

ENVIRONMENTAL AND SOCIAL SAFEGUARDS ASSESSMENT



Hybrid Timber Housing Demonstration project in Gujarat
(INDIA)

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1.1 Introduction

The Climate-Smart Forest Economy (CSFEP) Programme is a collaborative initiative that brings together EIT Climate-KIC, the World Economic Forum and the World Resources Institute, with seed funding from the Good Energies Foundation and support from Dalberg Catalyst. The overall objective of the program is to demonstrate the full climate potential of sustainable forests and forest products and to catalyze further momentum and investment in the sector. The program aims to increase the use of climate-smart forest products, catalyzing market demand from sectors that need rapid decarbonization (such as construction), while meeting social and ecological safeguards.

The identification and support for emblematic Breakthrough Initiatives (BI) constitutes a core aspect of the CSFEP. One such BI, "Hybrid Timber Housing Demonstration in Villages in Gujarat", was considered, in partnership with Aga Khan Agency for Habitat (AKAH). The goal of this BI is "Using timber to create dignified housing and support local forest economies".

Further, Dalberg Catalyst has involved WWF-India to conduct an assessment of environmental and social risks pertaining to the sourcing of timber based raw material under this BI.

While the BI is related to construction of timber based low-cost housing, the assessment has been restricted to only the plantation activities being owned or managed by AKAH in Gujarat, India.

1.2 Scope and Methodology

The assessment is based on the existing "Environmental and Social Safeguards Alignment Tool". As no site visits were involved, the following steps have been followed in the assessment process:

- Assessment of information provided by AKAH (Challenge Owner, CO), against the tool
- Secondary research to validate the information
- Gap assessment in the existing information vis-à-vis risk assessment matrix
- Recommended safeguard

1.3 Evaluation Findings

"Environmental and Social Safeguards Alignment Tool" is comprised of 6 different steps:

- Step 1: Overview of Safeguards Alignment Process and BI Status
- Step 2: Project Overview
- Step 3: Risk Assessment
- Step 4: Risk Mitigation Plan
- Step 5: Overview of Risk Mitigation
- Step 6: Global Guiding Principles Alignment

The first two steps in the framework are for building the understanding of the project and status of plantation programme of AKAH from where the sourcing of timber will be done for building low-cost climate resilient housing in Gujarat.

The plantation sites associated with this BI, owned and managed by AKAH, are located at Mahuva, Una and Chitrawad in Gujarat, India.

The plantation sites are not directly overlapping with any high biodiversity value area, however, Gir National Park, only home to Asiatic Lions, is in the vicinity of two of the three sites, Una and Chitrawad. As per the information provided by the CO, the plantation are being operated on private, community and degraded land.

Note: More details like land ownership status, GPS coordinates, community deeds (if applicable) etc. are required to ascertain understanding of complete ecological and social implications of the plantation sites.

Step 3, 4 and 5 are the most elaborated steps as they contain 20 issue areas, classified in three categories – Ecosystem Health & Function, Society & Economy and Climate.

After the risk assessment and mitigation exercise, the final step is to align the project with global guiding principles on sustainable plantations, climate, labour and human rights etc., while also exploring the possibilities of adopting FSC, PEFC, and other certification or safeguard frameworks.

1.4 Risk Assessment

Risk assessment, step 3, has been done against “20 issue areas” defined in the tool, ranging from biodiversity and GHG emissions to governance and involvement of local community in implementing sustainable forestry practices. Below is the detailed assessment, based on the information provided by CO:

1.4.1. Biodiversity

The timber polyculture comprised of four native species – Neem Tree, Black Jamun, Teakwood and Bamboo – is likely to result in supporting biodiversity in the area. To further ascertain the nature and scale of positive impact of the selected species, ecosystem service evaluation studies related to biodiversity support, carbon capture potential, water and soil retention, soil restoration, etc. can be commissioned. In addition, particularly with regards to Bamboo, there is a need to specify and ensure the native species of bamboo is being considered for plantation.

