



BUSINESS MODEL *FOR* AGAR-BASED AGROFORESTRY

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Registered offices:

Bonn and Eschborn

Umbrella Programme for Natural Resource Management

A2/18, Safdarjung Enclave

New Delhi 110 029 India

T: +91 11 4949 5353

F : + 91 11 4949 5391

E: info@giz.de

I: www.giz.de

Responsible

Mohamed El-Khawad

Program Director and Cluster Coordinator

Environment, Climate Change and Biodiversity

Email: mohamed.el-khawad@giz.de

Rajeev Ahal

Director, Natural Resource Management

Email: rajeev.ahal@giz.de

Technical Partner

Intellect Consortium

Content Review

Deepak Chamola, Technical Expert, GIZ

Editor

Raj Pratim Das

Design and Layout

Rouge Communications

rougecommunications@gmail.com

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CONTENTS

1. BACKGROUND	1
2. CHALLENGES IN CULTIVATION OF AGAR	2
3. PROJECT IDEA	3
3.1 Agar based agroforestry models	4
3.2 Intervention Strategies and Convergence	4
3.3 Business model with flow chart representation	5
3.4 Potential for upscaling	6
4. IMPACTS AND SUSTAINABILITY	7
5. FINANCIAL DETAILS	8
5.1 Scope of financing and subsidy	8
5.2 Cost Economics	9
5.2.1 Cost benefit for farmers	9
5.2.2 Cost benefit for FPO	11

LIST OF FIGURES

Figure 1: Diagrammatic representation of the proposed business model	6
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LIST OF TABLES

Table 1: Cost-benefits for individual farmers engaged in Agar agroforestry cultivation (1 acre landholding)	9
Table 2: Economic analysis of Agar agroforestry cultivation in one-acre landholding	10
Table 3: Working capital loan for farmers	11
Table 4: Cost-benefits for FPO engaged in aggregation and marketing of Agarwood (50 acres)	11
Table 5: Working capital loan for FPO	13
Table 6: Capital expenditure loan for FPO	13

BACKGROUND

Agar is a tropical tree belonging to Aquilaria genus of *Thymelaeaceae* family. *Aquilaria* genus has 15 species and the most common species found in the North Eastern India are *Aquilaria malaccensis* (which is also known as *Aquilaria agallocha*) and *Aquilaria khasiana*. Agar is said to be a native of South East Asia and different species of Agar are found in India, Myanmar, Indonesia, Malaysia, China, Nepal, Bhutan, Vietnam, Cambodia, Thailand, Laos, Papua New Guinea etc. Agarwood is a resin infused fragrant wood produced by 8 species of *Aquilaria* genus.

Agarwood is formed as a result of infection. A stem borer insect i.e. *Zeuzera conferta* bores the Agar tree making hollow tunnels and triggers the fungal infection, which ultimately leads to the formation of resin in Agar trees. Formation of Agarwood depends on the intensity and frequency of insect infestation, and aging of the plant. Fungal infections and formation of Oleoresin happens naturally. It is commonly believed in the Upper Assam area that the fungal infection takes place, when the plant become 5-6 years old and Agarwood is ready for commercial harvesting after 10 years of fungal infection. With the age of plant, the deposition of oleoresin intensifies and the colour changes from brown to black.

In India, Assam is the heart of multi-crore agarwood trade. There are about 50,000 farmers and workers directly engaged in the business of Agarwood and about 1.5 lakh get indirect benefits from the trade (Draft National Policy for Sustainable Utilisation of Agarwood, 2014). Although there is no official data regarding the production of agarwood oil but the policy makes a mention of 9100 distillation units in Assam.

The key products are Agarwood chips, dust and oil. Agarwood has distinct and valued fragrances. It is believed to be the most expensive wood in the world and in India, the price of good quality Agarwood oil is around Rs. 15,000 to 20,000 per tola (11.62 grams).

