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**Duration of NAS:** - 15 days

**Synopsis of Assessment Survey**

**Sal leaf**

It was believed that Lord Gautam Buddha was born and attained nirvana under the Sal Tree, But even before Buddha was born sal leave were major source of livelihood for the people especially the tribal’s living in and around the forests. Sal is so important for tribal that the tree is worshipped by them for its wonderful nature of providing multiple products for their livelihood. Sal leaf are found abundantly in forest area were accepted made used in the day to day lively hood requirement in ancient time by tribal’s and general mass in festivals, marriages, ceremonies since time immemorial . Slowly it became major source of income for them with understanding of multiple usability of Sal leaf for tribal.

Now days, Non Timber Forest Products (NTFPs) collection, processing and sale are a major source of livelihood for the people especially the tribal’s living in and around the forests. Almost 80% of the cash income comes from the collection and sale of NTFPs for the household dependent on forests. Out of all NTFP, Sal leave is one of the most important NTFP collected and processed. The Leaves collection comes twice in a year. First, it starts in the month of April-June, just after winter season and before rainy season. Second time it starts from mid September just after the rainy season till December end before winter starts. In these seasons, fresh and bigger size leave are available.

In the forests region of Orissa, Sal leave and Sabai grass are a major source of income for the people. The clusters are mainly found in the districts of Mayurbhanj, Keonjhar, Kandhmal, Balasore, Deogarh and Nayagarh. While the produce mainly comes from Mayurbhanj, Kandhmal, Keonjhar and Nayagarh districts, most of the processing facilities are located in Balasore and Mayurbhanj districts. Bethonati block in Mayurbhanj district is the largest market for Sal leaves. Although there are no authentic figures available on the quantity of leaves collected annually and marketed, a rough estimate shows that total trade from Sal leaf plates and cups is about rupees thousand crores, out of which Mayurbhanj has 50% market share.

Baripada block of Mayurbhanj, collection of Sal Leaves and its processing is concentrated in about 42 villages, covering about 4000 households. Most of the processing takes place in urban centers like Bethonati, Basta, Karanjia, Keonjhar, Rairangpur in the absence of electricity and low cost technology for pressing the leaves into cups at the village level. Small and medium traders buy the leaves from the village communities and process them at their centres. The Sal leaf cups and plates are sold to traders in other states for domestic sales as well as export.

Since the pressing machine has introduced to cluster, products made from Sal leaves has taken a shape of more organized trade. Before introduction of pressing machine they use to make only two products i.e. Khalis and Dwipatris, now they are converting Khalis into trays/thalis with and without compartments and Dwipatris are converted into cups and bowls. Also to meet the changing requirement of the market small value addition like stitching the Khalis and Dwipatris using machine, use of foiled paper to make the product leak proof has been introduced.

However the demand of Khalis has gone down due to the introduction of alternate products made up of foiled paper, plastic and thermocol which are cheaper and have strong product base in terms of design, quality and production process.
Still the products made of Sal leaves does not have strong product base in terms of Design, Quality and production process due to which it is not even able to fulfil the requirements of National market, international market is still a dream for the Sal leaf products. Reason for the above are neither design intervention to build a strong product base nor technical intervention at production level, tools and equipment level. Still they are using same machines which were introduced 30 years back.

Recent innovation of semi automatic heat pressing machine was developed to improve the production capacity of Plates and cups. It has got four dies for pressing and one die for cutting the excess leaf part. This machine is mechanically operated, whereas household pressing machine are manually operated. The operator remains standing and press the leaver at the bottom with legs to operate the die. Many operators using manual operated pressing machine have reported of back pain , knee pain, chest pain, breathing problem and tiredness which is not there in case of semi automatic heat pressing machine. The other drawback is heavy electricity consumption and. For the same we suggest the usability of Induction heat and hydraulic press technology

In case of semi automatic heat pressing machine, the operator can sit and just have to feed in the Khalis and Dwipatri in the die. There is a switch for controlling the temperature. The drawback of this machine is that it is very costly , occupies a large space and consumes heavy electricity .

