



MID TERM EVALUATION REPORT

OF

TRIPURA BAMBOO MISSION

BY

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Abbreviations

APTDC	Andhra Pradesh Technology Development & Promotion Centre
BCDI.	Bamboo and Cane Development Institute
BHPS	Bamboo Handicrafts Producers Societies
CFCs	Common Facilities Centres
CII	Confederation of Indian Industry
DFO	Divisional Forest Officer
DRDA	District Rural Development Agency
EDP	Entrepreneurship development program
ERG	Environment Research Group
FDAs	Forest Development Agencies
FTL	Forest Trading License
IL&FS	Industrial Leasing and Financial Services
ITC	Indian Tobacco Company
INBAR	International Network for Bamboo and Rattan
IPIRTI	Indian Plywood Industries Research & Training Institute
JAICA	Japan International Cooperation Agency
JFMCs	Joint Forest Management Committees
MTR	Mid Term Review
NER	North Eastern Region
NID	National Institute of Design

NMBA	National Mission on Bamboo Application
PPP	Public Private Partnership
SHG	Self Help Group
SPV	Special Purpose Vehicle
TBM	Tripura Bamboo Mission
TC	Tissue Culture
TFD	Tripura Forest Department
TFPDC	Tripura Forest Plantation and Development Corporation
TIDC	Tripura Industrial Development Corporation
TIFAC	Technology Information, Forecasting and Assessment Council
THHDC	Tripura Handlooms and Handicrafts Corporation
TRIBAC	Tripura Bamboo and Cane Development Centre
VPC	Vegetative Propagation
VRS	Voluntary Retirement Scheme

Executive Summary

Tripura Bamboo Mission (TBM) is an initiative of the Government of Tripura to focus on enhancement of turn over from Bamboo sector (from Rs. 27.90 Crores to Rs. 75.85 Crores) and to enhance the livelihood opportunities. It is a unique initiative in that it is steered in close association with Private sector and functions through partnerships with civil society, Private sector, Designers, Market agencies within and outside the state of Tripura and various agencies of the Government of Tripura and Government of India associated with Bamboo. At the Government level, the Mission is coordinated by a state level committee under the chairmanship of the Chief Secretary, Government of Tripura and three sub committees for Plantation, Industries and Handicrafts sectors. In the field, implementation has been outsourced to a Project Implementation unit drawn from IL&FS a leading consulting firm from the Private sector. The mission seeks to accomplish its objectives through community mobilization, institution development, capacity building, skill upgradation, sustainable management of raw material and market linkages. It has been working in close collaboration with both Government and Private sectors and is in the process of establishing Special Purpose Vehicles (SPVs) as change engines.

In operation for over 15 months, by the Mid Term Review, the total outturn from this sector has reached Rs. 56.56 Crores representing nearly 100% enhancement over the base line. The overall progress made so far is quite impressive, especially seen in the backdrop of past performance in the state of similar efforts and the given the challenges of geographic location and unorganized nature of the sector. Activities have so far been focusing on consolidating and institutionalizing traditional activities (of stick making and bamboo handicrafts). Achievements centre around institution development, promoting private sector participation in capacity building (partnerships have been arranged) and market linkages. Efforts initiated in the industries sector for establishment of a Bamboo park near Agartala hold the key for breakthrough. Critical issues that need attention are in the areas of supply chain management and promotion & mentoring local entrepreneurs.

Given the magnitude of challenges involved in the areas of infrastructure, development of markets, institutions of producers, promotion of entrepreneurs, mobilization of resources, ensuring sustainable supply of raw material, ensuring organic linkages among producers, Government agencies, Civil society, Markets and Private sector; the time span of three years available is grossly inadequate. Though nearly 75% of the target of turnover

enhancement has been achieved by MTR, it is strongly felt that the Project needs an extension of atleast 2 years to ensure that the efforts made and initiatives taken stabilize and attain a level of self sustenance.

Following is a set of key recommendations:

Sticks sector

1. Widen the production base of sticks sector by involving more families in more villages in the activity.
2. Diversify stick making and rolling in separate groups.
3. Set up Common Facilities Centres (CFCs) with equipment for cross cutting Bamboos into cylinders and slivering.
4. Ensure adequate supply of raw material to these CFCs.
5. Ensure coordination of activities of CFCs and JFMCs and FDAs.
6. Promote utilizing bamboo waste for charcoal conversion and using it in rolling of sticks.
7. Business planning for each CFC

Mats sector

1. CFCs should be set up in strategic locations on the lines of CFCs for incense sticks
2. Centralise Bamboo procurement, slivering and marketing through CFCs.
3. CFCs may be set up with public finance and managed through cluster societies / SPVs / Private sector partners with a well laid out business plan.
4. CFCs should source bamboo raw material from open markets and Forest Department's sale outlets set up departmentally or through JFMCs and/or FDAs.
5. Each CFC should have a well laid out business plan giving details of its features, configuration, membership profile, status of raw material linkage and marketing tie ups, annual targets and phased programme with month wise activities.

Handicrafts sector:

1. Look at options of commercial applications of **Bamboo Handicrafts for packaging**, including domestic utilities like – table mats, venetian blinds, door and window curtains, carpets etc.,
2. Develop plan for rejuvenation of Purbasha.
3. Organise the traders as Special Purpose Vehicle (SPV) and develop market linkages
4. Develop and promote Brand for products of TBM.

Industries sector:

1. Organise a consultation meeting with the TIDC, TFPDC, the relevant Government Departments, leading industrialists of bamboo sector in NER and elsewhere in the country and develop a road map for the further development of the Bamboo sector in the state. The possibility of a PPP model may be explored.
2. Conduct entrepreneurship development programmes (EDP)
3. Promote entrepreneurial mentoring by lead industrialists for setting up industries in Tripura state.
4. Establish a Bamboo Park.
5. The Government of Tripura may consider formulating a scheme to provide various incentives specifically to investors in the bamboo sector for setting up bamboo industrial units. The assistance can be as grant support to the extent of 40% with option to dovetail other schemes of the State / Central Government. In addition tax exemptions, interest subsidies etc may also be extended for period of say 5 years.
6. To attract investments, the Government of Tripura may also think of supplying raw material at a subsidised rate for the first 5 years, as was in the case of Paper and Pulp units elsewhere in the country.
7. This type of arrangement can be planned for the first 5 years, after which, the industries should compete with the open market.

Raw material supply:

1. Undertake resource mapping to document cluster wise, utility wise and species wise requirement of Bamboo on an annual basis for the current as well as targeted levels of utilization.
2. Dovetail plantation programme with ongoing projects implemented by the Forest Department.
3. Revamp Biotechnology facility at Hatipara.
4. Study of impact of deregulation of bamboo in transit.
5. Ensure opening of formal and regular supply channels through FDAs from the areas managed by them.

Institutional structure:

1. At the end of the project period the functions of the Tripura Bamboo Mission should be transferred to the proposed Bamboo Development Corporation (BDC).
2. Sector specific SPVs will be formed by federating societies/ SHGs/ JFMs at the CFC level with provision for enabling strategic partnerships with the private sector.
3. Ensure partnerships with TPFDC, TIDC, Purbasha and other Government owned institutions.

Project Extension:

Considering the challenges involved in the implementation of the project and also taking into account the progress achieved so far, the MTR recommends an extension of two years of project duration.



1. Background:

During 2005, the Government of Tripura commissioned a study to assess the potential of Bamboo sector in the state and to develop strategies to maximise turnover and livelihoods from this sector. Considering the geographical location of Tripura and given the socio-economic and ethnic issues, abundance of Bamboo resources in the state and high level of skill among the artisans, this initiative was appropriate. This decision was timely as around that time Bamboo had started flowering. Flowering in Bamboo that happens in gregarious proportions, calls for massive measures to deal with a host of environmental and social issues associated with it. If not handled properly, Bamboo flowering can lead to catastrophic situations (as had happened when Bamboo had flowered in the late 1950s in Mizoram).

Spread over nearly 23 % of state's area, Bamboo plays a significant role in livelihoods of the people of Tripura and provides an excellent opportunity for economic advancement of the state. Considering these, the Government of Tripura requested the National Mission on Bamboo Applications (NMBA) to assess the potential and develop strategies for promotion of Bamboo sector in the state. NMBA undertook this study through STADD Consultants and IL&FS a leading firm in the area of consulting services and came out with a strategy paper highlighting the potential that exists for upscaling the activities in the sector in the state of Tripura.

Basing on recommendations of this study, the Government of Tripura embarked upon a coordinated effort on a mission mode aiming to complement efforts of various players in Bamboo sector through better coordination, improved infrastructure and facilitating industrialization for overall promotion of state's economy.

Tripura Bamboo Mission (TBM), thus set up is an initiative of the Government of Tripura to focus on enhancement of turn over from the sector coupled with promotion of livelihood opportunities associated with Bamboo. It is a unique initiative in that it is steered in close association with Private sector and functions through partnerships with civil society, Private sector, Designers, Market agencies within and outside the state of Tripura and various agencies of the Government of Tripura and Government of India associated with Bamboo. The Mission's objectives of scaling up turnover from Bamboo sector from Rs. 27.90 Crores to Rs. 75.85 Crores and to simultaneously double the livelihood opportunities to 7000 are

sought to be achieved through cluster development approach through institution building, industrial linkages, better market and credit facilities coupled with resource upgradation.

At the Government level, the Mission is coordinated by a state level committee under the chairmanship of the Chief Secretary, Government of Tripura and three sub committees for Plantation, Industries and Handicrafts sectors. The Director, Industries who functions as Mission Coordinator ensures coordination between various Government agencies and departments apart from overseeing budgetary support to the Project Implementation unit. In the field, operationalizing the strategies has been outsourced to a Project Implementation unit drawn from IL&FS a leading consulting firm from the Private sector.

TBM has been in operation for over 15 months. The present study is to evaluate the extent to which the vision and objectives of TBM have been fulfilled and to assess the direction of development and suggest suitable reorientation (if needed) to ensure that the strategies being adopted lead to the goal.

2. Study Team and duration of the study

The Mid Term Review (MTR) of Tripura Bamboo Mission was undertaken by the Andhra Pradesh Technology Development & Promotion Centre (APTDC), an autonomous organization, jointly promoted by Govt. of Andhra Pradesh, Confederation of Indian Industry (CII) and Technology Information, Forecasting and Assessment Council (TIFAC), Government of India, for the development, protection and promotion of technology. For the (MTR) of Tripura Bamboo Mission, APTDC has a three member team who were accompanied by two senior Government officials deputed by the Government of Tripura. The Study Team comprised of the following persons:

1. Mr Ramesh G Kalaghatgi, IFS, Addl., Prl. Chief Conservator of Forests, A P Forest Department
2. Mr K Srinivasa Murthy, Counsellor – Technology, APTDC
3. Mr Arnab Hazra, Community Development expert.
4. Ms Swapna Debnath, Manager, Directorate of Industries and Commerce
5. Mr Sameer Chakraborty, Asst Development Officer THHDC.

The above team visited various locations in Tripura, between 29th March and 3rd April 2009.