Different uses of Agarwood

1. Religious practices – oil, agarwood, incense
2. Aromatic industries – perfumes, cosmetics, cosmeceuticals, incense and fragrance
3. Medicines – Chinese, Tibetan and Vietnamese traditional medicines, Ayurveda and Aromatherapy (Oil used for treatment of rheumatoid arthritis, cough, asthma, bronchitis, skin diseases and foul ulcers, pectoralgia and cephalgia. It is also used as aphrodisiac and sedatives)
4. Tea – Agar leaves are used as tea as it is a natural detoxifier. It is diuretic and stabilizes blood sugar. It also improves healthy skin

CHALLENGES IN CULTIVATION OF AGAR

- 1. Illegal trade and decline in Agar trees in the wild:** Agar is a protected species under the Indian Forest Act, 1927, and is scheduled tree species under the Wildlife Protection Act, 1972 and hence its harvesting from the wild is prohibited. However, illegal trade has been thriving in Assam and consequently the Agar forests have significantly dwindled. Illegal harvesting of Agar has meant that the farmers/harvesters are being paid very low prices by the middlemen.
- 2. Problems in legal formalities related to harvest of Agar:** Although over the past few decades, people have taken up Agar cultivation on private lands, but such farmers are also facing problems in getting transit permit from the Forest Department. Lack of fulfilment of legal formalities forces farmers to engage in illegal harvest which results in low prices for them.
- 3. Lack of price regulation:** Due to the high volumes of illegal trade in Agar there is a lack of organised markets for purchasing Agar from the farmers. Most of the trade is in the grey market and consequently there is no fixed price for Agar wood. Moreover, it is reported that some middlemen promote a false propaganda that even harvest from private lands are against the law to scare the farmers in selling at low prices. The price ultimately depends upon the bargaining by farmers with the middlemen/traders and at times the farmers are paid as little as Rs. 1000 to Rs. 2000 per tree.
- 4. Problem in getting trees infected naturally:** Only the trees that have developed a fungal infection produce Agarwood. Formation of Agarwood depends on the intensity and frequency of insect infestation, and aging of the plant. However, only about 5% to 20% of the trees develop the fungal infection naturally. It must however be mentioned that artificial inoculation techniques for Agar have been developed which expedite the infection and formation of Agarwood. In India the Rainforest Research Institute (RFRI), Jorhat has also developed artificial inoculation technique, however these need to be transferred widely to Agar cultivators.
- 5. Identification of infected trees:** Since not all trees in a field are infected simultaneously and percentage of natural infection is low, therefore it is important for the farmers to identify the infected trees from non-infected ones. Many farmers are unable to determine whether the tree is infected or not, as experts say that only the trained farmers can make out infected trees from the healthy ones. Consequently, farmers often chop off healthy, non-agarwood bearing trees. It is therefore essential to build capacities of farmers in various aspects related to Agar cultivation, including the identification of Agarwood bearing trees.

PROJECT IDEA

Assam is a major hub of Agarwood cultivation and trade in India. The daily trade of Agarwood in Assam is around INR 4 to 5 crores – including the sale of raw materials to finished products¹. But plantations of Agar are being done randomly by the individual farmers in Assam with no effort to organise the growers and undertake Agar planting in a more scientific way (quality seedlings, spacing, crop combination, nutrient application, facilitating fungal infections, examining the intensity of fungal infections and formation of Agarwood etc.). There is no effort for establishing planned agroforestry models based on Agar. The farmers are left to use their wisdom to plant Agar and other crops.

Moreover, owing to lack of appropriate policies, a majority of the trade in Agarwood was not regulated resulting in poor returns for the farmers/cultivators. Recently, the Assam Cabinet has permitted harvest and processing of Agarwood grown on private lands upto 35 bighas of farmland. This initiative would greatly help in promoting Agarwood cultivation in Assam and would ultimately help in income generation for the farmers of the region. Farmers from Sivasagar, Jorhat, Golaghat and Hojai areas in particular would benefit from this decision by the Assam government. Moreover, the state government has also proposed the setting up of an International Trade Centre on Agarwood at Golaghat.