Sal leaves is abundantly available in forests which can be developed into lots of products which has not been explored till now since the raw material base(Sal leaf) is not strong due to which the products which are developed ,are basically use and throw products. Till now people see it as a raw material to make cups and plates which has the limitations that it can be used only one time and thus there is not much of development done in terms of Design as well as Technology. Hence there is huge scope of design intervention and product development. The intervention can be right from raw material up gradation to product and technology for production.

The best product example can be developing and designing popcorn glass for urban theatre hall and also disposable glasses for soft drink (working on technical parameters of making leak proof).this will not only give new product but will save lot of tree. As understood it is natural and biodegradable , so safe for earth.

Sabai Grass Craft
The Sabai grass industry is associated with various activities of raising production of grass and processing of consumer goods such as ropes, mats, carpets, sofa sets, wall hangings and other sophisticated fashionable articles. The Sabai grass industry has tremendous export potential. Sabai grass ropes are the main product which produced by 85% artisans involve in the industry. The range of the high value products home and life style were made using the sabai leaf. Sabai grass is practically considered to be "The Money Plant" which ensures cash receipt throughout the year.

With the involvement of NGO’s, local people are looking into the possibilities of expanding the product range. They are working on lot of new products especially Home décor, storage items etc. which can be easily made by weaving the Sabai grass. They are also dying the grass with synthetic colors and thus increasing the design options.They are using other NTFP (Jute ropes) along with Sabai grass to develop new products.
It is observed Sabai grass is a very versatile material which can be easily converted into interesting and beautiful products. There are some points which can be worked upon, like products made of Sabai grass is susceptible to water. It will get damaged if it comes in contact with water. The chemical dyes are being used at present to color the products, which is becomes more harmful to skin when it combines with the grass. Alternatives like natural dyes and skin friendly/environment friendly.

The main area to be focused is new designs and product range need to be increased which will automatically led to development of new tools and machine. Also need of Quality control to raise the standard of the product, which is missing.
Cluster Information
Non Timber Forest Products (NTFPs) collection, processing and sale are a major source of livelihood for the people especially the tribal’s living in and around the forests. Almost 80% of the cash income comes from the collection and sale of NTFPs for the household dependent on forests. Out of all NTFP, Sal leave is one of the most important NTFP collected and processed. Sal is so important for tribals that the tree is worshipped by them for its wonderful nature of providing multiple products for their livelihood. It was believed that Lord Gautam Buddha was born and attained nirvana under the Sal Tree.
In India Sal trees are found abundantly in the forests of Assam, Bengal, Orissa, Jharkhand, Shivalik hills in Haryana, Eastern Ghats, Eastern Vindhyas and Satpura in central India. Sal is also found in the forests of Bangladesh, Nepal, Bhutan, Pakistan and China.

Geographical Map of the Cluster

In the forests of Orissa, Sal and Sabai grass are a major source of income for the people. Sal clusters are mainly found in the districts of Mayurbhanj, Keonjhar, Kandhmal, Balasore, Deogarh and Nayagarh. While the produce mainly comes from Mayurbhanj, Kandhmal, Keonjhar and Nayagarh districts, most of
the processing facilities are located in Balasore and Mayurbhanj districts. Betnati block in Mayurbhanj district is the largest market for Sal leaves. Although there are no authentic figures available on the quantity of leaves collected annually and marketed, a rough estimate shows that total trade from Sal leaf plates and cups is about Rs.1000 crores[^1], out of which Mayurbhanj has 50% market share.

[^1]: As reported by Laximidhar Nayak in his article “Sal an insurance against starvation”- Community forestry Volume-II, issue 3 Feb. 2003

Overall the Sal leaf plates and cups market provides livelihoods to thousands of forest dwellers and profits to hundreds of big and small traders in Orissa.

In the absence of electricity and low cost technology for pressing the leaves into cups at the village level, most of the processing takes place in urban centers like Betnati, Basta, Karanjia, Keonjhor, Rairangpur etc. Small and medium traders buy the leaves from the village communities and process them at their centers. The Sal leaf cups and plates are sold to traders in other states for domestic sales as well as export.