3. Specific tasks:

The Terms of Reference for this study indicates the following scope of work:

- 3.1 Provide a concise history of the programme from effective start date to the time of MTR
- 3.2 Assess programme performance to date, and compare achievements with the qualitative and quantitative objectives through indicators laid down in the Logframe both at the level of inputs and outputs
- 3.3 Assess the impact of the programme to date on the target communities' socio-economic condition
- 3.4 Review the constraints under which programme activities have been implemented as against the expectation of programme design, goals and objectives
- 3.5 Review the process of institution-building and coordination within and among the involved agencies, and other development efforts in the region
- 3.6 Identify deviations, if any, and the reasons and impact for such deviations found to have occurred, and assess the likely status of achievements by the presently scheduled date of project completion
- 3.7 Review physical and financial progress for the project period
- 3.8 Review effectiveness and efficiency of fund flow and disbursement to and from various agencies in order to achieve the stated objectives suggested in the Strategy Report and suggest corrective measures where necessary.
- 3.9 Document lessons learnt so far by the agencies, beneficiaries and others concerned, for the benefit of this programme implementation during the remaining period.
- 3.10 Document Case studies to indicate early impacts of the project.
- 3.11 Lay down a clear recommendations and a detailed framework for project pursuit during the balance project period.

4. Methodology:

This Mid Term Review was undertaken during March – April 2009. The review mission team comprising of the Consultants from M/s APTDC and the Government of Tripura members, visited Project sites and discussed with various stakeholders. In particular the mission met and discussed with

1. Sri Jitendra Choudhury, Hon'ble Minister for Rural Development, Industries, Commerce and Forests, Govt. of Tripura,
2. The Principal Secretary Industries, Government of Tripura,
3. The Secretary Handlooms and Handicrafts, Government of Tripura,
4. The Prl. Chief Conservator of Forests, Government of Tripura,
5. The Managing Director, Tripura Forest Development and Plantation Corporation,
6. The Chief Conservator of Forests and Project Director JAICA Forestry Project,
7. The Director Industries and Mission Coordinator, TBM, Government of Tripura,

Meetings were also held with Officers of Forest, Industries and Handicrafts Departments of Government of Tripura and focus group discussions were held with Traders, Entrepreneurs and Artisans associated with Bamboo sector in Tripura. Field visits were undertaken to clusters associated with Bamboo handicrafts, Incense sticks, Mat weaving, Bamboo plantations and markets. Information furnished by the Project Implementation Unit of the IL&FS, Departments of Handlooms, Handicrafts and Sericulture and Forest have been used in the report.

5. Status of implementation and Progress achieved so far:

The objective of the Tripura Bamboo Mission is to scale up the turnover of the local bamboo sector from Rs. 27.90 crore to 75.85 crore and double livelihood involvement in the Bamboo sector in the state to 7000. These are sought to be achieved within a 3 years project duration. Following strategies are to be adopted to achieve these objectives:

- Build sustainable bamboo based livelihoods based on a cluster based approach.
- Develop an institutional structure owned and managed by grassroots producers & their federations.
- Build their enterprises based on commercially sustainable business models.
- Provide infrastructure, skill training, design support and direct market linkages.
- Mobilize private investment in the bamboo sector in areas like bamboo composites, mechanized sticks and other industrial products.
- Promote plantation in non-forest areas, private land holdings and homestead plantations

The Project was launched on April 2007.

Following table is a brief account of achievements made so far:

Rupees in Crores

Sector	Turn over at the beginning of the Project	Targeted turn over by Project end	Achievement by MTR
Sticks	12.90	30.93	35.77
Mats	0.00	10.50	1.57
Handicrafts (including Furniture)	15.00	33.12	19.22
Industries	0.00	1.30	0.00
Total	27.90	75.85	56.56

While the overall progress looks impressive, it is to be noted that most of the achievement is in 'sticks' sector which is a traditional bamboo based activity in Tripura. Infact turnover has nearly tripled in 'sticks' sector. Efforts in the 'mats' 'handicrafts' and industries sector' have been mostly to develop the grassroots level institutions and scale up the current business activities pursued by various stakeholders with capacity building

initiatives, providing market linkages with design inputs..On the whole, progress made so far has been of the nature of consolidating and institutionalizing traditional activities (of stick making and bamboo handicrafts). Efforts initiated in mats, furniture and industries sector hold the key for breakthrough in Bamboo sector in Tripura. These are all new interventions and would need time to settle down and start showing up. However efforts are on to set up a Bamboo Park near Agartala to attract investments and Bamboo based Industries. Future scenario depends heavily on the speed with which this Industrial Park is set up and the conviction with which efforts are made to mobilize investments for setting up Industries and promote entrepreneurs are made. A few suggestions are made in this regard in the ensuing chapters.

To achieve the above targets, TBM has targeted to mobilize of Rs. 38.78 Crores of financial resources as below:

Component	Activities	Targeted budget (in Crore Rupees)
Institution Development	Project management, Cluster development, Grass roots institution building, Producer companies, Federations, State level SPV	2.70
Capacity Building	Capacity building and Skill training in various aspects of technical, commercial, entrepreneurial, design, production and plantation	12.27
Market Development	Marketing infrastructure, resource centre, brand development, marketing agents and distribution channels	8.62
Resource and Plantation Development	Promotion of homestead and community plantations, increased acreage of plantation of species species of commercial importance, procurement of quality planting material	4.57
Cluster Development and Technology Induction	Establishment of CFCs, Community Production Centres, tools and machinery, treatment and processing facilities, strengthening of SHGs/Federations	10.62
Total		38.78

As against the above target an amount of Rs. 8.16 crore has been mobilized by the MTR (Rs. 6.78 Crores during 2007-08 and Rs. 1.38 Crores during 2008-09). Further, proposals for Rs. 32.26 Crores are under submission to various Ministries in the Government of India for funding different activities (Rs. 26.36 Crores to the Ministry of Commerce for setting up Bamboo Park and Rs. 6 Crores to the Development Commissioner Handicrafts, Ministry of Textiles, Govt. of India). If these proposals are approved, the total financial resources that would be mobilized would be Rs. 40.12 Crores which is in excess of what was planned for the Project.

It is to be noted that the period leading to MTR has been a phase of initiation of the process of bringing the sector to order through institution development and capacity building. In all such interventions where community mobilization is the major theme, lots of efforts are needed in the initial stage. This is not to mean that lots of funds are needed. Efforts in community mobilization are mostly non cash inputs in the form of frequent visits, establishing rapport with the communities, identifying and encouraging local leadership, identifying and mapping skills, developing strategies to build capacities, build institutions, build linkages with market, develop confidence among producers and markets, set up a sustainable supply chain etc. Without a strong institutional foundation no community driven programme can succeed. Fund mobilization for setting up infrastructure and attracting investments should then follow. It is heartening to note that the initiative of TBM has meticulously followed this drill. Thus though nearly 80% of the fund mobilization efforts are still in the pipeline by MTR, the situation is not alarming. On the contrary, the implementing agency seems to be treading a careful line based on the past experience and performance of investments made in Bamboo sector in Tripura to initially invest time and resources in development of institutions and social capital and follow it up with development of infrastructure and market linkages. The progress made so far is in the right direction. It is now time to concentrate on developing partnerships, market linkages, attracting investments, setting up new and refurbishing existing infrastructure and closely monitor the process of implementation of change.

Detailed analysis of initiatives taken, activities grounded and progress achieved is made in the subsequent chapters.

6. Programme performance, assessment of impacts and suggestions:

Strategies developed for TBM focus on development of Bamboo sector in Tripura through developing sub sectors. The strategy document identifies 5 potential sub sectors for focused development – Sticks sector, Mats sector, Handicrafts sector, Furniture sector and Industries sector. Due to overlapping nature of many issues like design development, using woven material etc., Furniture sector is included in Handicrafts. The strategy document deals elaborately with existing potential and bottlenecks for each sub sector and dwells on strategies for their development. While assessing the performance of TBM in each sub sector with reference to the strategies elaborated as above, during the MTR, the study has looked at the institutional frame work and linkages developed both at production and at marketing level in the sub sectors and certain reorientation of strategies basing on ground realities are suggested. The study further suggests certain strategies for institution development, supply chain management, resource mobilization and monitoring arrangements which are overarching in nature covering all sub sectors. Details may be seen in the ensuing paras and chapters.

6.1 Sticks sector:

Stick based applications have been the traditional domain of Tripura's artisans. It is estimated that nearly 50% of country's sticks production is from Tripura. However owing to poor quality and transport costs, returns are not significantly high though potential exists for scaling up contribution from this sector to state's economy and livelihoods of its people. While assessing the potential of this sector, the strategy paper on TBM has identified the following bamboo stick based applications:

1. Manufacturing hub for incense sticks and finished incense products
2. Supply of readymade sticks to looms making blinds
3. Supply of finished fine stickmats for homes
4. Supply of slats for flooring units established
5. Supply of graded and quality certified intermediate material for applications

However within the period of this review, reasonably good amount of work has been done in case of incense sticks and this application holds lot of potential for upscaling given

the type of resources, skills and market linkages. This is not to mean that other applications are irrelevant. The other applications being investment heavy, technology centric and industrial in nature, are dealt in the section dealing with Bamboo industrial applications and utilities.

Conversion of Bamboo into sticks primarily for manufacture of incense sticks is a traditional and household level activity in Tripura. Though an estimated 17000 MT of sticks are made annually, most of them, after primary processing, are exported to South Indian states of Karnataka and Tamil Nadu for further processing including rolling, perfuming, packing and marketing. Further, nearly 80% of these sticks meet low end markets owing to their poor quality. Thus the artisans of Tripura and the state are deprived of the advantages of value addition and market. Identifying these, the strategies laid out for TBM envisage sector optimisation, mechanization and introducing rolling of sticks. Through various initiatives such as [shift in production of raw sticks to polished sticks](#), elimination of certain tiers of middlemen by establishing direct linkage between manufacturer and the community, promoting a body or organization for ensuring quality control and procurement through sorting, grading and price rationalizing, use of machines in stick making and production of rolled sticks (10% of the current production), returns to households involved are sought to be scaled up by 61.5%.

6.1.1. Progress made so far: TBM has targeted to convert 10% of the sticks produced from Tripura into polished and rolled sticks. In the context of this, key activities undertaken are formation of clusters, capacity building of the mobilized community, establishing market linkages and strengthening the supply chain. So far 4670 women have been trained and 11 rolling centres have been established (while 4 more are under the process of setting up). By 2008-09, 1300 MT of rolled sticks have been produced and marketed for Rs. 5.02 Crores. Market linkage has been established with Bangalore and Chennai based firms like M/s ITC Ltd. and All India Agarbatti Association, Bangalore. Local market linkages are also established in Agartala and Kailashahar. Rolling sticks is resulting in incremental revenue of Rs. 900 to Rs. 1200 per month per family which is virtually doubling their income. There is a total incremental value creation of Rs. 3.92 Crores on account of this initiative.

As regards polished sticks, intervention made includes community mobilization, capacity building and establishing market linkages. 542 members have been trained and one cooperative society of primary aggregators has been set up. 4635 MTs of polished sticks

produced have been sold for Rs. 9.27 Crores with an average household earning of Rs. 900-Rs. 1000 per month.

Polished sticks are produced from mature *Bambusa tulda* and fetch more than twice the value of the raw sticks that is the major product of Tripura. (Rs 23 / kg as compared to Rs 10 / kg). It enables the stick makers who are pre-dominantly women, an opportunity to earn almost Rs 1000 / month as a supplementary income. Polished incense stick production was introduced in Tripura under the TBM project in 2007 in the South Tripura district with the support of the DRDA South Tripura and the DFO of the Bugafa Division in the South district.