It is in the light of the above factors that the present business model for promotion of Agar cultivation has been developed. This business model seeks to promote Agar cultivation on private lands (thereby, reducing illegal harvests of Agar from the wild) and lead to increased economic gains for the farmers/cultivators as well as other people engaged in the Agar value-chain.

Project idea is to mobilise farmers and support them to engage in cultivation of Agar (preferably agroforestry models) by providing them financial and technical support. The promotion of agroforestry would ensure that the farmers would be able to get a limited amount of economic returns from their farmlands while they would be assured of substantial returns after the trees mature.

The farmer groups at the village level would be federated in the form of cluster level organisation or Farmer Producer Organisation (FPOs) which would provide technical as well as financial support to farmer groups while also ensuring competitive prices of Agarwood for the farmers.

¹ Mohammed Chowdhury, Chairman, ASEAN-INDIA business council LAO-PDR chapter as quoted in United News of India (UNI) on July 24, 2019.

3.1 Agar based agroforestry models

Although no agroforestry models alongside Agar have been formally introduced in the state but the farmers of Assam have been growing Agar in their fields as well as in their home gardens in the Upper Assam region and now Agar cultivation is spreading to other areas of the state.

In their home gardens, farmers have planted Agar along with several agriculture and horticulture crops while Agar has also been introduced in smallholders' tea gardens in Upper Assam as a shade tree.

The most common agroforestry practices with Agar include: Agar with Sugandhmantri; Agar with Patchouli and Sugandhmantri; Agar with Patchouli; Agar with Betel nut; Tea with Agar; Agar with banana and Betel nut; Agar with Sandalwood; Agar with Lemon etc.

Under the present business model (based on the discussions with farmers and other experts) Agar with Sugandhmantri (*Homalomena aromatica*) is being considered as the optimum model for the Assam region. Sugandhmantri is a shade loving plant that thrives in 40% to 60% shade and is suited to the North-East region and hence it has been considered as an intercrop. Sugandhmantri is also a low volume high value crop and hence it has the potential to generate significant revenues for the farmers. A crop cycle of 10 years is considered for Sugandhmantri with harvest starting from the third year of cultivation – therefore 16 harvests of Sugandhmantri in 20 years would be possible.

Detailed cost estimates of this agroforestry model are being discussed in the subsequent sections of this report.

3.2 Intervention Strategies and Convergence

This project is based on the surmise that a local competent NGO would take the lead in collectivisation of farmer/producers at the village level while also facilitating the setting up of an FPO. The proposed project seeks to intervene at two levels i.e. at the farmer group level and at the FPO level. The following is the nature of intervention/support envisaged under this project idea:

For support to farmers groups

The support may be provided through a local competent NGO or an established FPO for the following interventions.

- a. Farmer mobilisation and sensitisation for the adoption of Agar cultivation (preferably based suitable agroforestry models).
- b. Organisation of farmers i.e. formation of farmer Producer Groups (PGs) or other similar farmer groups.
- c. Training and extension services for farmers on package of practices (PoPs) for Agar.
- d. Facilitating loans to farmers for meeting cost of cultivation of Agar.

Agroforestry practices with Agar in Assam

1. Agar + Betel Nut (Dominant model)
2. Tea + Agar (Dominant model in Upper Assam)
3. Agar + Turmeric + Ginger
4. Agar + Pineapple + Turmeric
5. Agar + Sandalwood
6. Agar + Sandalwood + Mahogany
7. Agar + Banana + Betel Nut
8. Agar + Patchouli (emerging model)
9. Agar + Sugandhmantri (emerging model)
10. 10. Agar + Patchouli (for 3 years) + Sugandhmantri (from 4 year till harvesting of Agarwood)
11. Agar + Lemon grass
12. Agar + Lemon
13. Planting of Agar along fence (Border crop)

- e. Facilitating the supply of quality Agar seedlings to farmers.
- f. Facilitating farmers to get tree insurance.
- g. Facilitating farmers to market Agarwood at competitive prices.