- In every district 80% - 85% of people are involved in this trade.
- In Baripada block, collection of Sal Leaves and its processing is concentrated in about 42 villages covering about 4000 households. These villages are located around NH5 – spread within a radius of 10-15 kms. There are about 15 villages having more than 100 households. Among these villages, 4 villages in Hathikot Gram Panchayat work on Khalis 3 and rest of the villages are engaged in Dwipatri 4 More than 90% households of these villages are involved in NTFP collection. Most of the communities collect
NTFPs from forests located at a distance of 2-3 kms from their villages. The main market for these Khalis and Dwipatris is Betnati, a small town 30 km away from Baripada.
- Gram Swaraj is one of the NGO registered in the year 1995 which got involved in the development of this trade since last 5 years.

**SAL TREE**

**Botanical name** – “*Shorea Robusta*”
**Common Name** – Sal
**Parts used:**
1) **Sal Leaves** – Plates and Cups for eating food.
2) **Sal Trunk** – Fuel wood, household furniture. It is resistant to rot.
3) **Sal seeds** – Edible oil
4) **Sal resin** – Sal is a source of an opaline white resin used as incense, as a caulking for boats and a fuel for lamps
5) Sal tree also provides platform for Siali creepers, the leaves of which are also used as plates along with Sal leaves.
History of the Cluster
Sal leaf plates have been used by people during festivals, marriages, ceremonies since time immemorial in different forms as Sal leaves is considered auspicious for use.

Earlier very few products were made especially for their daily uses like Plates, Cups and baskets, which was made by joining Sal leaves together using Bamboo or Juna sticks. During 1965 some two to three traders started business of Sal cups (Donas) within Mayurbhanj. These cups were round in shape and were stitched using bamboo sticks. This product started gaining market in the local as well as adjoining markets in Bihar and Bengal, however not many trades were involved in this business initially. Later in 1970’s a trader from Betnoti introduced the cup pressing machine, which changed the look of the product .The demand and popularity of the product grew and spread to nearby states of Orissa. By late seventies the product got popularity in other northern states like Punjab, Haryana, Gujarat and Uttar Pradesh. Different dies in the machine started getting used to fulfill the need for new designs of cups and plates. Since then Sal leaf product has taken a shape of an organized trade, in which many people at different levels are involved in this. However it still requires a lot of development and improvement to stand in the market against their counterparts which are made from thermocol and plastic, which are giving them tough competition. The only characteristic which gives Sal leaves the upper hand against these thermocol and plastic based products is that the Sal leaf is natural, biodegradable and it will not harm the Mother Nature.

Design Opportunities for Inter Cluster Communication
Inter cluster communication does exists at Sourcing, Production and Selling level. Gram Swaraj is an NGO which has introduced the concept of Internal business linkages among the SHG’s who are working on Sal leaf products at different level to avoid involvement of middle men at each level of selling and purchase. There is still requirement of Inter cluster communication at design development, marketing and advertisement level which is only possible when they have strong product base and production base for that product.

Product Status at Cluster Level
After the introduction of pressing machine, products made from Sal leaves has taken a shape of more organized trade. Before introduction of pressing machine they use to make only two products i.e. Khalis and Dwipatris, now they are converting Khalis into trays/thalis with and without compartments and Dwipatris are converted into cups and bowls. Also to meet the changing requirement of the market small value addition like stitching the Khalis and Dwipatris using machine, use of foiled paper to make the product leak proof has been introduced. However the demand of Khalis has gone down due to the introduction of Thermocol plates which are cheaper and have better look. Still the products made of Sal leaves does not have strong product base in terms of Design, Quality and production process due to which it is not even able to fulfill the requirements of National market, international market is still a dream for the Sal leaf products. The reason for the above is:-

1) No design intervention to build a strong product base.
2) No or very less technical intervention at production level, tools and equipment level. Still they are using same machines which were introduced 30 years back.

3) Introduction of Alternate products made up of foiled paper, plastic and thermocol which are cheaper and have strong product base in terms of design, quality and production process.

4) Human psychology – Present product range made up of Sal leaves are basically used for one time use. They are considered as use and throw product due to which it has not been able to attract product up gradation.