To consolidate the production of polished sticks in Bugafa Division, all small aggregators have been organized as a cooperative society. This was done primarily to build their competitive strength through the aggregation of the production and also enable them to directly access the markets outside the state and thereby maximize their returns and pass on part of the benefits to the stick makers. “Pillak Cooperative” thus formed in the Bugafa forest division has membership of 14 small traders who were procuring and selling the sticks individually in a very small scale earlier. Regular meetings and training have been conducted to this group on various aspects like cooperative concept, leadership & motivation etc., in order to infuse basic business management concepts. Policies related to procurement, pricing and selling of the products are decided by the executive body of the society depending on the market condition and in consultation with the DFO and the DRDA. Currently one third of the total trade of polished sticks in the South Tripura District is done by the Pillak cooperative. With the success of the Pillak agarbatti co-operative society model, Govt. of Tripura is contemplating to replicate the same all across the state by the Forest Department.

Another important initiative taken by TBM is facilitating direct market linkage with ITC Ltd, and members of the All India Agabatti Manufacturers association in Bangalore. During the past one and half years of implementation, TBM has undertaken a series of interventions ranging from training, capacity building, promotion of local enterprises, institution development and enabling market linkages to instrument the shift from unpolished sticks to polished sticks making and rolled incense making in the state.

6.1.2 Recommendations:

6.1.2.1 Sector optimization: Converting Bamboo into incense sticks or Agarabatti sticks is through a series of manual activities, involving harvesting Bamboo, cross cutting, slivering, stick making, drying, polishing, rolling, perfuming, packaging and marketing. In all these steps, at best, certain tools are used and machines are largely absent. Since it is a series of manual operations aided by certain tools, it provides tremendous employment opportunities. Thus introduction of machines will have to be a carefully thought strategy as it has all potential of causing unemployment and social unrest.

The strategy paper further identifies 12 tiers of players in the supply chain between the community and the consumer. However, since the margins at various stages of value chain are low, any initiative of cutting any tier or layer is certain to result in enhanced returns that can be shared by the remaining players in the activity. During the period of its implementation, the TBM has identified this opportunity and has introduced certain measures like aggregating the primary traders, quality control by means of sorting and grading and procuring only good quality material. In addition to this, promoting private entrepreneurial linkage in skill enhancement, upscaling and marketing are also initiated. Various capacity building and institution development initiatives and market linkages established, are certain to yield good results. The Pilak model introduced in Bagafa Forest Division by aggregating primary collectors or traders as a Cooperative Society and ensuring quality control and price stabilization through them is a rational and welcome intervention, but needs to be given time to stabilize to replicate. In Tripura, since trade of agarabatti sticks is regulated through licence from the Forest Department, it is possible to regulate the market and quality of products and ensure optimal price and returns. But the potential of monopoly or monopsony emerging from such an intervention and the possible scenario in the not unlikely eventuality of market getting deregulated from the present mechanism are to be studied in detail before mainstreaming it in other areas. The private entrepreneur linkage developed as in case of Kailashahar is another welcome initiative of market forces ensuring quality and helping in expansion of the activity.

6.1.2.2 Mechanization: Projections made in the strategy paper draw heavily from use of machines (being) developed by ERG, Bengaluru. However during the visit, set of machines manufactured in Taiwan and supplied by a Nagpur based trader were on display and use. But in all the sites visited, these machines were used more for training and demonstration rather

than for triggering production by the artisans or the community. In a state like Tripura, given the challenges of infrastructure, supply of electricity, skills in machine handling and maintenance and considering skills existing in manual operations, and need for employment opportunities, one should aim at appropriate technology for mechanization. Hand operated or pedal operated tools in use in Karnataka and Andhra Pradesh are recommended for testing and adoption if needed with due modifications.

6.1.2.3 Establishment of rolling facilities: As already mentioned, Tripura accounts for nearly 17000 MT of agarabatti stick production annually but most of the sticks produced are exported to Karnataka and Tamil Nadu for rolling and further processing. Strategy document of TBM targets 10% of total production of sticks to be rolled and exported. The strategy paper also details the potential of rolling activity of enhancing returns to Rs. 45 a day as compared to Rs. 26 a day from stick making at present. However during visit to JFMC in Parathia where rolling has been introduced, it came out that rolled sticks can fetch between Rs. 35 and 40 a Kg while cost of production is around Rs. 32 per Kg (including wages @Rs. 14 per Kg for rolling). Though economics of rolling sticks and relative advantage to households involved are being demonstrated, this intervention lingers on two major issues – (i) skill in rolling and (ii) availability of raw material i.e. charcoal and glue (jigat). TBM has intervened in both these aspects and has plans to upscale rolling of polished sticks. Arranging supply of jigat from bark of *Litsea chinensis* through a linkage with FDA in Udaipur in South Tripura and skill enhancement initiative in JFMC at Parathia were studied in certain details. Since jigat is the most critical ingredient apart from raw sticks, and since its availability is governed by its supply policy by the Forest Department, the arrangement made is to be seen as an initiative with replicable potential.

Considering the economic advantages of rolling incense sticks but limitations of availability of raw material of jigat from sustainable means of harvest (jigat at present is made from bark of *Litsea chinensis*), there is need to identify other sources of jigat if rolling of agarabatti sticks is to be scaled up substantially. At present charcoal is being accessed from market. It is suggested that in the event of centralising cross cutting of bamboo for further slivering and stick making, substantial quantity of waste (bamboo nodes) would be generated. This bamboo waste can be a good source of charcoal for agarabatti rolling. Infact in another initiative undertaken in Tripura by TRIBAC (promoted by INBAR), charcoal made from bamboo waste is being used for rolling. As this provides locational advantage, CFCs can also be sources of supply of charcoal for agarabatti rolling apart from polished sticks.

6.1.2.4 Institution development: As already said, this sector is typified by a series of manual operations aided by certain tools. Thus mechanization will have to be thought out very carefully and should be introduced to widen the activity base and improve efficiency of the entire chain of activities. Right now the activity is limited to those households that can afford to procure raw material (bamboo) themselves. No intervention appears to have been made for ensuring supply of raw material and to increase the number of artisans. The way to scale up is to widen the production base and involve more families in the activity. This can be achieved better by intervening through arranging raw material (bamboo) supply to the artisan families involved and willing to get involved in stick making and mechanizing and centralising certain operations while ensuring other operations to be done manually in decentralised household level locations.

It is suggested to set up Common Facilities Centres (CFCs) with equipment for cross cutting Bamboos into cylinders and slivering. Bamboo can be procured by these CFCs and machines can be used for cross cutting and slivering. Slivers so produced can be supplied to households with an appropriate arrangement to buy back finished and polished sticks. Quality control and grading would be feasible through this means and there is scope to widen production base and involve/encourage more households in the operations. CFCs should be within a distance of around 10 Km from the villages/hamlets where stick making happens and supply of slivers and procurement of sticks can be made either at CFC headquarters or by sending mini luggage carriers (three or four wheelers) to the villages where activity happens. Advantages of such an arrangements are (i) it ensures supply of raw material to all households getting involved in stick making activity without any extra effort by them to procure the same, (ii) division of work and its partial mechanization (cross cutting and slivering will be mechanised and stick making remains manual) ensures wider participation, (iii) availability of primary processed raw material at door steps of artisans enhances efficiency in stick production, (iv) quality control as procurement of finished sticks will be centralized at CFC level and (v) it also gives scope for periodic skill upgradation as the artisans are organically linked to the CFC which can act as information hub apart for processing and marketing centre. All the machines lying unutilized and underutilized in various centres set up earlier (eg. Stick and Mat making centre at Koifang) can be shifted to these CFCs and put to operations through appropriate modification. CFCs can be owned and managed by entrepreneurs or by the community organized as federations of primary producers with an appropriate legal framework as a society and may be given certain amount

of working capital to trigger the activity. They have to function however on sound and ethical market principles and emerge as service centres. These CFCs can be set up by JFMCs or FDAs also or JFMCs and FDAs can be sources of supply of bamboo raw material for the CFCs and thus this supply chain can ensure an organic link between resource rich communities (JFMCs and FDAs) and resource needy communities which apart from ensuring immediate revenue to JFMCs and FDAs and economic equity, can bring in much needed social harmony.

Each CFC should have a well laid out business plan giving details of its features, configuration, membership profile, status of raw material linkage, marketing tie ups, annual targets and phased programme with month wise activities.

6.2 Mats sector:

Mat making is another traditional bamboo craft that has rural employment opportunities as well as industrial applications. Unlike sticks, mats require certain specifications of Bamboos and the most widely used species is Mritinga (*Bambusa tulda*). Traditionally bamboo mats have utilities in rural, semi urban and urban sectors in housing and domestic utilities. With scarcity of timber from other species for manufacture of ply wood, and with technological inventions of using bamboo mats as substitutes of timber veneer, new utilities for bamboo mats have emerged. Bamboo mat boards are gaining popularity as Bamboo is available in greater abundance than many other timber species and they give an ethnic and artistic finish with a wide range of geometric patterns. Bamboo matboards have application in housing, furniture, other domestic utilities, body building of transport vehicles etc. and are a good replacement for Plywood.

6.2.1. Progress achieved so far: TBM has targeted to build a steady supply capacity of 10,00,000 mats / annum (3000 – 5000 mats / day). In this regard the key activities undertaken are:

- Introduction of supply chain of mats for industrial use.
- Formation of mat weaving clusters.
- Capacity building of the mobilized community.
- Establishing market linkages.
- Strengthening the supply chain.

So far 758 women have been trained, 5 mat weaving clusters have been established at Damcherra and Khedacherra (North Tripura), Ambassa (Dhalai), Teliamura and Khowai (West Tripura). Since inception of TBM, 3.20 lakh mats have been produced by the trained members and sold for Rs. 2.42 Crores fetching an average monthly earning of Rs. 1500 to Rs. 1700.

Weaving of Bamboo Mats results in substantial livelihood generation for rural poor in Tripura. Mats are woven all across the state especially by the tribal population for the local markets and housing needs. The skill of mat weaving is inherent to the tribals of Tripura. Traditionally the use of bamboo mats had been confined only to villages of Tripura where people use it for fencing, roofing, wall cladding and other household activities. With recent

development of Bamboo technology, mats have found varied applications in numerous industrial products that include bamboo mat boards, shuttering board and roofing sheets and different varieties of bamboo laminates. The current requirement of a Mat Board per unit is 3000 - 4000 mats per day. This requires a dedicated 1500 mat weavers to supply to a single unit. On an average a person can weave a maximum of 2 mats and earn Rs 80 per day. With partial mechanization in the feeder units, the productivity rises to 3 – 4 mats a day.

The TBM strategy is to have an integrated approach of building the bamboo mat production base in the state by effectively organizing the bamboo mat weavers in the various mat waving clusters in the state and in the next phase establishing a bamboo mat board unit in Tripura, through mobilizing the required private investment.

Capacity building of the community entails skill training as per the industry requirement of 8ft X 4ft dimension and weaving of mat from bamboo slivers without any blisters. Once the training phase is completed field coordinator is deputed to supervise the production activities ensuring all aspects of quality & timely delivery,

A two tiered marketing arrangement has been promoted by TBM. The first linkage ensures immediate buy-back from the mat weavers in the clusters. Mats so procured are then supplied to Industries. At present such arrangement is working well with involvement of a local private enterprise PS Greengold Bamboo Industry in Dharmanagar, North Tripura.