Further to this, it would also be interesting to know the selection process of these species. As per a report published by the State Government, ‘Tree Wealth in the Non-Forest Areas of Gujarat’, 15 of the key 60 tree species found outside forest areas constitute 72.52% while remaining 45 tree species were less than 27.48%. The main ten timber tree species were Nilgiri (*Eucalyptus* sp) [19.84%], Limdo (*Azadirachta indica*) [12.65%], Deshi baval (*Acacia nilotica*) [4.87%], Teak (*Tectona grandis*) [4.16%], Arduso (*Ailanthus excelsa*) [2.59%], Khijado (*Prosopis cineraria*) [0.98%], Karanj (*Pongamia pinnata*) [0.93%], Kanji (*Holoptelea integrifolia*) [0.90%], Saru (*Casuarina equisetifolia*) [0.71%], Khair (*Acacia catechu*) [0.65%]. Apart from teak and neem (limdo) which appear in this list of preferred species, would be interesting to see the selection criteria, beyond native species indicator, behind Jamun (a fruit tree species) and bamboo. Detailing out the selection criteria of species would also be helpful in better understanding the implications of the issue areas.

Risk level: “Possible Co-benefit”

1.4.2. Endangered Species

As per the response (from CO), the information regarding endangered plant species in the vicinity is not properly known. Hence, the risk is unknown at this point.

To assess that, the CO may visit the sources from [Wildlife Institute of India \(WII\)](#) that provides a nation-wide data on rare species in India. It suggests that there are eight rare species that are found in Gujarat. Presence of these can be assessed through primary data collection, followed by any implications of growing selected species in the plantation programme.

Risk level: “Unknown” (This is likely to be a low-risk area)

1.4.3. Habitat Protection

No information has been provided here. However, this issue area may not be applicable as native species have been selected in the plantation programme, which shouldn’t pose any serious threat to the habitat integrity in the region.

Risk level: “Unknown” (or maybe Not Applicable)

1.4.4. Ecological Resilience / Climate Change Adaptation

This is a low-medium risk area, based on high likelihood and low-medium severity, as per the current information considered by the CO in assessment. Although the plantation sites are degraded land, teak plantation may contribute to the water stress challenge in the region due to its relatively high consumption of water for growth. To assess the scale, complete ecological impact assessment in terms of water footprint, effect on ground water table, unsuitability to avian-diversity, soil erosion with regards to selected plant species, should be carried out.

Risk level: "Medium" (primarily because of lack of data available)

1.4.5. Avoid land use and cover type conversion in areas of high conservation value

CO has mentioned that the plantation sites are either privately owned, community owned or degraded land and considered as waste land. In such a case, the risk of any high conservation value getting converted is low.

Risk level: "Low"

1.4.6. Ecosystem function and service provisioning

No information has been provided here. The selected species are among high value species and likely to have net positive impact. Ecosystem services valuation, that provides the quantum of direct and indirect contributions of ecosystems to human well-being and subsistence, should be carried out to ascertain the scale. Provisional services like fuel, food, fodder, timber, essential oil, resins and such other services/products can be directly assessed from the vegetation. Other elements like religious purpose, aesthetic value, cultural significance etc. can be evaluated through a secondary research and person interviews with the local communities. Services like avenue plantation, intercropping benefits, nitrogen fixation, etc. are also part of the provisional services that trees offer. Apart from this, regulatory services like decomposition, water purification, flood controlling, soil erosion prevention, air purification, temperature, reducing dust and pollution etc. are some of the indirect services that should be evaluated and used for documentation and communication purposes.

For more details on ecosystem services valuation outside the forest tree can be referred in this research publication – [Ecosystem Services of Trees Outside Forests](#).

Risk Level: "Possible Co-benefits"

1.4.7. Resource efficiency & pollution prevention

There is a need to ensure species diversity at each plantation site, considering water availability, climate vulnerability and extreme weather events, soil and nutrient quality, etc. Intensive use of fertilizers and pesticides should be avoided, instead appropriate bio-fertilizers and manure should be identified that are suitable for growth of the species while maintaining or enhancing the soil's nutrient quality. As the region faces acute drought situation in some part of the year and among the water stressed geographies, water consumption and management plan should be prepared. Focus should be on soil and water conservation through reducing soil loss from the runoffs and increasing infiltration rate to recharge groundwater table. For example, plantation of tree species, with suitable intercropping application helps in improving water permeability through the soil and strengthens the localized soil and water system. Furthermore, water structures like water

harvesting pits/trenches, regular monitoring of impact on groundwater table, water channelization within the plantation area to reduce soil erosion through runoff should be planned for efficient water use and recharging.