A cluster approach would be followed and a minimum of 50 acres (20 ha) of area is proposed to be taken up under Agar cultivation along with inter-crops.

For support to FPOs to strengthen Agar value-chain:

- a. Establishment of office and processing unit of FPO.
- b. FPO to support farmer mobilisation and sensitisation.
- c. FPO to support training and extension for the farmers on PoPs for Agar cultivation.
- d. Facilitating supply of quality planting material to members.
- e. Provision of credit to the farmers for meeting cultivation costs – need based.
- f. Promote tree insurance, help farmers to obtain tree insurance.
- g. Procurement of agar from farmers – aggregation at sub-cluster level.
- h. Storage (also where ever possible grading) of Agarwood.
- i. Negotiate with buyers for sale of Agarwood.

The FPO would require funds, in the form of loan, for establishment of infrastructure (capital costs) and for procurement of Agarwood from the farmers (working capital) and meeting other incidental costs related to operations. However, during the initial years the FPO would not engage in processing of Agarwood as it may lack capacities for the same although this may also be taken up at a later stage.

3.3 Business model with flow chart representation

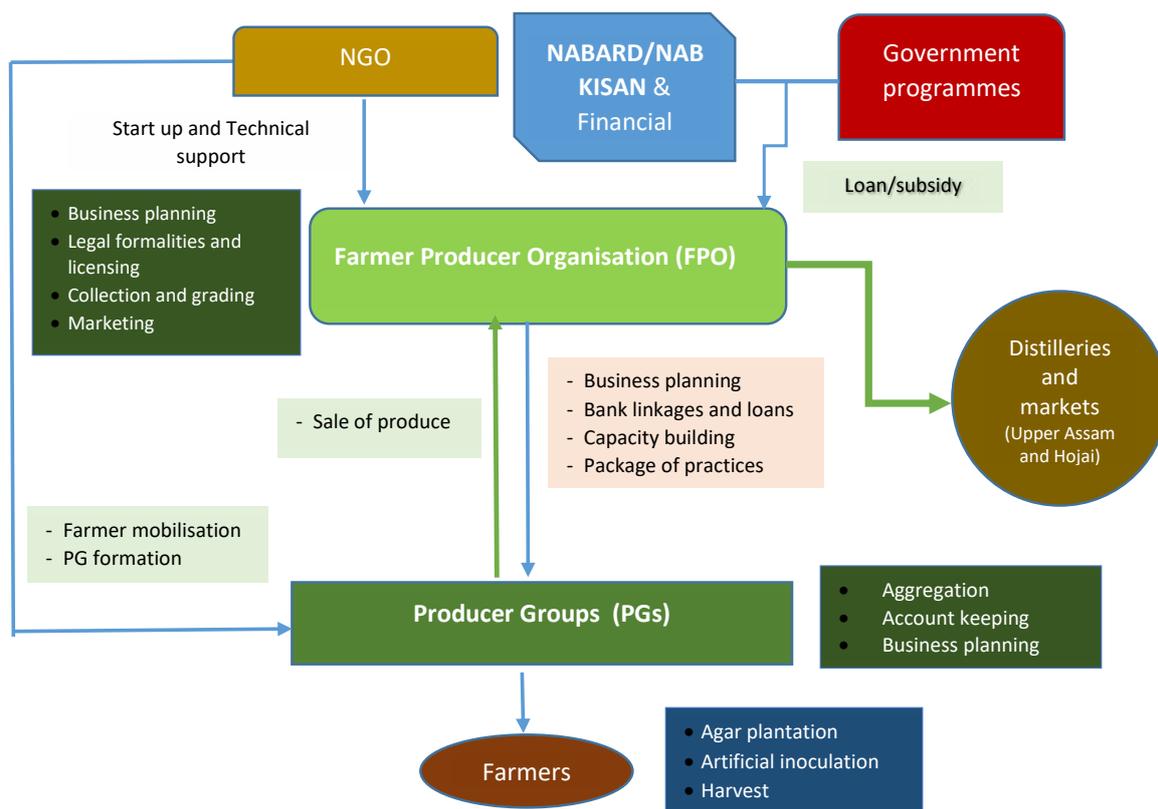
Under this model, it is proposed that an established NGO could initially take up community mobilisation and organisation of Agar farmers in the form of PGs and later federate/collectivise the PGs in the form of an FPO. Although this model has not been piloted till date, but its relevance emerges from a field study conducted in Assam that has revealed that Agarwood cultivators are exploited by middlemen and traders. It is felt that in order to boost Agar cultivation on private lands and also to provide greater economic benefits to farmers it is important to organise farmers and set up an FPO that could ensure better market prices to the farmers.