5) NREGA – This scheme is introduced and implemented by the government of India for unemployed people in rural areas. This scheme has provision of 100 days job guarantee or equivalent compensation for that period. The compensation per day under this scheme is higher than the wages they earn from any other regular job.
6) **Ration scheme** – This scheme was introduced and implemented by Government of India for BPL (Below Poverty Level) Families in rural areas. Under this scheme government provides rice @ Rs. 2/kg, due to this people are now not motivated to work and earn more money and upgrade their living standard, as they are getting cheap food. They don’t go to work regularly.

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**Cluster Map**

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![Cluster Map](image_url)
UNIT WISE DESIGN AUDIT

1) **Primary collectors/Leaf collectors** – They are mostly women’s living in the nearby villages around the forests; men’s are mostly engaged in the transportation and selling activities. They mostly belong to tribal communities, schedule caste and other backward class. They mainly perform the collection of leaves from the nearby forest, stitching leaves into Khalis and Dwipatris, and drying of these Khalis and Dwipatris. The investment at this level is almost nil.

1) Unit holder – Champa  
Village - Jarida  
Tulsigutha (70km from Baripada district headquarter)  
Block – Kaptipada  
District – Mayurbhanj

2) Unit holder – Budhi Ram behera  
Village – Koturia  
Block – Kaptipada  
District - Mayurbhanj

3) Unit holder – Manda Murmu  
Village – Talpukuri  
Block – Bethonati  
District - Mayurbhanj

4) Unit holder – Kapra Tudu  
Village – Nedan  
Block – Bethonati  
District - Mayurbhanj
1.1) Collection of Leaves

a) **Months** – Best time for Leaves collection comes twice in a year. First, it starts in the month of April-June, just after winter season and before rainy season. Second time it starts from mid September just after
the rainy season till December end before winter starts. In these seasons, bigger size leaves are available; there is no problem of drying it as sunlight is abundant in these seasons. The problem of leaves getting affected by fungus or moisture due to fog is not there. Other reasons are as follows:-

**Reasons:**

a) In winters due to less sunlight the leaves do not dry in one go due to which it is dried twice which makes the leaves darker in color. Cups and plates made from these leaves fetches less price.
b) In winters due to fog the leaves get affected by moisture and fungus; when these leaves are dried, small black spots appear on the leaves. Plates and cups made up of these leaves are considered of very low quality.

c) In winters the leaf size is small as there is no rain.

d) In rainy season they cannot dry the leaves due to which they have to stop the collection of leaves and also people get engaged in agriculture in the rainy season.

e) Leaves collected in winter season are smaller in size which affects the quality of the end product. Khalis and Dwipatris made from bigger leaves look good and have higher demand. Number of leaves consumed in making Khalis is less when the leaves are big which requires less time to stitch and increase the profit.

b) Everyday work hours - Collection of leaves starts early in the morning, from 6 am in the morning till 1'o clock - 2'o clock in the afternoon, after which they go back to their homes for lunch. Usually they collect the leaves from the nearby forest which is 2km- 3km from their home.

c) Tools used – They use a 12ft-15ft long bamboo stick with iron sickle at one end to pluck the leaves or small branches with leaves.

d) Average no. of leaves collected – They collect 4000- 6000 leaves in a day.

1.2) Stitching of leaves - Leaves are stitched into Khalis and Dwipatris immediately after collection of leaves from forest. Once the leaves are stitched into Khalis and Dwipatris they are spread on dry ground under sun for drying. Leaves are stitched first and then dried because it is easier to stitch the soft leaves, but once it dries it is difficult to stitch the leaves; they might break or get damaged.

a) Material used for stitching of leaves – Juna grass and Bamboo stick are the two materials which are mainly used for stitching the leaves. Bamboo is available in abundance in the nearby forest area. Juna grass is purchased from the local market in small bundles which cost Rs5/bundle. They can stitch 500
Khalis from one bundle of Juna grass. Khalis and Dwipatris stitched using bamboo twigs have less price as compared to those stitched using Juna grass. This is because Juna grass is hollow from inside and soft so when the khalis and dwipatris are pressed into Cups and plates they get compressed and one cannot feel it while eating food whereas in the case of bamboo twigs, since they are hard and compact, it can be felt even after the khalis and Dwipatris are compressed into Cups and plates. Sometimes it can also hurt your finger if they are sharp or pointed. **If it is loose it may mix with the food and enter your body also which can be dangerous.**
b) **Pieces hand stitched in an hour** – Khalis – 50 Pcs/hour, Dwipatris – 200 Pcs/hour. Khalis of size 12”, 14”, 16”, 18” diameter are stitched. 16” Khalis is the most popular size.