The strategy paper for TBM identifying the potential of this sector has suggested setting up supply channel of mats of required specifications for the 6 existing units in NER which together need 3000 mats for manufacturing Corrugated Sheets and 11,500 mats for Shuttering grade utilities everyday. Considering that 2500 mats can be transported in one truck load, the targeted daily production/procurement of mats is of the order of 6 truckloads a day. Against this, the Consultant's team during their visit and interaction assessed the production of 5 truckloads a month from Dharmanagar region which is grossly inadequate to make any impact. The main reasons for poor production of mats were identified as (i) inadequate supply of good quality Bamboo of desired species, (ii) inadequate skills among

the artisans for production of mats of required specifications, (iii) inadequate infrastructure for treatment, primary processing and (iv) unorganized procurement arrangements. The strategy paper is quite candid in stating need of treatment of raw bamboo and size and quality specifications.

6.2.2. Recommendations: Considering the opportunities the following suggestions are made:

- CFCs should be set up in strategic locations on the lines of CFCs for incense sticks which will be the hubs for training, sourcing raw materials, primary processing (treatment, cross cutting, splitting, knot removal and slivering of Bamboos), supplying slivers to artisans and procurement of woven mats and quality control.
- CFCs should be set up at village level and adequately equipped with requisite machines for primary processing as stated above.
- CFCs may be set up with public finance and managed through hired professionals with a well laid out business plan ensuring their self sustenance or may be set up on PPP mode on mutually agreeable terms (with private entrepreneurs or firms, Community and Govt of Tripura) with clear cut pricing policy for buying woven mats of prescribed quality. For this purpose the community would comprise all mat weavers who can be organized as a society. Such societies can be facilitated to hire professional managers for managing CFCs or CFCs as already stated may be set up on PPP mode.
- CFCs should source bamboo raw material from open markets and Forest Department's sale outlets set up departmentally or through JFMCs and/or FDAs.
- Thus bulk purchase of bamboo raw material, centralised treatment and primary processing will economise the cost and boost production.
- A detailed action plan needs to be developed in this regard to initiate the process in atleast 10 villages/centres during 2009-10, with each centre targeting atleast 50 mat weavers living within a distance of 5 Km from the CFC headquarters to weave 4 mats a day which can be scaled up subsequently. Thus presuming 15 working days in a month, TBM should target monthly production of 30,000 mats or 12 truckloads for 2009-10.

- This can be scaled up in subsequent years apart from setting up a matboard industry within the state.
- Each CFC should have a well laid out business plan giving details of its features, configuration, membership profile, status of raw material linkage and marketing tie ups, annual targets and phased programme with month wise activities.

6.3 Handicrafts sector:

Handicrafts based on bamboo are yet another traditional cottage activity in Tripura. The levels of skills and fineness are so high among the artisans that all over India, it is the bamboo craft products from Tripura and Bamboo craftsmen from this state who are talked about, whenever a reference is made to bamboo handicrafts. The state of Tripura boasts of 23 winners of national award and 17 winners of merit certificates at national level. It is amazing to note that out of these, all but 2 in respect of national awards, and all about 4 in case of national merit certificates are associated with bamboo in one way or the other.

6.3.1 Progress made so far: The core objective in the handicrafts sector has been to address the limited production capacity and also to make a shift from the traditional designs of handicraft which is faced with a decline in market potential to more contemporary utility products. This would enable the state to increase the value of the sector from 15 crores to 30 crores and also increase the earning potentials of the artisans engaged in handicraft.

Key Activities undertaken so far are large scale mobilization and organization of artisans in the leading handicrafts clusters, formation of artisan co-operatives, skill training of artisans, design development and introduction of utility based products, infrastructure provisioning (CFCs), technology Induction, capacity building and establishing market linkages. 7 handicraft clusters have been set up with 11000 artisans who have been trained. 6 of them have been organized as artisan cooperatives. 132 new designs have been introduced.

The various interventions under the TBM project have had a significant impact on the earning potential of the artisans both through increase in their productivity and through introduction of higher value products that have ensured better returns to the artisans. In the Jirania and Nalchar clusters, one of the major product viz bamboo table mat sets are sold at a wholesale price of Rs 35/-. These are low quality mats for which women earn Rs 2 – Rs 3 / mtr and are able to weave 4 – 5 mtrs per day. Under the TBM implementation, with the introduction of treatment and dyeing the coloured bamboo table mat sets are sold at Rs 250. The income of artisans has risen to Rs 6/ mtr and with the training support the average productivity levels of artisans has risen to 8 – 10 mtrs per day. Currently the average income of artisans engaged in the handicrafts sector has more than doubled to Rs. 1200 - Rs.1600 per month.

The various training and interventions undertaken in the handicraft sector are as follows:

Bamboo Treatment: One of the major weaknesses of the Tripura Bamboo handicraft has been the lack of appropriate treatment of bamboo leading to insects and fungus attack. Through TBM, a tie up was made with Indian Plywood Industries Research & Training Institute (IPIRTI) Bangalore to train the artisans in various appropriate bamboo treatment processes. Based on the IPIRTI bamboo treatment module, a treatment manual was prepared in *Bangla* language and distributed to around 800 artisans during training programmes conducted on bamboo preservation and treatment. A pressure treatment plant for bamboo furniture was established in Katlamara with funding support from NMBA.

Design Development: Design development is an integral part of handicraft sector, a total number of over one hundred new bamboo utility products have been developed by various design partners inducted in the project. Under the project design development trainings and workshop were conducted in association with these design partners. The products developed during the design development trainings are into production and have been marketed successfully. New range of utility products is also being developed as part of the ongoing design development interventions.

Institution Building: Institution building is key to the sustainable development of the handicraft cluster. A major constraint in achieving production scale and uniformity & quality of the product has been the fragmented nature of the production base. As part of the Tripura Bamboo Mission large scale community mobilization exercise and awareness generation programme has been undertaken to federate the artisans into a grass root owned & managed institution. Artisans federations were facilitated based on the successful “one village one product” model practiced in most South East Asian countries. Six such federations have been facilitated under the project. While these federations focus on undertaking production, they will be linked to the existing cluster level societies to receive an ongoing technical assistance and capacity building support. A state level SPV has also been promoted under the project with a focus to drive the market development, technical development and product development needs of the handicraft sector in the state.

Establishment of Community Production Centers: Establishment of Community Production Centers is another initiative to ensure growth of handicraft clusters to enable the artisans to undertake large quantity institutional order and maintain quality standards from buyers outside the state. Two Community Production Centers have been established at two clusters namely Baikhora & Sankhala, the Sankhala Cluster is a tribal clusters and the cluster is promoted as a bamboo based furniture cluster. Construction work for two new CFCs has started at Jogendranagar & Mohanpur for split bamboo, mat and mat based craft products. Constructions of three more CFCs are in the pipeline at Nalchar, Charilum and Kaladheepa in South Tripura.

Addressing the shortage of Bamboo for Handicrafts Production: The relative unavailability of the required species to bamboo has made it difficult for the artisans to continue working. Artisans have to leave work for 2 or more days in a week to collect the required and suitable bamboo culms from the nearest bamboo source. To address this problem TBM has established bamboo depots at Charilum, Nalchar, Jogendranagar, Agartala and Sankhala to enable bulk procurement of bamboo from the source where bamboo is cheaper. The depot will ensure timely supply the bamboo at reasonable rate. Setting up of Bamboo Depots at Ganganagar and Chakmaghat are in the pipeline. Establishment of bamboos depot at the source where bamboo is available in abundance will help tribal communities involved in Jhum cultivation to find an alternative livelihood through the supply of the bamboo directly to craft clusters .

Market Linkages: Direct market linkages are provided with leading retail outlets in the country. Products developed in the clusters were showcased to leading retail outlets like Fab India, Shoppers Stop and other bigger players. The link to leading retail buyers are very important from the point of volume sales which can be done to organized retail buyers like Fab India and Shoppers Stop. Their feedback has been obtained and a new range of products are being developed based on their feedback, specifically on colour, size and quality specifications.

Through the above market linkages the TBM has directly facilitated sales of Rs. 20,000,00/-. It is estimated that around an additional Rs 60-70 lakhs of sales has been undertaken by Micro enterprises through sales of new product designs and new business linkages facilitated directly through Tripura Bamboo Mission.

The detailed estimate of the turnover of bamboo handicrafts from Tripura is prepared based on the information provided by the Tripura Handicrafts and Handlooms Development Corporation, Purbhasa, the trends observed in the handicrafts cluster and from data gathered during focus group discussions with the fifteen leading traders of handicrafts who represent 70% of the total trade undertaken in the handicrafts sector. Sales through this outlet has been declining since 2006-07 from Rs. 128 lakh (2006-07) to Rs. 108.45 lakh (2007-08) to Rs. 79.80 lakh (2008-09). The declining sale of THHDC has been on account of declining procurement by THHDC on account of limited budgets for procurement, payment delays to artisans has led to a decline in the number of artisans willing to supply to Purbhasa. Purbhasa has formulated stringent quality control norms for procurement which majority of the clusters are unable to meet as for a long time the skill building and capacity building of artisans by the handicrafts department has been rather inadequate.

The sales recorded by the leading handicrafts enterprises have been an average of 10% in FY 07 – 08 and 15% in FY 08 - 09. The only segment that has registered a healthy growth rate of 20% has been the bamboo partitions, gifts and the turning products like flower vases, mugs, cups, etc.

It is to be noted that although the turnover recorded an increase, margins have been extremely low due to the rising price and shortage of the bamboo raw material. As the majority of the product quantity has been confined to the price sensitive low value product segment, there has been limited scope to transfer the rising input costs onto the product prices.

Under the TBM project, there has been an intensive effort to develop a range of products that are high in quality, higher in value and in premium range. These products have enabled the entrepreneurs to tap new marketing channels and increase their margins as well as ensure better returns for the artisan.

As per a survey conducted by the Government of Tripura, out of 2,44,495 artisan households in Tripura, 1,49,380 work on bamboo. Out of these, 78,343 artisan households work on various kinds of basketries alone. As high as 41.33% of these artisans belong to scheduled tribes and 21.08% belong to Scheduled Caste which highlights the social importance of the sector.

It is interesting to note that the distribution of artisans and bamboo resources are not exactly overlapping. Most of the artisans however are located in western and southern Tripura as compared to the other parts of the state, with northern belt accounting for 3rd largest number. During the visit of the consultant's team, one thing that came out strongly was the widening gap between demand and supply of bamboo raw material for the artisans associated with bamboo handicrafts. Among the various species of bamboo, that grow in Tripura, *Bambusa polymorpha* is very critical for the handicrafts especially the mat & basket based products. Shortage of this bamboo is hiking the production costs and rendering bamboo handicrafts economically unviable.

During the period of implementation of TBM, initiatives have been taken to organise the artisans under legally tenable institutional framework as Societies, train them in further refining their skills, and provide them with market driven designs with a proper marketing arrangement. During the field visits, the consultant's team visited the handicrafts societies at Jogendranagar, Mohanpur, Pratapnagar, Chorilam and Bykhura. The linkage developed with Bengaluru based design development agency (Industree Craft) in Bykhura, showed interesting arrangements of an organic linkage between the participating artisans and the training cum production centre with new and vibrant designs and market linkage. The arrangement evolved for weekly purchase of mats of Sheetal patti (a locally available reed) and its further processing into various end products at the societies workshop (housed in the building of DRDA) has potential of replication and scaling up. While in Pratapnagar, the initiative was driven by an entrepreneur (Mr. Ananthabandhu Sutradhara), the initiative in Jogendranagar and Mohanpur were more community driven where existing defunct clusters, developed earlier by the Government of Tripura have been revived. In all these clusters visited, societies have been setup for arranging market linkages etc. Book keeping capacities developed through the SHG movement are being utilised in keeping the books of accounts of these societies.