The FPO could obtain loan (along with grant/subsidy - if applicable) - from NABARD, NABKISAN or commercial banks –for establishing enabling infrastructure and establishment of systems for collection of produce from farmers. For the purpose of meeting the operational costs of FPO as well as for meeting working capital requirements for purchase of farmer produce, the FPO could also take working capital loan.

The NGO or the FPO can also channelise loans for the farmers (through banks) after keeping a fixed margin on interest rates to meet its administrative cost. The FPO is also required to build capacities of farmers on Agar cultivation, artificial inoculation of Agar trees and on identification of infected Agar trees prior to harvesting.

The following flow chart represents the role of various institutions within the business model and also depicts the flow of inputs and outputs:

Figure 1: Diagrammatic representation of the proposed business model



3.4 Potential for upscaling

Agar cultivation can prove to be a viable option for income enhancement of farmers as Agarwood has a high market value and has a high market demand as well. In light of the recent changes in the legal regulations related to the harvest and processing of Agarwood cultivated in private lands there is a significant scope for upscaling of Agar based agroforestry plantations in Assam.

Sivasagar, Jorhat, Golaghat and Hojai and key regions within Assam where there is significant scope for promotion of Agar based agroforestry models. In fact, Agar plantations have a potential to be replicated in other regions in Assam and in the north-eastern region having similar climatic conditions.

Moreover, in parts of Karnataka, Kerala, Tamil Nadu and Andhra Pradesh agroforestry plantations of Agar are being taken up on a small scale through support of private agencies and these could be upscaled.

IMPACTS AND SUSTAINABILITY

Social impacts

- a. Building social capital and social cohesion through organisation of farmers.
- b. Building capacity of individual farmers and also farmer groups.
- c. Generating additional employment for people involved in the value chain through the FPO.

Economic impacts

- a. Ensuring higher prices for Agarwood for the farmers by eliminating middlemen.
- b. Increasing productivity of Agar farms through adoption of PoPs for cultivation.
- c. Capacity building of farmers in identification of infected trees thereby reducing the harvest of non-infected trees and enhancing revenues of farmers.
- d. Cultivation of inter-crops would result in additional incomes for the farmers over the maturity period of Agar.

Environmental impacts

- a. Promotion of Agar cultivation on private lands would prevent illegal harvest of Agar from their natural habitat.
- b. Agar plantations would contribute to climate change mitigation through carbon sequestration.
- c. Increase in biodiversity - plants, birds and insects.
- d. Improved soil fertility.
- e. Inter-crops would prevent soil erosion.
- f. Preventing use of chemical fertilisers and reduction in soil, water and air pollution.

FINANCIAL DETAILS

5.1 Scope of financing and subsidy

For cultivation of Agar, farmers require significant investment for purchasing seedlings, plantation and maintenance activities. For this purpose, they may fulfill their financial requirements partly through loans and partly through subsidies from National Ayush Mission (NAM).

FPO is also expected to facilitate the farmers to obtain loans for meeting their cultivation costs. These loans would be sourced from NABKISAN or other banks.