c) They sell these Khalis to Local agent, Traders and they also sell it directly in the local market.

d) Selling price of Khalis and Dwipatris depends on the quality and demand. The selling price of Khalis to a local agent for 100 Pcs., range from Rs.10- Rs.12 for 12” Khalis to Rs.20 for 18”Khalis. When the Khalis are sold to traders, additional charge of Rs.30/bundle is added towards transportation and profit charges on the initial charges which is equal to selling price to a local agent. When the Khalis is sold directly in the local market they add Rs.10/bundle towards storing charges and commission on the initial charges which is equal to the selling price to a local agent.
e) Any other method of stitching - Apart from this they also stitch the leaves using sewing machine, but in this process they have to first join the leaves using Juna grass or Bamboo twigs to maintain the round shape of the Khalis. They use cotton thread to stitch the leaves. Once the leaves are stitched, twigs are removed from the Khalis and Dwipatris. Stitching of leaves using sewing machine enhances the look of the product. It makes the product more leak proof until and unless there are any holes or gap in the leaves. While eating food in Khalis stitched using twigs, there were chances of hurting the finger or if the twigs are loose, it may come out from the leaf and get mixed with the food which might enter your body while eating and can hurt you. Also if the twigs come out from the leaf, it will create gap in the Khalis/Dwipatris due to which the food will start dropping from the Khalis/Dwipatris. All this can be avoided if the leaves are stitched using sewing machine. The drawback is the extra material (twigs) and the extra time used in first stitching the Khalis with twigs.

f) They categorize machine stitching into three types – Ordinary, medium and special stitching. In ordinary stitching the stitch pattern is vague and the gaps are not properly sealed. In medium stitching again the stitch pattern is vague but lesser gaps are there as compared to ordinary when. In special stitching the Khalis is of good quality, there is a stitching pattern and the gaps are properly sealed. Price of the stitching different categories are as followed:-
a) Ordinary stitching – Rs 8/100pcs
b) Medium stitching – Rs 10/100pcs
c) Special stitching – Rs 12/100pcs

g) Price related/selling issue/problem – Price related problem arise when the quality is not good. This happens in the winter and rainy season when the leaves are not of good quality, there is no proper arrangement of drying the Khalis and Dwipatris and leaves used is smaller in size. Also due to unskilled labor the khalis and dwipatris stitched have gaps and holes. Different size khalis are mixed in the bundles as the size of the khalis cannot be maintained or standardized.
1.3) Drying of Khalis and Dwipatris - Collected leaves are joined together using bamboo twigs or Juna grass into Khalis and dwipatris, after which it is spread on a dry ground in sun. It takes 1 day to dry. Drying in the sun leads to folding and contraction of the leaves which is corrected by making bundles of Khalis or dwipatris and pressing it under heavy flat object like stones.

**Drying related issues:-**

a) Khalis and Dwipatris need to be dried properly, Khalis and dwipatris with wet leaves have less demand as these leaves get darker in color when it dries. This usually happens in the months of rainy season and winter season when days are short or sun does not show up due to fog or cloud.

b) If the leaves are not immediately processed into Khalis and dwipatris and dried in sun then again the color of the leaves get dark.

c) Thin leaves make good quality khalis and dwipatris then thicker leaves and have more demand, as it dries quickly, they make a lighter bundle due to which the transportation charges is less, also the leaf collector will be able to collect more leaves and bring it to their home, they will make more numbers of Khalis and dwipatris.

d) In rainy season, sometimes the Khalis and dwipatris are left outside for drying and suddenly rain pours in which damages the leaves.

e) In rainy season they don’t have dry large surface to dry the leaves.