Bamboo furniture: So far 2 furniture clusters have been established in West Tripura in at Katlamara and Shankhela, (both have been registered as cooperative societies), 100 artisans have been trained in bamboo treatment, dyeing and design development . Partnerships have been established for design development with National Institute of Design (NID) and a French Furniture designer Eric Banque. They have adequate bamboo resources of the Kanakaich bamboo required for the production of bamboo furniture. Over 150 youth from

these clusters have been trained in furniture making at the BCDI. However due to lack of opportunities most of them worked as daily wage earners or were unemployed earlier.

TBM initiated activity in the cluster primarily to augment the limited production capacity of furniture production in the state and also to build a model of sustainable self employment for the tribal youth in Shankhela. 30 youth have promoted a producers owned enterprise “Tribe Crafts Centre” to undertake community production of the centre. In the Katlamara cluster a larger number of artisans have been mobilized and included in the production activity to build the production capacity

The key challenge for the bamboo furniture subsector is to have designs that are mostly knock – down type. Given the high transportation costs many, furniture is unable to meet the competitive price points. An exclusive design initiative with NID has been undertaken to address the opportunities in bamboo furniture given the constraints.

Under the project appropriate design linkage, market exposure and market linkage have been provided. The cluster has received an order for 1000 chairs from the buyer – seller meet organized by TBM at Alleppey. They have also marketed their products through the various exhibitions and fairs organized by TBM. The members of the society earn an average of Rs 2000 at the current levels of production.

6.3.3 Recommendations: All the efforts made so far aim at refining the existing skills with market driven designs. However, in the current days of fast life and competing markets with opening of global trade, with dwindling raw material and lower profit margins, handicrafts may not really be viable livelihood options unless they are reoriented to commercial applications. During the visit to the initiative in Pratapnagar, Bamboo cylinders were seen being converted as flower vases through wood turning lathe. Instead of limiting use of such products to such conventional utilities, if the same cylinders are used as packaging material for marketing high value commodities such as Tea or Spices that are commercially grown in Tripura, sale value of bamboo products as well the contents (Tea and Spices) would get enhanced substantially. It is suggested that TBM may look at such options of commercial applications of Bamboo Handicrafts including domestic utilities like – table mats, venetian blinds, door and window curtains, carpets etc.,. With this, the handicrafts sector will not only withstand competition from other household utility items made up of plastic and other synthetic materials but provide viable ecofriendly alternatives, as they are primarily organic

and biodegradable in nature. The skill base available in Tripura can be profitably put to productive use by slightly reorienting the approach of the handicrafts – from decorative items to commercially lucrative eco-friendly products, thus treating the handicrafts sector as an industry.

The critical aspect however is on the marketing side. The Government of Tripura has promoted the marketing outfit of these handicrafts through a state run organisation called – Purbasha. However, over time, Purbasha has overgrown in number of employees at apparently incorrect slots without corresponding growth in efficiency. As per information provided to the consultant, out of 315 employees of Purbasha, employees of group C & D alone, add up to 303. Out of 26 sale counters, 16 are in Tripura. It may thus be seen that the marketing strategy of Purbasha doesn't seem to be harnessing the marketing potential available elsewhere in India and abroad, despite the state having a large nationally renowned skill base of artisans. This calls for an urgent intervention to have a commercially viable and artisan friendly marketing arrangement. Apart from marketing, Purbasha is also associated with promoting artisan clusters (it has organised handicrafts production in 10 clusters). However, as against 1,49,380 artisan households in Tripura state, a paltry 4,318 are registered with Purbasha. Thus there is a huge disconnect between the state run handicrafts marketing agency and the artisan base in the state. During the interactions the consultants had with the officials of Handlooms, Handicrafts and Sericulture Department and the leading artisans, it came out that Purbasha is able to procure and provide marketing support for only about 10% of the handicrafts produced in the state, while the balance is still under unorganised sector.

While Purbasha's sales are of the order of Rs.3 to Rs.3.5 crore annually, sales by other agencies / traders is around Rs.25 crore (ascertained during the interaction with the traders). There is a need therefore to revamp Purbasha by harnessing its core competence and making it an accountable and commercially viable organisation. In this regard it is suggested to reorient it in tune with its core competence. Since Purbasha's core competence appears to be more on dealing with artisans and procuring high quality Handicrafts, it is better that it may limit its activity to procurement from those clusters in which it is functioning at present and if possible scale up to other clusters as well. The employees of Purbasha, who may get associated with the procurement activity, may draw the remuneration in proportion to the procurement quantities / value. In the event of this, its sale counters and marketing outlets,

may be outsourced to private entrepreneurs, who may undertake marketing under the banner of Purbasha, with Government of Tripura receiving certain portion of the sale proceeds apart from rentals. Thus the overhead cost of Purbasha would substantially reduce, while its staff would be utilised effectively. Such of the staff who do not have skills for working with artisans and associating with procurement of good quality handicrafts, should be trained in the required skills. Those who cannot or do not want to be trained, may be retrenched, and can either retire through a Voluntary Retirement Scheme (VRS) or may be reemployed in other Government Organisations. The TBM may take up the matter with Government of Tripura for revamping Purbasha into a vibrant accountable marketing organisation on the lines of above suggestions, with due consultation. This however will be a decision, the Government of Tripura will have to take and it goes beyond the mandate for TBM (since Bamboo handicrafts is only one of the activities of Purbasha).

There is also a need to simultaneously promote the other players to ensure healthy competition among the marketing entities and benefit the artisans in the long run. The initiative taken by TBM in organising the traders as Special Purpose Vehicle (SPV) though is in its initial stage, holds potential for future. Though discussions are being held on the structure of such an entity, the initiative is comparable to the initiative of the Pilak model being tried in case of incense sticks in South Tripura. While organising traders into SPV will have advantages such as meeting bulk demands from the market, timely supplies, quality control are certain advantages, potential issues of likely monopoly and monopsony will also need to be addressed and provided for.

6.4 Industries sector:

With the given socio-economic conditions, disadvantages of geographical location, high transport cost to reach the markets in the mainland of India, and given the abundant availability of bamboo resources, industrialisation of bamboo in Tripura should be the ultimate and obvious goal for promoting the economy of the state. However, due to these reasons alone, this should be attempted in a phased manner.

6.4.2 Progress made sofar: Promotion of bamboo industrial applications is an important means to ensure the long term growth through value addition and employment generation in the sector. The TBM has in partnership with the NMBA, has undertaken certain pilot activities and investments in area of introducing industrial applications of bamboo and higher value added, technology based initiatives in the bamboo sector in the state. The following activities have been undertaken in the bamboo industrial application sector:

Introduction of mechanized bamboo sticks: Three mechanized round stick making units have been setup in the state, one in the North district and two in the West Tripura district. These sticks are used for making premium quality incense sticks used in export quality incense products and in the weaving of bamboo blinds. The details of the three units are as follows:

- M/s Banik Agro Forest Products Pvt Ltd located in Nagicherra, Agartala is the largest unit. The total project cost is Rs 1.5 crores. The unit has an installed capacity of 450TPA. The unit is based on technology and machinery sourced from Taiwan. TBM has mobilized funding support in the form of soft loan of Rs.62 lakhs from NMBA and the remaining funds has been the promoters own contribution. The unit commenced commercial production in October 2008 and produces various thickness of round sticks, bamboo slats, bamboo skewers and toothpicks (from the waste)
- The St Xaviers Vocational Training institute has also invested to set up a mechanized stick making facility at Bislamganj West Tripura. This unit is a technology demonstration, training cum production centre and has been set up with a total investment of Rs 60 lakhs. (NMBA contribution (Rs 30 lakhs), promoters' contribution (Rs 30 lakhs).)
- M/s P S Green Gold located in Dharmanagar, North Tripura has invested in setting up a mechanized stick making unit of 300 TPA. The total project is of Rs 40 lakhs,

and has been funded with a 50% soft loan from NMBA for the equipments that have been sourced from Taiwan.

Development for a Bamboo Industrial Park in the state: Further to the pilot round of private investments to introduce industrial applications of bamboo in the state, IL&FS CDI has developed the detailed project to set up an integrated Bamboo Park in Tripura. This addresses the need for a concerted action plan to develop the technology based applications of bamboo and establish viable enterprises engaged in the production of high value added bamboo based products in the State.

The park will house a cluster of enterprises engaged in the production of a range of high quality premium bamboo based products. The park will have state of the art infrastructure and common facilities that comprises of production processes generic to the enterprises, business development platforms, product development & training centres.

A Master Plan has been developed over 50 acres in the Industrial Growth Centre at Bhodjungnagar Growth Centre. The land has already been allocated by TIDC. The Masterplan for the Park has been developed by reputed Mumbai based firm R.J Batliboi – Architects Pvt Ltd. The Park will be designed to capture the natural and eco friendly aesthetic attributes associated with bamboo.

Introduction of Bamboo Gassifiers: Bamboo biomass gasification system is an excellent source of renewable power. The electricity generated from gassifier is termed as “green power” as it recycles all bamboo waste and by-products as biomass. It is an incremental source of power that ensures uninterrupted source of electricity and increases the cost-efficiency of commercial operations. TBM in association with NMBA has installed four 25 KW bamboo based gassifier unit in following locations:

- St Xaviers Vocational Training School, Bishramganj (recycle of industrial waste bamboo, power used to run the mechanized stick manufacturing centre)
- Rubber Producers Society, Laxmandepa (power used for running community latex sheet processing centres and for community lighting in the area around the centre.)
- Rubber Producers Society , Rangmala
- Common Facility Centre, Katlamara (recycle of industrial waste bamboo, power used to run the power tools used in furniture CFC and for lighting of community primary school)

6.4.3 Recommendations: To begin with, action may be initiated to setup feeder units for supply of semi-processed materials to the existing industries, particularly in NER and elsewhere in India. In course of time, with acquired confidence and more entrepreneurs coming up within Tripura and investments forthcoming from outside Tripura as well, other types of units can be set up.

The critical thing however would be to promote entrepreneurs with in Tripura and invite investments from outside the state as well. As has happened in the initial phase of industrialisation in India, Public Sector Undertakings can play a crucial role in initiating the process of industrialisation and in driving it. From this point, the initiative taken by the Tripura Forest and Plantation Development Corporation (TFPDC) in entering into an MoU with the university of Nanjing of China, needs to be taken to a logical conclusion at the earliest possible opportunity as it has all the potential of kick-starting the process of industrialization of this sector.

Since TFPDC is a sister organisation of Tripura Forest Department, it has certain advantages in accessing bamboo raw material. During the interaction with the Managing Director of this corporation, it came out that, they have a plan to invite public / private participation in setting up the proposed unit. Such initiative may be taken in respect of all the industries to be promoted in the first phase. Either the TFPDC or the Tripura Industrial Development Corporation (TIDC) can take lead in conducting market surveys, preparing DPRs and inviting EoI for public private partnerships. Thus the PPP mode is the way forward in the present context of Tripura state for initiating the process of setting up of industries in Bamboo sector.

The following actions are suggested in this regard:

1. Organise a consultation meeting with the TIDC, TFPDC, the relevant Government Departments, leading industrialists of bamboo sector in NER and elsewhere in the country and develop a road map for the PPP mode and evolve a PPP policy for Bamboo.
2. Conduct entrepreneurship development programmes (EDP)
3. Promote entrepreneurial mentoring by lead industrialists for setting up industries in Tripura state.