Risk level: "High"

1.4.8. Impacts to tenure security

The CO has identified this as a high-risk issue as the communities at the plantation sites are largely comprised of low-income groups and may prefer non-timber fast growing species over the selected species which have long gestation period. However, to fully evaluate this risk, there is a need of information on existing ownerships/rights of these sites. This will further be helpful in managing this risk through statutory requirement and compliance, communities' income security support, etc. There could be benefit-sharing/incentive mechanisms with the community that can be designed; with the government, policies can be explored and linked to the plantation programme; the Nationally Determined Contributions (NDCs) can be linked to the plantation programme. All of this analysis and establishing linkages will be helpful in better visibility of the BI and scale-up opportunities.

Furthermore, it is not essential that the land has to belong to the communities or indigenous people for related implications on tenure security. Even in cases when the land ownership is different from group of vulnerable communities or indigenous people present in the vicinity, few of the listed risk areas still need to be identified, assessed and appropriate safeguard measures need to be designed.

It appears that the cultural and demographic information about potential presence of vulnerable communities or indigenous people around plantation sites is yet to be done. It is suggested to conduct this mapping to know the implications of implementing the process of free, prior and informed (FPIC) consultation for obtaining the consent of indigenous peoples for implementation of the project.

Risk level: "High"

1.4.9. Minimize risks and accidents

Due to increased frequency of cyclones in recent times, annual monsoon floods and acute drought situation in peak summers, there is a likely threat to the plantation programme. Conducting time-series data-based climate modelling studies to understand future projections of important variables like temperature and precipitation and associated extremes like droughts and floods from climate indices would help in determining the frequency & intensity of climate impacts in the future. Based on these studies, appropriate safeguards and adaptation measures can be put in place to minimize climate risks.

For instance, presence of Neem tree is found to be low in high rainfall areas of Gujarat but the regions having rainfall from 550 mm to 900 mm are good for Neem tree. Scale of plantation of Neem is high in this Zone in the State. Thus, it is very useful to conduct climate modelling studies and understand the climatic risks.

An emergency response plan should also be designed and implemented to respond quickly and effectively to accidents and emergencies that may contaminate the environment or cause risk to people. The emergency response plan must establish the organizational structure, the human, material, and budgetary means available, and the procedures to be applied when facing accidents or emergencies in an orderly manner, mitigating the effects on the environment and people, containment and control of contaminants, and minimization of negative consequences on people and the environment

Risk level: "High"

1.4.10. Economic livelihood impacts (including poverty reduction)

The plantation programme is likely to result in livelihood and income generation, both for local communities as well as migrant labourers. To ascertain the positive impact, details on local employment, gender distribution in employment, establishment of any community institution, benefit sharing with owners/communities etc. can be gathered.

Risk level: "Possible Co-benefit"

1.4.11. Well-being (non-economic)

This is likely to be an area of positive impacts, with increase in tree cover. However, further to the information provided, more positive impacts like ecosystem services, community resilience against climate change etc. can also be assessed to measure this. Consultations/surveys with local communities/workers/labours can be done to assess any physical/mental/societal benefits of the plantation project

Risk level: "Possible Co-benefits"

1.4.12. Labor and working conditions

No information has been provided for this issue area. There is a need for improved working conditions at the site for operations and management of the plantation programme. This includes, but not restricted to, better sanitation, fuel food (to avoid forest foraging), compliance to the labour laws, facilities like crèche, etc.

Risk level: "Unknown"

1.4.13. Food security

No information has been provided for this issue area. However, the plantation programme does not appear to have any significant impact on food security, both local and regional. This could also be an area of possible co-benefits if suitable horticulture, pulses, fruits etc. can be cultivated as the potential of under canopy cropping is higher among the plantation method of selected tree species.

Risk level: "Unknown"

1.4.14. Illicit activities

No information has been provided for this issue area.

Risk level: "Unknown"

1.4.15. Equity and inclusion (including gendered impacts)

As per the information provided, there is no elaborated process or plan defined to ensure equity and inclusion in this plantation programme, however, the CO has indicated a commitment to engaging with and providing work for female labourers in managing and operating plantation sites. Further to this, there is a need to carry out inclusive community consultations, stakeholder engagement, decision making processes etc., with representation from all gender and segment in the communities.