1.4) Packaging – Khalis and Dwipatris are packed using Sabai ropes into a bundle.

a) **Packaging of Khalis:**

100 Khalis = 1 Chakka
10 Chakka = 1 bundle

Therefore in one bundle there are 1000 Khalis. Chakka is the local unit for counting Khalis. The number of Khalis in a Chakka may vary.

b) **Problems faced in Packaging** – Most of the people being illiterate, There are mistakes in counting the stitched Dwipatris and Khalis. Many times the bundles contain less number of Khalis and Dwipatris as compared to what is stated. This has degraded the popularity and hence the demand of the Khalis and Dwipatris.

1.5) **Transportation of Khalis and Dwipatris** - Khalis are generally transported in an auto rickshaw or van depending upon the volume. These vans/auto rickshaws are sent by the processor cum traders. Generally the traders are in regular contact with the village level agents who procure and in some cases also store Khalis on the behalf of the traders. These traders also have their own warehouse in the villages. Dwipatris are generally transported by cyclewallah to the nearby market. The carrying capacity of a bicycle is 35000 Dwipatris.
Fig 1.4) No proper mode of transportation of good are available.

A few village level agents also directly purchase and sell the khalis to traders on their own.
2) **House hold processing Units/Contractual Processors**

1) Unit holder – Sayukta Behra  
Village – Talpukari  
Block – Bethonati  
District – Mayurbhanj  
Product-Dwipatri, Bowl & Cup

2) Unit holder – Sohna Bibi  
Village – Talpukari  
Block – Bethonati  
District – Mayurbhanj  
Product Range- Khali, Thaali and Tray

2.1) **Heat pressing of Khali and Dwipatri into Cups and Plates** – Heat pressing process is both done at household level with one machine or at contractual processor/processor cum trader level with machines ranging from 2-4 in numbers. The machine for making plates cost approx. 6000/-, and cost of the machine for making donas cost approx. 4000/-. Khalis and Dwipatris are heat pressed into following products:-

2.2) **Khali** – Khali was traditionally used in temples and house for serving food. Flat in shape and made up of 6-9 leaves joined together using small sticks made up of Bamboo or Juna sticks (high quality)  
   a) **Thali** – 2 Khalis are heat pressed together to make a Thali, for better quality 3 Khalis are also used. A thin plastic film of size 8”x8” is used in between the two layers for increasing the strength, to prevent leakage up to some extent, work as an adhesive as it melts partially to stick the layers together. These thalis are round in shape with raised walls of 1”-1.25”. Their diameter may vary from 11”-18” as per the requirement.  
   b) **Tray** – A Thali with 2-3 compartments is called tray.  
   c) **Bowls** – They have a diameter of 6”-8” and 3”-4” in depth, they have a flat base. These are introduced recently.

2.3) **Dwipatri** – Smaller in size and made up of 2 leaves, hence called Dwipatri, is used to make Donas for serving food.  
   a) **Donas (Cups)** – 4”-5” in diameter, Donas are very popular with road side vendors not only in villages but also cities for Chaat pakori’s. 2 dwipatris are heat pressed together to make a dona. They also have a thin plastic film in between the two layers. They are also getting stiff competitions from their counterparts made up of paper with aluminum foil and plastic cups, but once again they have a upper hand as for making them one has to only use the leaves of the tree (new leaves grow very fast) but for making paper cups one has to cut the whole tree which takes 4-5 years to grow.
b) **Tea cups** – These are introduced recently. They have two layers, inside layer is of leaf and outer layer is made of paper with aluminum foil to avoid leakage of liquid and also keep the tea hot.

### 2.4) Packaging and Storage

The finished products are stored in storage rooms. These storage rooms are kept dry by spreading dried Sal leaves and plastic sheet on which the bundles of finished products are kept. The walls & floors need to be damp free. Most of the store rooms have mud floor but bigger traders have cemented floor which is considered best for storage. They also put insecticides/pesticide on ground to protect the leaves from insects. This is generally done once in a year. Cleaning of the store is also done once in a year. Bundles of Khalis are tied with Sabai ropes and are stored without any external packaging like plastic bag. Thalis, Trays, Donas are counted and packed in Plastic bags. These plastic bags are printed with their brand name.
which is registered. They also have the bag size mentioned on it. The bag size and the number of plates and cups in a bundle vary according to the requirement.

