival</b>	94%
<b>Best Survival Species and Height</b>	<i>Bruguiera sexangular. Better than natural forest</i>

## Case Study Success Story: How a micro ecosystem is being restored in less than a year of mangrove plantation

Brahmani is one of the biggest seasonal rivers along the Bhitarkanika delta. The water is brackish and the banks used to be dense with mangrove forests less than 2 decades ago. SGIF with the help of LTIMIndtree, planted mangroves in Dibakarpur which is a tiny village (all but 21 families) along the banks of this river. Locals report that the area used to be lush with mature mangroves trees. The banks used to be loaded with various vegetation. The tides would bring in silt with salt water. This silt would be lodged on the ground due to the mangroves. The silt provided habitat to crabs, snails, and other kind of shell fish.

We spoke to Mahadev (55 years) and his friend Radha Babu (32) who say finding a good catch of crabs and fish along this river used to be common. They also narrate that finding salt water crocodiles so far up the river was not very common.



*Mahadev (left) and Radha between a healthy grass land and newly planted saplings in Dibakarpur*

When asked the reason for this observed change, they narrated two primary reasons. One, the relentless felling of mangrove trees either for firewood or other use. Two, a sizeable area along the river was cleared of mature mangrove trees to provide for open grazing pastures for the ever-increasing buffalo population in a village which is about 6 kms away. With this unmanaged grazing, the grass along certain patches has completely vanished due to soil erosion. The buffalos are therefore having to move further and further up along the river to find fodder.

LTIMindtree helped with the plantation of 1.5 lakh mangroves saplings in the Bhitarkanika delta. To implement this project, suitable areas were identified in conjunction with the local community. The plantation sites are carefully chosen after studying the local hydrology and understanding how the tidal inundation affects the area every day. The community was brought together and was made aware of the planned intervention. The community welcomed us with open arms as it understands now the loss that they have had to face due to loss of mangroves. The old fish bone canals made by nature were cleared and revived. The community agreed to give up the land for plantation and pledged to work with us to protect the young saplings. The plantation areas were fenced in so as to protect the young saplings from grazing and human damage.

The challenge that we faced was, a handful of buffalo herders have tried to destroy the fence. Our plantation sites have fenced off some of the areas that would have been available to the free roaming cattle (mostly buffalos) they own. While we had the support of the village elders and the community at large, we were able to get Mahadev and Radha to work for us as full time watchers for the plantation project.

They ensured that such conflicts are managed and resolved on the spot.

The plantation is almost 8 months old now. The soil has started appearing more stable. New grass has started coming up. The mangrove saplings are growing well as the rich nutrients brought in by the tide is trapped by the new grass and saplings. The villagers have started reporting an increase (albeit marginal) in the crab population. Crabs fetch a handsome price in the nearby market and the women have to spend less time foraging. Mature mangroves will also keep the basking crocodiles away reducing the risk of life. The biggest adversaries (the buffalo herders) have started mellowing down as they can see the potential of grasslands being reestablished making their and their buffalo's lives

easier.



**Location: Kendrapara. Crab collection along the bank of one of the canals. Some mature mangroves can be seen in the background.**



**Location: Kendrapara . Propogules being placed into nursery bags for germination**



**Location: Kendrapara .Saplings ready for plantation from nursery created to support the plantation program**