It is envisaged that for this business model the FPO would require a loan of INR 34 lakhs for meeting capital costs and another loan as a working capital of INR 4.5 crores (12.5 of total procurement cost) for meeting the working capital requirements for the procurement of Agarwood from farmers. Since Agarwood is a high value product therefore the working capital requirement is higher.

Working capital requirement would be primarily met partly through loans from NABKISAN and partly through loans from other banks while capital costs would be met partially through loans and partially through grant assistance from NABARD.

National Ayush Mission (NAM): Under NAM, a subsidy amounting to 75% of the cultivation cost (subject to specified limits) is provided to the farmers for taking up cultivation of Agar. The facilitating agency and/or the FPO would assist the farmers in convergence and obtaining the subsidies.

National Horticulture Mission (NHM): NHM provides subsidy of upto 40% of cultivation costs for aromatic plants (cost of cultivation INR 40,000 per ha) upto 4 ha per farmer. For Sugandhamantri this subsidy could be utilised through adequate linkages by the farmers. For the North Eastern States and Tribal Sub Plan area the subsidy is 50%.

NABARD: NABARD provides financial grants of upto INR 11 lakhs per FPO for three years to meet initial expenses of each FPO. In addition to this, NABKISAN (NABARD subsidiary) also provides loan to FPOs for upto INR 1 crore for meeting working capital requirements. These loans are provided directly by NABKISAN or routed through other banks.

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA): In case unculturable wastelands, erstwhile fallow lands are proposed to be used for Agar cultivation then under 'land development works' component of MGNREGA labour cost for bunding and land levelling are provided under this scheme.

5.2 Cost Economics

The proposed business model provides estimates of cost-benefits at two levels i.e. at the level of individual farmer and at the level of the FPO for agroforestry-based model for Agar cultivation.

5.2.1 Cost-benefit for farmers

The following table provides details of the expected cost of cultivation and the expected net revenue for individual farmers engaged in Agar along with Sugandhmantri on one-acre land.

Table 1: Cost-benefits for individual farmers engaged in Agar agroforestry cultivation (1 acre landholding)

S.No	Particulars	Unit	Quantity	Unit Cost (INR)	Total Cost (INR)
A.1	Cost of Agar Plantation				
1	Land preparation – cleaning, development, pit preparation etc.	Lumpsum	1	18150	18150
2	Fencing and maintenance	Lumpsum	1	75625	75625
3	Manures, composts	Lumpsum	1	60500	60500
4	Seedlings	No.	210	20	4200
5	Seedlings treatment and other medicines	Lumpsum	1	3025	3025
6	Labour cost – planting, weeding, maintenance etc. – 5 years	Lumpsum	1	45375	45375
7	Maintenance cost till 20 years	Year	15	15125	226875
	Total (A.1)				433750
A.2	Cost for intercropping				
9	Cultivation of Sugandhmantri – including harvesting, maintenance and processing cost (for 20 years including 2 cultivation cycles)	Lumpsum	20		397600
	Total (A.2)				397600
A.3	Other costs				
10	Crop Insurance (per acre)	Per annum	20	10000	200000
11	Interest on working capital				200165
	Total (A.3)				400165
	Cost of Cultivation in 20 years (A1+A.2+A.3)				1231515
B.1	Revenues from sale over 20 years				
12	From sale of Agarwood (assuming survival of 180 plants)	No of trees	180	40000	7200000
13	Sale of Sugandhmantri dry rhizomes (16 harvests in 20 years) @ 15 quintals per harvest	Qtls	240	12000	2880000
	Revenue over 20 years – Total (B.1)				10080000
B.2	Net income in 20 years				8848485
B.3	Net annualized income per acre				442424