Fig. 2.4) The insecticide used is Poison, causes many diseases
3) **Traders** – There are 250 registered traders in Betnoti and Baripada towns. On the basis of the value addition they do in terms of Processing, storage, capital investment and operational capacities, the traders can be further classified into two categories i.e. Processor cum traders and Big traders.

3.1) **Processor cum trader** – 200 odd, processor cum traders is involved in both trading as well as processing. Dwipatris and Khalis are purchased by them and processed into cups and plates by installing pressing machines. The processed material is either sold to big traders or sold in the domestic markets located in other states. This category of traders has direct access to outside market. With 10-12 pressing machines in each unit, the average annual turnover of a processor cum trader is around 10-15 lacs. Some of these traders also make their own pressing machines and dies. They have Tempos and small vans to collect Khalis and Dwipatris from villages and local agents.

1) **Unit visited** – Heera Traders  
**Owner** – Mr. Gagan Kumar Bugudi  
**Established** – Year 1990  
**Block** – Rupsa (50 km from Baripada)  
**Annual turnover** – 50 lacs  
**No. of Employees** – 300 (mostly hired labor)  
**Investment** – 30 lacs  
**Loans** – PMEGP (Prime ministers employment generation programme) loan sanctioned under KVIC (10 lacs).  
**Registered Brand** – Heera Brand  
**Process** – 1) Die and machine making for personnel use  
2) Heat Pressing  
**Machines available** – Manual operated Heat pressing machine, Hydraulic operated heat pressing machine, Die making machine  
**Cost of machines** – 1) Hand operated Heat pressing machine for foiled tray = approx. Rs. 50000  
2) Die making machine – approx. 2 lacs  

2) **Unit visited** – Tulsi  
**Owner** – Mr. Debender Mohanty  
**Established** – Year 1993  
**Block** – Bethonati (40 km from Baripada)  
**Annual turnover** – 42 lacs  
**No. of Employees** – 260 (mostly hired labor)  
**Investment** – 24 lacs  
**Loans** – PMEGP (Prime ministers employment generation programme) loan sanctioned under KVIC (8lacs).  
**Registered Brand** – Tulsi Brand
Machines available – Manual operated Heat pressing machine, Die making machine
Cost of machines – 1) Hand operated Heat pressing machine for foiled tray = approx. Rs. 50000

3) Unit visited – Chandan Traders
Owner – Mr. Sanjayukta Kodri
Established – Year 1990
Block – Bethonati (40 km from Baripada)
Annual turnover – 32 lacs
No. of Employees – 278 (mostly hired labor)
Investment – 21.5 lacs
Loans – PMEGP (Prime ministers employment generation programme) loan sanctioned under KVIC (8lacs).
Registered Brand – Chandan Brand

Machines available – Manual operated Heat pressing machine, Die making machine
Cost of machines – 1) Hand operated Heat pressing machine for foiled tray = approx. Rs. 50000

Over view of Processor cum Trader’s Workshop
The over view of processor cum trader’s workshop available. Which clearly reflects the workshop are not well set in organized manner, ignorance and unhygienic for the workers and the people leaving around the workshop. Lack of proper infrastructure and set ups are not only causing problem in production but also causing hazards to health and environment of the artisan’s/workers and also the peoples living around.
Fig. 3.1) In-house manufacturing unit for making Heat pressing machine and dies

Fig. 3.1) Lathe machine for making dies

Fig. 3.1) Dies for Sal leaf Cups and Plates getting ready inhouse

Fig. 3.1) Drilling machine

Fig. 3.1) Hydraulic heat pressing machine for making Sal leaf cups

Fig. 3.1) Die ready for making Sal leaf cup
Fig. 3.1) Khalis collected from nearby village is unloaded from auto