Risk level: "Medium"

1.4.16. Community involvement / Indigenous participation/ leadership

CO aims to involve communities at various levels in the process, for example through formation of groups for larger plantation sites, with relatively higher input cost. It is further suggested to identify the indigenous communities, other vulnerable groups, while orienting their participation in decision making processes. It is also suggested to form formal community institutions for better management of the large-scale plantation sites.

If there is any implication of the plantation project or site or its operations on the indigenous communities, all steps should be taken to uphold the rights of the indigenous people pertaining land and resources in accordance with the international declarations and treaties like the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

Risk level: "Medium"

1.4.17. Cultural heritage alignment

No information has been provided here. There is a need to assess cultural alignment of the plantation programme, particularly with the selection of species, with the communities. For instance, leaves of Jamun tree is used in marriage ceremonies in some areas. Such kinds of ecosystem services and cultural connect can be assessed to cultural heritage alignment. Further, any cultural significance in and around the plantation sites should be assessed to ascertain alignment with global guiding principles.

Risk level: "Unknown"

1.4.18. Indirect impacts (other stakeholders)

The key indirect impact as per CO is replication and scale-up of the plantation programme at other sites. The major indirect impacts that could be assessed is replacement of traditional raw material, like steel, cement, for housing construction.

Risk level: "Possible Co-benefits"

1.4.19. Maximize net reduction or sequestration of GHGs

Since plantations also act as potential carbon sinks, it would be useful to ascertain the carbon stock and carbon sequestration potential over time through carbon stock assessment studies. A systematic review of existing studies that have ascertained carbon values of specific species could also prove to be helpful. In the course of the project, involvement of local communities that can contribute to upkeep and maintenance of the plantation who are incentivized through benefit sharing mechanisms could also contribute to successful completion/longevity of the project.

Neem and Teak, two of the selected species, are also part of top giant tree species category in the State and acts as huge carbon stock trees. Evaluation of the potential carbon sequestration throughout the project life-cycle in the selected species will be helpful in communicating co-benefits of the programme and also support in contributing to the sustainable scale-up effort.

For details and methodology of carbon sequestration potential assessment, refer to the research publication - [Assessment of Carbon Storage Potential and Area under Agroforestry Systems in Gujarat Plains by Co2fix Model and Remote Sensing Techniques](#).

Risk level: "Possible Co-benefits"

1.4.20. Avoid net deforestation (including reversals and leakage)

No information is provided here. However, this is likely to be not applicable as no deforestation is involved in this plantation programme. The sites are classified as waste land.

Risk level: "Low" (or maybe NA)

1.5 Policy Paradigm

In Gujarat, forest cover is relatively low but tree cover – Trees Out-side Forest (TOF) – is quite noticeable among Indian states. State’s Social Forestry Programme was initiated in 1969-70 and has evolved over the years to realize the potential of livelihood, culture and eco-system services through social forestry schemes. Particularly with focus on minimizing tenure security related risk and livelihood related co-benefits, linkages with following schemes can be explored:

- **Rehabilitation of degraded farm land:** Forest Department supports small and marginal farmers to take up plantation on their lands, especially degraded lands. During the last decade, on an average, about 9,500 ha of the farm lands are planted every year at the cost of the Government. In addition to the cost of plantation, assistance is also provided for three years as a part of subsidy.
- **Farm forestry under MGNREGA** A new scheme of raising 400 trees per hectare on farm land using MGNREGA fund has been initiated in 2011. Subsequently, this scheme has been accepted by the Government of India as a part of individual beneficiary scheme under MGNREGA. About 11,000 ha is proposed under this scheme in 2012 which may be scaled up subsequently to over 20,000 ha/year. There is a potential to seek assistance from MGNREGA for the maintenance of the plantation sites.

Below is a detailed mapping of policies that are likely to have implications for the plantation project.