4. The Government of Tripura should develop infrastructure at the proposed industrial park, with all the required facilities.
5. The Government of Tripura may plan to mobilise equity to at least 40% for the first five units, which can be scaled down for subsequent units.
6. The Government of Tripura may decide on tax / interest sops for those who wish to invest in industries in the state for certain period of say 5 years.
7. To attract investments, the Government of Tripura may also think of supplying raw material at a subsidised rate for the first 5 years, as was in the case of Paper and Pulp units elsewhere in the country.
8. This type of arrangement can be planned for the first 5 years after which, the industries should compete with the open market.

It is suggested to develop a plan of action for implementing the above measures.

8. Business potential of the following may be explored and adopted:

Following are some of the options for setting up of industries in Tripura State. These are not exhaustive. TBM may add to the list based on the feasibility and opportunities.

- Buddha bamboo as ornamental plant (can fetch over Rs.500/- per plant)
- Promoting Muli bamboo for applications of partitioning and false roofing (being straight & hollow, it cannot tolerate loads but would be suitable for internal separation/partitioning and false ceiling with reasonably good acoustics).
- Using Kanakkaiach for wall cladding (being a solid and straight bamboo, it would be suitable for wall cladding, which can take impact loads).
- Promoting rhizome based products in niche markets - from flowered clumps and rhizome, decorative furniture can be made and introduced in niche markets.

Semi-mechanisation of sticks feeding in manufacturing placemats/blinds in the looms:

In making the above said products, most of the time goes for feeding the long sticks, manually. Any automation will result in enhancing the productivity and thereby, better earnings to weavers. TBM may partner any local Engineering college who can develop such a mechanism through low cost automation.

Pole Bamboo for structural applications: Since every person in NER is fully aware of bamboo based structures, this segment doesn't receive due priority within the region. On the other hand, people across the country (other than NER) wish to use bamboo structures for pent houses / health resorts/ parks etc., but there are no service providers. It is possible for entering into this niche market through promoting entrepreneurs for manufacturing and selling, Pre-fabricated structures, with proper market representatives at different locations.

Readymade Bamboo sticks for Manual and/or Mechanized Looms for Blinds: Loom woven utilities from Bamboo sticks (either handloom or power loom) have major utilities. The strategy paper on TBM has suggested setting up of 10 units of converting Bamboo into round sticks for use in loom based applications. But apart from three units, other units are yet to come up. These may be set up.

Furniture sector: Bamboo furniture has excellent market which is growing year by year. While the initiative of NID and other partner agencies at Katlamara is good, it needs scaling up as a community or social venture. At present it is driven by an individual entrepreneur. With limitations of business orientation and abilities, the activity is not getting scaled up to realize its full potential. Also, the market is more positive for heavy bamboo rather than thin bamboo (initiatives of VEDHA, Nagpur and KONBAC, of Kudal, (deploying trainers from

Tripura) support this hypothesis). TBM should engage suitable training agencies to look at blending both thin and thick bamboo of different species and train artisans accordingly. Such agency apart from identifying and fine tuning entrepreneurial talent among local artisans, may mentor them. It is suggested to set up atleast two more CFCs during 2009-10 for furniture making with latest design with a mix of heavy and lighter bamboo poles with all associated facilities. Market tie up may be made through major sale outlets selling modern furniture like @home, Big Bazar etc.

Thick strips / Slats for Flooring Units: In India, there are existing units for manufacturing bamboo wood and bamboo flooring tiles. Since these units need to compete with well established Chinese producers in the global markets, these Indian units do require slats in huge quantities at most competitive rates. These units are still in stabilisation phase and looking for help. Under these circumstances, TBM may aim to facilitate setting up of feeder units and enable maximum value addition in Tripura with market tie ups with the floor board / wood manufacturers.

Bamboo Mat board manufacturing: Bamboo Mat Board is another industry that can be set up in the state. This, however will have to be done after establishing an assured supply chain of bamboo mats as has been elaborated while discussing about Mat sector in this report. While technology of pressing mats into a board is very simple and looking at potential mat production in the northern part of the state, any enterprising local entrepreneur may be encouraged for setting up this unit. Shutter grade / marine grade BMB has a niche market and may be targeted.

Bamboo board / Sliver boards: The Tripura Forest Development and Plantation Corporation has entered into an MoU with Institute of Cane and Bamboo Research, University of Nanjing, China for research on likelihood of converting Muli Bamboo (*Melaconna baccifera*) into Bamboo Boards, Sliver Boards, Activated Carbon and many other commercial products. During interaction with the Managing Director of this Corporation, it was informed that initial research done has shown positive results on feasibility of utilizing *Melaconna baccifera* for making Bamboo floor board/strand boards. Being a sister organization of the Forest Department this corporation will not have any problems in accessing raw material. Moreover, supply of bamboo raw material, can be tied up with JFMCs and FDAs. However, as regards investments, this corporation might have to mobilise the same through Public Private Participation. This initiative by TFDPC may be followed up by TBM.

Activated charcoal and associated products: As of now, charcoal is being sourced from individual homes, for incense sticks manufacturing. In the adjacent state of Nagaland, Nagaland Bamboo Development Agency has successfully demonstrated producing charcoal through kilns and selling such briquetted char for niche applications. Considering the plentiful availability of bamboo waste generated from making sticks in Tripura, manufacturing of charcoal can be a viable activity. However, the technology for making activated carbon could be the point of concern. TBM can facilitate partnership for any local entrepreneur with an existing activated carbon manufacturing company elsewhere in the country.

Incense sticks (finished product): With Tripura contributing nearly 50% of India's incense production, it is time that the state ventures into further stages of value addition. Rolling sticks has already been initiated. A full fledged Agarabatti unit from any leading manufacturer like ITC or Cycle Brand would serve the market in NER better. It is surprising to note that raw polished and even rolled sticks are exported all the way to Karnataka and Tamil Nadu for perfuming and packaging and brought back for meeting the market demands of NER. Setting up a full fledged unit would reduce such wasteful transaction cost and provide further employment opportunities within Tripura.

Entrepreneur Development Programmes and Entrepreneur mentoring: The major hurdle seems to be lack of local entrepreneurs. It will be a good initiative to involve the local professional colleges and conduct Entrepreneurship Development Programs, focussing on bamboo, to ensure a minimum of 30 entrepreneurs every year. Lead entrepreneurs who have been identified for promoting the SPV can also be trained in these programmes. TBM may explore and request the corporate buyers to adopt and mentor atleast one Social Entrepreneur from one community / one cluster and help him build the business. Suggested contacts are:

- All India Agarabathi manufacturers association can be approached for sticks making / rolling / perfuming & packing
- ITC / HLL can be approached for developing the markets
- N Ranga Rao & Sons (Cycle Brand) can be approached to enlighten on the aspects of value addition and the obvious incremental price benefit for various operations. TBM need to work on the breakup costs & value chain to offset the remoteness of the state.
- Arunachal Plywood Industries / Timpak / Srivari Metals / Composite Development Centre etc., can be approached for taking their suggestions & procurement schedules to improve the logistics & reduce the transport cost.

Logistics: The recent developments of the Train connectivity – Agartala – Silchar – Guwahati – is yet to be exploited. There is a clear commercial advantage of transporting various products upto Guwahati by road and then to other parts by rail. TBM should venture to take full advantage of this development.

8. Supply chain management:

With the gregarious flowering of the Muli bamboo in the past few years, the bamboo stock in the state has been adversely affected. Traditionally, many crafts persons and marginalised groups who work with bamboo have extracted bamboo from homesteads or nearby common property. With growing demands grow there has been steady degradation of common property land degrades. This coupled with overexploitation of several stands and clumps has led to local scarcity.

The handicrafts clusters mostly located in west Tripura district are worst affected. There is serious shortage of the major species used in handicrafts. The shortage has led to serious escalation in the prices of the bamboo and hampered the continuity of the production activity. As the production of handicrafts is organized as complete home based activity where the onus of procurement is with the individual artisans, the brunt of the adverse supply situation has had an immediate adverse impact on the livelihoods of the artisans. With the bamboo prices registering a sharp rise from Rs 5 – Rs 6 levels to Rs 20 – Rs 25, artisans are unable to afford the procurement of bamboo and often have to travel long distance to buy bamboo. It has been observed that the skilled artisans have turned to incense stick making activity to sustain their livelihoods.

8.1 Progress made sofar: The TBM has a two pronged strategy to address the access to raw material (i) To address the current shortage of bamboo in the clusters (ii) to undertake a resource regeneration program to address the future resource requirement of bamboo for the value added applications in the state.

Establishment of Bamboo raw material Depots: To address the current shortage of bamboo in the handicrafts clusters in West Tripura, TBM has promoted community owned

and managed Bamboo depots at Nalchar, Charilam, Jogendranagar and Shankhela. The major purpose of the bamboo depot is to undertake a bulk purchase of the required bamboo raw material from Chakmaghat, the main centre for the wholesale procurement of bamboo. This will ensure uniformity in the quality procured, cost effective and sustainable supply of bamboo raw material to the artisans. The first phase of bamboo depots essentially focus on the collective procurement of bamboo raw material as opposed to the traditional practice of individual artisans procuring bamboo. The second phase will focus on establishment of bamboo depots in the bamboo resource growing areas like Ganganagar, Damherra, Chakmaghat in association with the JFMCs. These will be promoted as the major resource centres and all the bamboo based enterprises being set up in the various clusters across sub-sectors will be linked to these resource centres for the procurement of their bamboo raw material supplies.

Resource Generation Program: Under the TBM resource generation program, the focus has been to address the resource requirement of the various bamboo value addition clusters. Most value added applications of bamboo require specific non-Muli species of bamboo, the supply of which is currently limited. To meet the future requirement of raw material based on the projected growth of the bamboo sector in the state, TBM has initiated the following resource generation activities:

- 20 ha community plantation of Kanaikach bamboo, has been undertaken at Katlamara to meet the requirement of the furniture cluster in Katlamara and Shankhela.
- TBM has set up a Vegetative Propagation centre at the space provided by the Forest Department at the nursery at Hatipara. Under this project planting material has been prepared to meet the plantation requirement for 100 ha. The following activities have been undertaken at the VPC centre :
 - 10,000 polybags in Balcooa, Cacherensis, Vulgaris, Polymorpha, Tulda have been prepared.
 - TBM has raised 25000 TC polybag seedlings: Balcooa, Stocci, Asper (for bamboo shoots). The TC seedlings have been multiplied in the nursery using the micropropagation techniques to build the planting stock.
 - TBM has also raised 2,25,000 seedlings of Hamiltoni and 75,000 Tulda (Mritinga).

The planting material is being supplied to the Forest Department to be used for the various plantation programs being undertaken by the department.

- TBM has supplied 36,350 Kanaikaich rhizomes to Ompi (22,250) and Amarapur (14100) block to meet the future needs of the new induced furniture cluster in Amarapur in coordination with PD DRDA South district.
- A Tissue culture lab and hardening centre has been set up in Hatipara in association with the Forest Department and Tata Energy & Research Institute (TERI). The lab will supplement the planting material stock. TBM is facilitating the process of selecting a private partner to operate the TC lab in a commercially viable manner as a joint venture arrangement with the Forest Department.