Assumptions

- The cost of cultivation of Agar may be sourced from NAM wherein upto 75% subsidy is being given for the cultivation of Agar.
- If required, the FPO could arrange bank loan for the farmers for meeting the cost of cultivation for one year.
- Due to the long span of cultivation/harvest inflation could not be factored in the above calculations.
- The above assumption does not factor in drip irrigation system. In case drip irrigation is factored in then the yields are expected to increase by about (10 to 20)%.
- The labour costs are included while calculating the above costs but in-case farmer engages in performing various agricultural operations then the cost of labour may be a saving for the farmer.
- Working Capital includes the cost of Agar plantation and its maintenance for 5 years (excluding labour costs), cost of cultivation of Sugandhmantri for one year as well as crop insurance for two years
- Two-cycles of Sugandhmantri (10-year rotation) are assumed with harvest beginning from the third year of cultivation onwards.
- Agarwood trees are generally harvested in a phased manner by the farmers – depending upon the scale of infection and also the maturity of the tree. Although harvest is assumed at the end of 20 years but in reality, farmers might start harvest after 15 years resulting in revenues must before the projected periods.
- Out of 210 trees planted, it is assumed that 180 trees would survive.
- It is assumed that all trees would be infected (through natural or artificial inoculation) and for this purpose the role of FPO is providing artificial inoculation facilities for farmers is envisaged.
- Interest on working capital has been included in the above costs.

Economic analysis

Under the proposed model, farmers are able to get total net returns of around INR 88 lakhs over a period of 20 years. Although the returns from Agarwood commence only after 15 years but under the present model the farmers also get annual returns (from 3rd year onwards) through sale of Sugandhmantri. The Benefit Cost ratio (over a 20-year period) for an individual farmer is calculated to be 8.19 which indicates the high profitability of this model.

Table 2: Economic analysis of Agar agroforestry cultivation in one-acre landholding

Particulars	Amount in INR	
	Year 1 to 20	Total
Capital cost	433750	
Recurring cost	797765	
Total cost	1231515	1231515
Total benefits	8848485	8848485
Net present worth of cost @15%	75246	
Net present worth of benefits @15%	615888	
Benefit Cost Ratio	8.19	

LOANS

Under this model farmers would be able to generate revenues through the sale of Sugandhmantri from third year onwards. From an economic perspective it is felt that farmers would require working capital to meet the initial cultivation and maintenance cost of Agar and also inter-crops and would be able to repay the working capital in annual instalments starting from the 3rd year onwards.

Table 3: Working capital loan for farmers

Working capital loan	INR in Lakhs									
	Y 1	Y 2	Y 3	Y 4	Y 5	Y 6	Y 7	Y 8	Y 9	Y 10
Yearly Working Capital Requirement	200000									
Repayment	0	0	50000	50000	50000	50000	50000	50000	50000	50165
Interest on net working capital Loan (Diminishing) @ 12% per annum	24000	26880	30106	27718	25044	22050	18696	14939	10732	-
Total Loan outstanding	224000	250880	230986	208704	183748	155798	124494	89433	50165	-

5.2.2 Cost-benefit for FPOs

Details of cost-benefit of FPO engaged in aggregation and marketing of Agarwood is provided under the following table:

Table 4: Cost-benefits for FPO engaged in aggregation and marketing of Agarwood (50 acres)

S.No	Particulars	Unit	Quantity	Cost (Rs.)	Amount in INR lakhs				
					Year 1	Year 2	Year 3	Year 4	Year 5
A.1	Capital Cost								
1.1	Office	Sq. ft.	200	700	1.40	0	0	0	0
1.2	Yard for collection of Agarwood	Sq. ft.	3000	400	12.00				
1.2	Office equipment (Chairs, table, computer, printer etc.)	Lumpsum	1	75000	0.75	0	0	0	0
1.3	Weighing machine (large sized), woodcutting saws and other equipment	Lumpsum	1	500000	5.00	0	0	0	0
1.4	Purchase of vehicle for transportation	Nos	1	15000	15.00	0	0	0	0
	Total capital cost				34.15	0	0	0	0
A.2	Recurring cost				0	0	0	0	0
2.1	Mobilisation of farmers, capacity building in POPs, technical guidance and artificial inoculation for Agar cultivation (per year for 5 years)	Acre	50	25000	12.50	13.13	13.78	14.47	15.19
2.4	Procurement of Agarwood from farmers	No of trees	9000	40000	3600.00	3780.00	3969.00	4167.45	4375.82