Legal Instrument	Salient Features	Responsible Institution	Implication to the Project
The National Forest Policy 1988	In order to achieve national goal of tree cover and other afforestation related issues. Various other geophysical and ecosystem related issues have also been included in the Policy. The Policy provides for maintenance of environmental stability through preservation, restoration of ecological balance impacted by serious depletion of forests, preserving natural forests with vast variety of flora and fauna, check erosions/ degradations, and to minimize pressure to existing forests.	MoEF&CC, GFD	Low <i>(Overarching policy at the National level)</i>
Indian Forest Act, 1927	This law is the current forest legislation for regulating forest management throughout the country. It provides three categories of forests - Reserved Forests, Village Forests and Protected Forests. It empowers the government to impose duty on forest produce including timber and provides rules for regulating cutting of trees, collection of forest produce, etc. It provides for penalties for violations of this law.	MoEF&CC GFD	Low <i>(Umbrella law for management of country's forests)</i>

<p>Forest Conservation Act, 1980 (Amend1988)</p>	<p>It restricts and controls the conservation of forests for non-forest purposes. It requires prior approval of the central government for de- reservation of any reserved Forest or conversion of any forest for non-forest purposes. It provides for the need for any permission given for forest conversion is based on environmental impact assessment and subject to compensatory afforestation.</p>	<p>MoEF&CC GFD</p>	<p>Medium</p> <p><i>(Plantation sites are private or community owned. There is mention of degraded land by the CO. If that is involved in the plantation site then the implication is high)</i></p>
<p>Gujarat Amendments to Indian Forest Act 1927</p>	<p>The 1984 Amendments was made to exempt from issuing of transit passes for timbers for Saru, Subabul, eucalyptus, etc. in specified areas to facilitate transport of timber of this species raised by farmers vide agro forestry practices. The amendments of 1953, 1960 and 1983 covers changes about seizure confiscation and compounding of offences. The 2005 amendments exempts the need of a transit pass for Prosopis charcoal from the areas outside forests.</p>	<p>GFD</p>	<p>High</p> <p><i>(The exemption may or may not include the selected species for plantation)</i></p>
<p>Saurashtra Felling of Trees (Infliction of Punishment) Act, 1951</p>	<p>This is one of the first State laws made in Saurashtra State in 1961, which was later amalgamated into the Gujarat State when the Forest was under State List to control indiscriminate felling of trees. Under this Act 26 trees species including five reserved species are protected from felling. It controls the felling of five reserved tree species that require the permission of GFD, while the Gram Panchayat can give permission for felling the other 21 tree species. It further controls felling of trees on private land, an application giving specific information about ownership, land and trees is to be given to the collector or Gram Panchayat who may refuse or grant permission. Amendment of 1993, authorized the Sarpanch of the village in non- forest area to issue transit passes up to nearest forest check depot.</p>	<p>GFD, ULB, Panchayat Raj Institutions</p>	<p>High</p> <p><i>(The plantation sites will come under the Saurashtra region in the State and therefore, would have to comply with this law. Further, teak is one of the five reserved species under this law and need permission for cutting, firewood, transport etc.)</i></p>

<p>Wildlife (Protection) Act 1972 and Amendments</p>	<p>This Act provides for protection of wild animals, birds and plants, prohibition on hunting any wild animal specified in Schedule I, II, III and IV, prohibition on picking, uprooting, of specified plants, constitution of Sanctuaries, National Parks and Closed Areas, prohibition on trade or commerce of wild animals, in Trophies, Animal Articles derived from Certain Animals. The Act also empowers certain officials to investigate and impose penalties.</p>	<p>MoEF&CC, GFD</p>	<p>Medium</p> <p><i>(Although plantation sites are non-forest areas, their proximity to Gir National Park may build implications of this act. Understanding and checking if the locations are part of any supporting habitat for wildlife like wildlife corridor or eco-sensitive zone, events of human-wildlife conflicts)</i></p>
<p>Gujarat Minor Forest Produce Trade Nationalization Act, 1979</p>	<p>This Act is to provide for the nationalization of trade in certain minor forest produce (MFP) in Gujarat. The Act aims to eliminate exploitation of the tribal people who collect timru (<i>Diospyros melanoxylon</i>) leaves, mahua (<i>Madhuca indica</i>) gums and other MFPs by private traders. The Act imposes restriction on sale, purchase or transport of MFPs on all persons other than the Gujarat State Forest Development Corporation Ltd as the sole trading agent for MFPs</p>	<p>GFD</p>	<p>Low</p> <p><i>(as the plantation would not involve MFPs)</i></p>
<p>The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006</p>	<p>The Act, commonly known as 'Forests Right Act'. The Act seeks to recognize and bestow the forest rights and occupation in forest land among the forest dwelling Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations. Two enabling Rules namely, Scheduled Tribes and other Traditional forest dwellers (Recognition of Forest Rights.) Rules, 2008 & Scheduled Tribes and other Traditional forest dwellers (Recognition of Forest Rights), (Amended) Rules, 2012 have been formed to facilitate implementation of the provisions of the Act</p>	<p>Ministry of Tribal Affairs and Tribal Development Dept., GFD</p>	<p>Low</p> <p><i>(The sites are private or community non-forest land. If degraded patches are involved and those areas come under FRA, this will have high implications)</i></p>