More than 20 species of Bamboo occur over 2397 Sq Km of Tripura covering around 23% of its geographical area. Of this, 938 Sq Km (9% of state's geographic area) of area supports pure Bamboo brakes. Despite reasonably high species diversity, 80% of Bamboo growing stock is from Muli Bamboo (*Melaconna baccifera*). A report by the Tripura Forest Department assesses the total annual demand of Bamboo as 118 million numbers as against recorded supply of 110 million numbers.

It is therefore to be noted that Bamboo is in short supply even for meeting the current demand. Various reports of the Forest Department of Tripura and the TBM's strategy paper acknowledge shortage of Bamboo in the state. This was confirmed during the field visits and focus group discussions by the Consultant's team during this MTR. Shortage is also felt as Muli Bamboo (*Melaconna baccifera*), that had flowered in the past couple of years is in various stages of regeneration and other species (especially *Bambusa tulda*) have shown signs of flowering.

8.2 Recommendations:

Resource mapping: There is an urgent need to map the cluster wise, utility wise and species wise requirement of Bamboo on an annual basis for the current as well as targeted levels of utilization so that required steps can be initiated to augment the supply chain of Bamboo resources. Though nursery and plantation programmes have been initiated by the TBM, efforts need to be scaled up with better coordination among players with better domain knowledge. The Forest Department of Tripura has been implementing three massive projects that have strong afforestation components. The Tripura JAICA Project, Indo German Project and the Centrally sponsored scheme of National Bamboo Mission have all been working to upgrade the Bamboo resources in Tripura. In addition to these, another Centrally sponsored scheme of dealing with Bamboo flowering is also under implementation. Such species

mapping and demand survey will be handy in planning afforestation measures through these schemes/projects. Bamboo afforestation component of these schemes will have to be closely linked to enterprise development initiative of TBM to have perceptible impacts. The coordination committees set up can monitor plantation programme to ensure that they are need based. Afforestation will primarily be a mandate for the Forest Department.

Revamping Biotechnology facility: The biotechnology lab (tissue culture facility) set up by the Forest Department in Hatipara near Agartala that is underutilized at present is sought to be managed on a PPP mode. Similar attempt made in other states (in the state of Andhra Pradesh similar action was taken to utilize the facility at Biotrim, Tirupathi) should be studied by the TBM and the TFD before formally inviting expression of interest.

Study of impact of deregulation of bamboo in transit: Out of 2397 Sq Km of area under Bamboo in the state of Tripura, only 109 Sq Km is outside forests in private holdings. Thus Forest Department is obviously the major source of supply of Bamboos. Though it was informed that tribals of Tripura do not need any permit for cutting and transporting Bamboo, traders who purchase such Bamboo need to obtain transit permits (passes) from the Forest Department. There is however a demand to exempt Bamboo from any type of transit regulations atleast within the state of Tripura to enable free movement and usage of the resource. While such relaxation may be advantageous in promoting cultivation of Bamboo in private holdings, its impact on forest grown Bamboo needs to be studied. More critically the impact of such relaxation and deregulation on the tribal economy (as most of the forest grown bamboos are in tribal areas where tribals are already exempted from the regulatory regime) and JFMCs and FDAs (for whom the Government has made commitment of usufruct rights) needs to be studied in greater detail as it is likely to increase pressure on bamboo resources in such areas.

Supply chain management: Another critical area of concern is that where skilled artisans exist Bamboo resources are degrading or have already degraded and where such resources are available in plenty, skills are nonexistent or are poor. This is more pronounced in case of Bamboo handicrafts in which case artisans are concentrated mostly in West and South Tripura. Thus apart from mapping for resource augmentation as stated above, organic linkages and supply chain from resource rich areas to resource needy areas need to be established in addition to widening skill base to skill poor communities through trainings,

capacity building and handholding support. In the long run, such linkage is certain to bring in much needed social harmony in the state.

During the field visit, the Consultant's team visited two traditional Bamboo supply points (markets) at Chakmaghat and Dhamcherra. These two markets have developed along the banks of rivers as Bamboo from interior areas is transported by rafts and sold to prospective purchasers. A more formal, well distributed, artisan friendly and assured arrangement of Bamboo supply is needed. It is suggested that Forest Department should open formal and regular supply channels through FDAs from the areas managed by them. Bamboo depots may be established by each FDAs at convenient places where the respective JFMCs can bring their Bamboos and sell either on wholesale basis or retail basis and CFCs, artisans (either individually or through their groups), training institutes, entrepreneurs and others can access them. This will ensure sustainable management of Bamboo forests while ensuring raw material supply to the needy artisans and others. Location of such depots can be decided basing on convenience of resource owning JFMCs/FDAs and consumers. Forest Department can also decide to sell Bamboo from non JFM areas through such outlets. Species wise availability and quality specifications of Bamboos in such depots can be publicised so as to invite and ensure supply to the artisans who can purchase their exact requirement. In course of time artisans can start placing orders in advance with these depots for supply of their exact requirement in terms of species and quality specifications.

8. Future scenario:

Tripura, being a land locked state and surrounded by Bangladesh for nearly 80% of its boundary (with whom there are no free trade links at local level), suffers from distinct disadvantages. Distances from the main land and the socio-economic conditions significantly impact industrial development of the state. The state is typified by mere absence of civil society organisations and lukewarm activity by social and philanthropic institutions unlike in other states of the North Eastern Region. Thus Government becomes the major if not, the only means of delivery of Governance in the state. Limitations of flexibility in day to day administration of the state's bureaucracy further adds to the challenges in administration. Despite commitment by the policy makers, and fairly high literacy rate, poverty remains to be the major cause of lack of development. Intervention of TBM is expected to lead to initiation of a series of actions for economic development of the state through development of bamboo sector. Since such development is a process but not an event, one has to look at the prospects of TBM way beyond the present association of three years.

Though the exit strategy in TBM's strategy documents is rather unclear, from various discussions the Consultant had during the visit, it came out that there are plans to set up a dedicated corporation for development of bamboo in the state of Tripura which will take forward the actions initiated by IL&FS, the implementing agency of TBM during the current phase. The structure, mandates, linkages etc of this corporation are yet to be firmed up. During the discussion with the officers of Forest and Industries Department, an impression was created that setting up such an exclusive corporation may take some more time. While the present arrangement of implementation of TBM through outsourcing to IL&FS is only for a period for 3 years, it is rather ambitious to expect to achieve the objectives of TBM within this period of time. At best, a number of activities can be initiated and processes can be set in motion during this period of time. For these activities to reach a stage where one can confidently say that things have stabilized, it takes lot more time and efforts. There is tremendous need for coordination with Bamboo being virtually a multi sector species with multiple utilities with multiple players.

The key factor for sustainable term growth of the bamboo sector in the state of Tripura will be a sound institutional structure to drive planned development of its various sectors. The institutional structure that has been designed under the Tripura Bamboo Mission

project comprises of a network of institutions for each sector culminating at a state level apex institution: Bamboo Development Corporation. Based on the specific characteristics and the needs for the sustainable growth of each subsector, specific institutional frameworks have been designed.

The institutional design planned for each sector under consideration by the TBM is outlined below:

Institutional Design for Handicrafts Sector: The institutional design for the handicrafts sector has a ‘bottom – up’ approach comprising of bamboo handicrafts producers societies (BHPS) at the cluster level and a Special Purpose Vehicle (SPV) at the state level.

The BHPS is a village level institution to consolidate production and build the capacity at village level. Bamboo handicraft activity in Tripura is a complete homebased activity which has led to fragmented production base with serious constraints to scale up the production capacity and move to the production of better quality and products of contemporary designs. In order to address this, the BHPS is formed by federating a minimum of 50 – 100 artisans in the same locality engaged in the production of a common handicraft product. It provides the institutional structure for the artisans and master craftsmen to own and manage a grassroots level enterprise and establish a common facility centre / community production centre with appropriate infrastructure and equipments to enable the artisans to undertake scaled up volumes of production of contemporary and better quality products. The various BHPS in the major handicrafts clusters in the state will lead to the development of a strong production base for the Handicrafts sector in Tripura. The SPV planned will be a state level institution promoted primarily to enable the sector to attain critical mass in its operations, assume a commercial focus, build a demand driven approach and most importantly forge linkages with mainstream markets. It will be promoted as a Public Limited Company, with the majority share holding of artisan federations (BHPS), master crafts persons and institutional investors. The remaining shareholders will comprise of private small and small micro-entrepreneurs in the handicrafts sector. The SPV management and operations will be undertaken by a professional team of managers under the governance and supervision of a Board of Directors.

Institutional design for incense sector: The Incense sector will have two distinct frameworks one each for the polished sticks and the rolled incense categories. For the polished sticks category, Forest Divisions of Tripura will be the basic units to form a co-

operative societies. The co-operatives will be formed by the small traders and primary aggregators of polished sticks from the home based stick makers. There will not be any govt. share or equity in the cooperative. The cooperative will obtain the FTL (Forest Trading License) and will be the nodal body in each forest division for the direct procurement and sale of polished sticks. The co-operatives will have standard policies related to procurement, pricing and selling of the products that will be decided by the Cooperative board based on the prevailing marketing conditions. This collaborative model will ensure gains from economies of scale and ensure direct access to the final buyers resulting in better value realization and increased earnings for the stick makers.

The rolling activity in the state is being undertaken mostly with the JFMCs in the various forest divisions. The various JFM groups in a cluster will be federated as a state level society to aggregate the production and undertake direct sales to the enterprises linked to the clusters. In the second phase a state level SPV will be formed as a Producers owned company with the membership of the cluster level cooperatives to undertake business directly with buyers located outside the state.

Institutional design for the Bamboo Mats subsector: The Mat weaving activity in Tripura is undertaken by the poorest of the poor sections of the population to supplement their livelihoods. The mat weavers are located in remote villages close to the bamboo growing forests. The institutional design to promote the growth of this sector, comprises of building a network of grassroots institutions to build the production base linked to an effective marketing institution specifically for its use in industrial applications such as mat boards and laminates. To build the production base and the supply chain for mats, an average of seventy to hundred households located in a village undertaking mat weaving is organized to form mat producers cooperatives with a production capacity of a minimum 1000 mats per week. These groups / cooperatives are linked to local private entrepreneurs who have been promoted under the TBM project for the aggregation of mats and to build the supply chain to meet the growing demand from the bamboo mat board units located outside the state. In the first phase of implementation, P.S Green Gold Dharmanagar, has been promoted as the local mat aggregator in the state. In the next phase after the scale up of production it is planned to promote private investment to establish a mat board unit within the state.

Institutional design for the bamboo industrial applications sector: The bamboo industrial sector will be completely private sector driven. This sector will be promoted by the Tripura Industrial Development Corporation through the development of the Bamboo Park with appropriate common infrastructure required for the development of bamboo industrial applications.

Tripura Bamboo Development Corporation: On completion of the Tripura Bamboo Mission project, it is proposed to graduate the project to a state level apex body: Tripura Bamboo Development Corporation, to drive the medium to long term growth of the vibrant bamboo clusters that are established by the Tripura Bamboo Mission project. The planned development of the bamboo sector in the State of Tripura can be undertaken through a systematic and coordinated set of policy measures that address both the demand and supply side scenarios over the medium and long run. The proposed corporation will address both the promotion of high value added applications of bamboo in the state with a commensurate program to address the supply side to ensure availability of the right species of bamboo raw material through planned bamboo cultivation in the state. The institutional structure for the proposed Corporation may be a society registered under The Societies Registration Act, 1954. Alternately, a Company may be registered with the majority shareholding of the Government of Tripura. The detailed Memorandum and the Articles of Association can be drafted on the lines of the TFDPC. The proposed Corporation will be attached to the Forest Department and shall be headed by a senior Forest Department official with adequate experience in the area of bamboo plantation and development. The lean staffing structure should be adopted with key essential officers for core responsibilities, technical officers and basic support staff for administration and accounts. The focus should be on outsourcing field extension works through the JFM Committees, artisan owned societies and federations.