S.No	Particulars	Unit	Quantity	Cost (Rs.)	Amount in INR lakhs				
					Year 1	Year 2	Year 3	Year 4	Year 5
2.6	Transportation expenses	Lumpsum			2.50	2.63	2.76	2.89	3.04
2.7	Staff, administration, travel, coordination, marketing etc.	Month	12	100000	12.00	12.60	13.23	13.89	14.59
2.8	Interest on loan for working capital (12%)	Half yearly			54.00	45.48	35.94	25.25	13.28
2.9	Interest on loan for capital cost (12%)	Per annum			4.10	3.81	3.49	3.13	2.72
Total recurring cost					3685.10	3857.64	4038.19	4227.08	4424.64
Total cost - capital and recurring (A1+A2)					3719.25	3857.64	4038.19	4227.08	4424.64
B	Income/ Benefits								
3.1	Sale of Agarwood	Quintals	9000	50000	4500.00	4725.00	4961.25	5209.31	5469.78
Net returns					780.75	867.36	923.06	982.23	1045.14

Assumptions

In the above analysis the following assumptions have been made:

- The above analysis assumes that the FPO is promoting cultivation of Agar with about 50 to 250 farmers cultivating an aggregated area of 50 acres.
- The FPO would engage in mobilisation of farmers and engage in capacity building in POPs, technical guidance and artificial inoculation for Agar farmers.
- The storage infrastructure will be made of low-cost materials.
- Loan will be obtained for INR 4.50 crores as working capital for procurement of Agarwood from farmers. This is 12.5% of total cost of procurement per year and is based on the assumption that harvest of Agarwood would be done round the year.
- Although new Agar plantation would take 15 to 20 years to mature but this model assumes that the FPO would start procurement with existing Agar farmers while also promoting new plantations.
- A loan of INR 0.34 crores would be obtained for meeting the capital costs.
- An increment of 5% each year for price escalation in the market value of Agarwood (selling price) has been factored in each year.
- An increase of 5% each year in the cost of procurement as well as in administrative costs has been factored.
- The staff of FPO will coordinate the entire business operation while services of experts would be obtained for capacity building of farmers and for artificial inoculation.

LOANS

It is envisaged that for this business model the FPO would require a loan of INR 34.15 lakhs for capital expenditure and a loan of INR 450 lakhs for meeting the working capital requirements for procurement of Agarwood from farmers.

Although the total value of Agarwood procured from the farmers is around INR 3600 lakhs but the working capital has been calculated at 12.5% of total cost of procurement per year and is based on the assumption that procurement of Agarwood would be done round the year from the farmers. The working capital loan is expected to be paid over a period of 6 years.

Table 5: Working capital loan for FPO

Working Capital Loan	INR in Lakhs					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Yearly Working Capital Requirement	450					
Repayment		125	125	125	125	123.95
Interest on net working capital Loan (Diminishing) @ 12% per annum	54	45.48	35.94	25.25	13.28	-

The repayment of loan for capital expenditure would be initiated from second year onwards and it is expected to be repaid over a period of 10 years.

Table 6: Capital expenditure loan for FPO

Capital expenditure loan	INR in Lakhs									
	Y 1	Y 2	Y 3	Y 4	Y 5	Y 6	Y 7	Y 8	Y 9	Y 10
Capital expenditure	34.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Repayment	0.00	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	5.16
Interest on capital loan (Diminishing) @ 12% per annum	4.10	3.81	3.49	3.13	2.72	2.27	1.76	1.19	0.55	0.00
Total loan outstanding	38.25	35.56	32.54	29.17	25.39	21.16	16.42	11.11	5.16	0.00

Deutsche Gesellschaft für Internationale
Zusammenarbeit (GIZ) GmbH

A2/18 Safdarjung Enclave
New Delhi-110029 India

T: +91-11-494953535
E: nrm@giz.de
www.giz.de/India