<p>The Indian Forest (Amendment) Bill 2017</p>	<p>The bill will consolidate laws relating to forests, transit of forest produce and the duty to be levied on them under the Act, the definition of tree includes palms, bamboos, stumps, brush- wood, and canes and excludes bamboos felling or transportation of bamboos growing in non- forest areas will not require any permits.</p>	<p>MoEF&CC, GFD</p>	<p>High <i>(as bamboo one of the selected species)</i></p>
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1.6 Sustainably Managing Plantations through certifications and standards including FSC and PEFC

Forest Stewardship Council (FSC) is a globally recognised certification system with a million hectares of forestland certified under its forest conservation standards. FSC uses a voluntary, **market-based system** in which companies associated to timber related products, in any way, are audited against principles and criteria of FSC. The performance-based standards encompass environmental, social and economic values, and are framed to ensure that the forests are managed sustainably. FSC ensures **traceability of products** from the forests to the point of sale. Products that are manufactured from responsibly harvested forests are identified with the FSC logo, which is considered the “gold standard” of forest certification by major environmental groups.

FSC has recently launched India specific FSC forest stewardship standard which provides an opportunity for the plantations to be audited against India-specific indicators of FSC to confirm forests are being managed sustainably with social and economic values considered. With the new standard, the landowners can now access the market with growing demand for FSC timber upon getting certified. Strengthening implementation of standards and certification for sustainable supply of wood products to spur improved forest management practices on existing and new forests. This brings in various economic benefits for the farmers along with socio-environmental benefits.

While FSC is a voluntary certification standard, there exists national sustainable forest management standard developed with inputs from various stakeholders through Network of Certification and Conservation of Forests (NCCF), endorsed by Programme for Endorsement of Forest Certification (PEFC) - a Geneva based leading international forest certification organization. The globally aligned nation specific certification schemes and standards aims to enhance sustainability, market and public access to goods and services from forest, trees outside forest including non-wood forest products and the protected areas, wetlands and other conservation landscapes in the country.

1.7 Stakeholder Mapping

Agro-forestry has been receiving a consistent push in the State of Gujarat, particularly from the fact that it is among the lowest primary forest cover states in the country and establishing key mechanisms to increase tree cover outside forest areas is necessary. With such a priority, there has been institutional and policy infrastructure in place for facilitating social forestry programmes. The selected species have relatively long period of gestation, particularly with teak.

For a successful plantation, there is a need of mapping out stakeholder with a long term vision. From community support to tenure security and climate variability, it is important to understand updated technology, policies and practices to design better safeguard measures. The following points should be kept in mind while doing stakeholder mapping:

- Livelihood support to communities during gestation period
- Evaluation of quantum of possible co-benefits through the programme (*carbon sequestration, ecosystem services, well-being of people etc.*)
- Building understanding on potential high risk areas like extreme weather patterns or possible human-wildlife conflict (*livestock attack, human deaths, crop-raiding by wild animals etc.*)
- Certification, like FSC, PESC, Organic, potential for plantation sites
- Capacity building and strengthening of village institutions like EDCs, BMCs, JFMCs, FPOs, Gram Panchayats, for inclusive communities participation, particularly for degraded lands

- Engagement with Gujarat forest department (*local forest division, social forestry department*), horticulture department (*to explore possibility of high value intercropping in the long-gestation period*), district administration (*to explore links like MNREGA scheme for management of plantation sites*)

To facilitate the thinking on stakeholder mapping, below is a suggestive template for the CO team:

Stakeholder actor/Institution	Role	Link (Risk Mitigation or Maximizing co-benefits)	Engagement Strategy

1.8. Recommended Safeguards

After the assessment based on the information provided by the CO, below are the recommendations to better identify, assess and mitigate high risk issue areas while maximizing possible co-benefits:

1	<p>Although it has been mentioned that “most” of the plantation areas are wasteland, it is advisable to get complete composition (<i>location, ownership, present landuse, ecological stressors, ecosystem services</i>) to both assess severity & likelihood of risks as well as documenting credible benefit-sharing or ecosystem services that the programme would provide.</p> <ul style="list-style-type: none"> • For instance, wasteland is a very broad classification that is done by the States – in Gujarat, it even includes mining, degraded forests, land with/without scrub etc.
2	<p>Stakeholder mapping is required for leveraging expertise & resources of key institutions like Forest Department (Local division), Gujarat University, District Administration and other individual experts on biodiversity/botany/Wildlife. It will be helpful to aligning the programme, or for scaling-up later in the implementation, with local government schemes on plantation activities, building communities role in managing these plantations, enabling flow of information on mitigating any potential impact on biodiversity etc.</p>
3	<p>Communities’ involvement can be enhanced from current consultation process; it can be made more participatory like formation/strengthening of community based institutions, to implement and manage the programme.</p>
4	<p>As some of the selected species have high water requirement for growth, it is required to assess impact on ground water table, sourcing of water. Further, at the site operating level, creating water trenches around the plantation, water harvesting structure, water ponds with plantation species, should be explored</p>
5	<p>As the plantation sites are prone to floods and, sometimes, cyclones with high speed winds and torrential rainfall, robust climate modelling would be really beneficially to ensure proper and timely safeguard measures are in place for survival and growth of plantation.</p>
6	<p>Identify appropriate bio-fertilisers and pesticides that are suitable for the selected species while maintaining the soil quality.</p>
7	<p>Creating water trenches around the plantation, water harvesting structure, water ponds with plantation species, fisheries</p>
8	<p>Soil moisture conservation is very important in species with long-gestation period. Plantation of suitable under canopy species – for both leaf on and leaf off period – should be practiced so that they derive the benefits during both the seasons.</p>
9	<p>As the plantation sites are situated near a protected area, there is considerable probability of occurrence of human-wildlife conflict in form of livestock attacks, human life-loss, crop raiding by wild animals etc. It is essential to understand the existing level of human-wildlife conflict and strengthen the mitigation of such conflicts by improving the ecological integrity of the habitat and enhancing the level of local community participation.</p>
10	<p>Capacity building of communities – Training communities and farmers, often in partnership with government programs, for delivering plantation management</p>

	<p>activities can help build capacity at the grassroots level and develop youth and women within the region building inclusivity. Through adequate training and sensitization, community can be engaged in various activities effectively including sustainable harvesting, raising of quality planting stocks, controlling invasive and pest etc. Economic incentives can be provided to the individuals, communities to restore the land while building technical capacity and provision of improved market access.</p>
11	<p>Based on the information available in the risk assessment tool, it is not feasible to recommend any suitable plantation certification. The gap can be covered through suitable technical studies and strengthening the baseline information, particularly on high risk and possible co-benefits issue areas.</p>
12	<p>In Addition to already mentioned sources in the report above, below database can be referred to initiate designing of baseline studies for gathering complete information around high risk issue areas.</p> <ul style="list-style-type: none"> • http://gujenvi.nic.in/PDF/soe-forest.pdf <i>(Status of Environment Report done by Gujarat State Government, 2009-10)</i> • https://forests.gujarat.gov.in/writereaddata/images/pdf/3-Glimpses-of-forests-in-gujarat.pdf <i>(Reports on Forests/Species in Gujarat by Forest Department, 2013 - later updated in 2017)</i> • https://forests.gujarat.gov.in/writereaddata/images/pdf/7_Agro-Forestry-in-Gujarat.pdf <i>(for Agro-forestry potential, practices, areas in different types of land which are outside forests)</i> • https://forests.gujarat.gov.in/writereaddata/images/pdf/Tree-Wealth-in-The-Non-Forest-Rural-Areas-of-Gujarat-2021.pdf <i>(for data, management or schemes around outside forest areas in the State)</i> • https://forests.gujarat.gov.in/writereaddata/images/pdf/Gujarat-in-INDIA-ISFR-21-06-2022.pdf <i>(2022 - For presence of various plant species in Gujarat – details on areas near Una, Chitradvad can be found here too)</i> • https://www.giz.de/en/worldwide/16024.html <i>(This is a programme supported by GIZ for Gujarat Forestry Development Project. Aga Khan Rural Support Programme is one of the implementing partners. In case of internal capacity building of AKAH, maybe Aga Khan Rural Support Programme can be consulted and involved)</i>