To set up the apex institution, an initial corpus has to be provided by the Government of Tripura. This fund should be capitalized by appropriate channelling of funds available for bamboo plantation development with the state Government across various projects being implemented in the state such as the JBIC, NBM and the Indo – German project. The Corporation can also mobilize funds from multilateral donor agencies.

Considering the strengths and challenges of various Government run or sponsored institutions and near absence of viable Civil Society Organizations within the state and after due examination of the proposed institutional framework as outlined above, it is suggested to constitute Tripura Bamboo Mission as an overarching and independent entity. Since it has to have a strong business motive to enhance livelihoods and contribute to state's economic development, option of registering it as a Public / Private Limited Company should be explored. It can be a company promoted by producers, entrepreneurs and traders of Bamboo products and can grow to promote industrialization of Bamboo sector and can establish linkages and partnerships with raw material suppliers (Forest Department, JFMCs, FDAs etc), other Government agencies, marketing agencies, design developers etc. It can have skeletal staff drawn from Government or from open market, which can be paid from its profits. It will be an entity covering all sectors. Suggestion is made in favour of registering the apex institution as a Company under the Companies Act 1956 as it is most suitable as a commercial entity. Each sector can still have unique institutional framework which can function under the overall ambit of the Company as envisaged above. IL&FS, the present implementing agency of TBM should develop a perspective plan for a period of five years basing on the strategies identified at the time of initiating TBM and now (during MTR) giving annual projections of physical and financial details of expenditure and revenue.

Though a good beginning has been made and substantial progress has been achieved, the Project has miles to go before it can claim to have achieved reasonable degree of sustainable development of the sector. Initiatives of developing institutions of artisans, primary aggregators, traders, developing linkages with designers, skill upgradation among the artisans basing on market driven designs and specifications, developing market linkages, conceiving Bamboo Industrial Park, intervening in augmenting resource and supply chain management have all begun well. But primarily period of three years is grossly inadequate to make any palpable impact in a complex and multi sectoral species like Bamboo especially in the context of geographically disadvantaged and poverty ridden state like Tripura. If the initiatives taken are to yield desired result, it is essential to not only establish a robust institution that will take over the sector management by the conclusion of the implementing agency's committed engagement but nurture it, promote it and hand hold it. This is best done by the present institution implementing the Project. For this, it is essential to extend the tenure of engagement. Atleast two more years of extension after conclusion of the three years

of period as contemplated now is recommended. The Government of Tripura and IL&FS can deliberate upon the modalities and tasks for this extended period in the light of various suggestions and recommendations made in this report.

9. Key actions needed, time frame and milestones

Sl. No.	Action suggested	Responsibility	Time frame
1	Set up/rejuvenate CFCs exclusively for stick making (20), mat weaving (10)	IL&FS	Dec 09 (30%), July 10 (40%), Aug 10 (30%)
2	Develop business plans including training and marketing plans for each CFC	IL&FS	Jun - Aug 10
3	Organize exposure visits to CFC members to study best practices in the country	IL&FS, TFD, JAICA Project	May – Aug 10
4	Charcoal conversion in CFCs	IL&FS	June 10
5	Handicraft sector – Exploring commercial applications	IL&FS	July 10
6	Furniture sector – set up 2 more CFCs	IL&FS	Dec-10
7	Organize EDPs	IL&FS, TIDC	June-10
8	Consultation for Entrepreneur mentoring and promoting the same	IL&FS, TIDC	July-10
9	Industrial applications, Prepare DPRs	IL&FS, TIDC, TFPDC	Mar-10 – for 5 Industries; Commission 3 by Mar-10 and rest by March- 11
10	Map cluster wise, utility wise and species wise annual requirement of Bamboo for the current as well as targeted levels of utilization.	IL&FS	March 2010
11	Develop comprehensive plantation programme integrating/complementing all funding sources both in and out of forest areas	TFD	Dec 09
12	Reviving biotechnology lab	IL&FS, TFD	Dec 09

13	Study need and impact of deregulation of transport of bamboo	TFD	Mar -10
14	Opening Bamboo depots through JFMCs / FDAs	TFD, JAICA Project	Mar -10
15	Institution building and coordination-converting TBM into a Company	IL&FS	June – 10
16	Develop perspective plan for 5 years with annual projections for revenue and expenditure	IL&FS	March – 10

10. Logframe and Monitoring Framework :

Enclosed.

Annexure**Intersectoral coordination established with various Government and Non Government Partners :**

Linkages Established with Government Partners		
S.No	Particulars of Partner	Relevant Experience
1.	Forest Department (FD), Government of Tripura	<ul style="list-style-type: none"> - Synergies have been built with the JFMCs to promote incense rolling and polished stick making as alternative livelihood activities. - Support from FD to establish primary level cooperatives owned and managed by the stick produces and primary aggregators - Partner with FD to address the resource generation requirement. TBM has propagated and supplied non-muli planting material to the department. It is also facilitating to operationalise the tissue culture lab of the department in partnership with a private partner for production of planting material on commercially sustainable norms. - Training of JFMCs and field functionaries in various areas of bamboo plantation and value addition.
2.	Rural Development Department – (DRDAs), Government of Tripura	<ul style="list-style-type: none"> - Joint mobilization of the poor producers to form SHG and federations to undertake bamboo based livelihood activities. - Establishment and operations of community production centers with support from DRDA - Infrastructure support in the clusters. - Capacity building for undertaking various skill training activities in bamboo value addition under the DRDA supported programs.

3.	Department of Handlooms and Handicrafts, Government of Tripura	<p>- Mobilization of artisans in the handicrafts clusters in the state.</p> <p>- Joint management of skill training and design development programs.</p> <p>- Joint management of retail exhibitions and Fairs.</p>
4.	Tripura Industrial Development Corporation	<p>- TIDC will be the major promoter of the proposed Bamboo Park for which land has been allocated in the Industrial growth centre in Bhodjung nagar.</p> <p>- Establishment of an exclusive microenterprise business promotion fund for providing subsidized credit for the working capital requirements of the bamboo microentrepreneurs.</p>
5.	NMBA, Department of Science & Technology, Government of India	<p>Project partner in promoting the technology application of bamboo. All The following activities have been undertaken in partnership with NMBA:</p> <ul style="list-style-type: none"> • Introduction of 4 bamboo gassifiers for electricity generation from bamboo waste biomass • Private Investment - Funding support for financing equipment for establishing the three mechanized stick making units in the state. • Funding support for establishment of Vegetative Propagation Centre at Hatipara Central Nursery to generate planting material for non-muli bamboo species. • Skill training for rolled of incense • Training on fragrance and perfuming of incense at Kannauj.

Linkages Established with Private Partners		
S.No	Particulars of Partner	Relevant Experience
6.	National Institute of Design (NID) – Leading institution in the country providing design education and research. NID outreach programs extends its learning facilities beyond the classrooms and includes the artisan skill base in the country	<p>TBM partner to provide skill training and design a range of bamboo furniture and utility products with demand from domestic markets.</p> <p>The focus has been on designing knock-down furniture, introducing use of tools to improve the productivity of the artisans and the quality of the products,</p> <p>NID also provides interface for artisans to work with graduate students specializing in bamboo products and design development.</p>
7.	Industree Crafts Foundation (ICF) is a major player in the artisan and handicrafts sector in the country with special focus on strengthening natural the production bases and facilitating market linkages. The Organization has started the first chain of exclusive retail stores for artisan products – “Mother Earth” in partnership with the Pantaloon group.	<p>ICF has been a major partner of the TBM project in the handicrafts sector and has provided support in the following areas:</p> <ul style="list-style-type: none"> • Design Development • Quality control and efficient management of production • Establishment of community production centers • Market buyback arrangements for the new product lines designed. • Exposure and on the job training in other artisan managed production centers.
8.	AIACA (All India Artisans and Craft Workers Welfare Association)	<ul style="list-style-type: none"> • AIACA has partnered with TBM to design a high end product range to be retailed in stores like Fabindia and Good Earth. • It will provide linkage with the Aid to Artisans International for marketing and capacity building support to the producers to enable access to global markets. • It will provide the Craftsmark certification for the handicrafts products. • Technical support for the development of artisan / producer owned Companies.
9.	ITC Ltd.	ITC is an important partner in the Incense sector. To promote and partner with the TBM mandate of introducing rolled incense in the state, ITC has initiated operations in Agartala through its franchisee ‘Jayanti Domestic Products’ to procure rolled

		<p>incense, and manufacture the ‘Mangaldeep’ brand of finished incense.</p> <p>ITC has also setup a direct buyback mechanism for the rolled sticks and polished sticks produced by the co-operatives and groups formed under the TBM project.</p>
10.	All India Agarbatti Manufacturers Association Karnataka	AIAMA provides linkages with its members who are leading manufacturer of incense, for the direct procurement of polished sticks and rolled incense from the TBM promoted cooperatives. The direct linkage enables better returns to the stick makers and rollers and offers better quality to the final buyer.
11.	Arunachal Plywood Industries Limited. (APIL)	APIL is largest manufacturer of bamboo mat boards in the North Eastern region. TBM has partnered with APIL to procure bamboo mats from the mat weavers societies and the private entrepreneurs promoted by it. It also provides technical assistance to achieve the quality standards and promotes cross learning in the mat sector between Tripura and Arunachal.
12.	Growmore Biotech Ltd	<p>Growmore Biotech Ltd has partnered with TBM to introduce the use of tissue culture planting material, development of protocol of the required species for which there is a shortage of planting material in the state.</p> <p>Growmore also provides technical assistance for the micro-propagation of the TC plantlets to ensure cost effectiveness and adequate supply of planting material.</p>
13.	St Xaviers Vocational Training Centre	<p>St Xavier’s vocational training centre has been a TBM partner in the following areas:</p> <ul style="list-style-type: none"> • Incubation of new bamboo related technology in the state (e.g Gassifiers) • Training partner to impart training on use of basic machines in the preliminary processing and stick making using bamboo • Partner for community mobilization and in providing handholding support in the management of community production centers.

14.	Stagure Software Systems	<p>IT Partner to setup an E-Portal and training of field staff and community members to operate and utilize the e-portal for effective communications with buyers and partners.</p> <p>User training to enable the use of the portal to promote business and also to effectively communicate with buyers.</p>
15.	G D Kothari Industries	<p>G D Kothari Industries is one of the largest suppliers of cane to various cane and bamboo manufacturers all across the country. The Company is a marketing agent of TBM and has provided numerous market linkage to the handicrafts artisan producer groups to a network of distributors and retailers dealing in bamboo and natural fiber handicrafts products.</p>
16.	J K Cane Industries	<p>J K Cane is a leading retailer of cane and bamboo products in Kerala. They are the marketing agent for the TBM and have undertaken the following activities:</p> <ul style="list-style-type: none"> • Mobilizing wholesale orders for handicraft micro-enterprises from buyers in Kerala. • Organized Exhibition for TBM handicrafts at Alleppey. • Showcases TBM products in their showroom Brooklyn in Alleppy • Provides market information and feedback to the producer groups.