Fig. 3.1) Unloaded Khalis

Fig. 3.1) Operator making Sal leaf tray using hand operated machine

Fig. 3.1) Operators operating the heat pressing machine to make Sal leaf plates

Fig. 3.1) Hand operated heat pressing machine for Sal leaf tray

Fig. 2.4) Operator making Sal leaf Cups using Hydraulic heat pressing machine
Fig. 3.1) Die for Sal leaf cup made inhouse

Fig. 3.1) Die for Sal leaf tray made inhouse

Fig. 3.1) Packing of Sal leaf Plates in process

Fig. 3.1) Packing of Sal leaf tray in process

Fig. 3.1) Packing of Sal leaf Cups in process

Fig. 3.1) Sal leaf Cups, Plates & Trays packed and stored
Problem Areas Related to Workshops.
The current statuses of the Sal leaf product work shop are captured in pictures below. It clearly reflects the ignorance and the need of design intervention. Also demands the implementation of system and good infrastructure.

Fig.3.1) Very un organized work shop, no proper electrical fitting, machines are not set in organized manner. Un hygiene and un safe working conditions.
Fig. 3.1) Not very well designed setup, less space, no proper electrical wiring. This kind of setup is not at all safe. No standard setup system is available or maintained.
Figure 1.3) Electrical and wiring standard is not followed. This can be very dangerous.
Fig. 3.1) Workshops are not well organized & managed

Fig.3.1) No proper storage space designed for tools and small parts.
Fig. 3.1) Cleanliness not maintained in side work shop
3.2) Production capacity - They process Khalis and Dwipatris into Cups, Plates and trays in different combination using brown paper and aluminium foil. They process 25 different combinations of products in Cups and Plates. They make plates with size ranging from 5” – 13” in diameter and Cups with size ranging from 2.5” – 6” in diameter.

a) Using Hydraulic Dona making machine they can make 2100 Cups in 8 hours.

b) Using manual operated heat pressing machine they produce 2400 Sal leaf plates. They heat press 2 khali together with thin plastic film of size 10"x10" in between.

c) Using manual operated heat pressing machine for foiled tray they produce 800-1000 Pcs in 8 hours. In this they use Brown paper, aluminium foil, one khali, thin plastic film of size 10"x10”.

The price of the processed cups which includes stitched Sal leaf cup, aluminium foiled Sal leaf cup, Sal leaf cup with paper ranges between Rs.100-Rs110 for 100 Pcs depending on the quality. The price of processed plates which includes stitched Sal leaf plates foiled Sal leaf plates, Sal leaf plates with paper ranges between Rs.310 – Rs. 400 for 100 Pcs depending on the quality. They supply Cups and Plates to wholesalers in Maharashtra and Orissa.

3.3) Demand over the year – In terms of product, demand of cups is more than the plates. They have not been able to fulfill the demand of the current market as they are not able to produce enough finished product. The reason for not able to meet the market demand is unavailability of labor. The attendance of
labor is not proper. Most of them skip the work as they are getting free food under the government scheme. They are not self motivated to earn more and develop their living standard.

3.4) Problems Faced
a) Product related-
1) **Counting problem** – Quantity of Khalis and Dwipatris in a bundle which is collected from primary collectors vary and is not according to what is stated.
2) Actual number of twigs which should be there to join leaves to make Khalis and Dwipatris is sometimes missing due to which there is lot of gap between leaves which is not suitable for use.
3) Some people supply Khalis and dwipatris which sometimes consist of leaves which are not properly dried. These leaves when dry the color of the leaf becomes dark which is not preferred by the customers or they pay less money for it.
4) Thermocol plates have become more popular although they are very dangerous for environment as they are not biodegradable, it is being used by the people as they look good in appearance, cheaper than Sal leaf plates, surface is cleaner and smooth.
5) Storage of Khalis and dwipatris become a major problem, when the permit for transportation is banned for 2 months by the government every year in the month of Rainy season. At this time they have stock of Khalis and Dwipatris worth 36 lacs for which they need lot of space.

b) Payment related – Since they have advance payment system, they don’t have money problem.

c) Marketing related – Since they maintain high quality they are referred by bigger traders to other traders.

3.5) Big traders and manufacturers – There are 50 big traders, with annual turnover from 2-15 crores. They have better access to outside market, market information, storage space and capital. They purchase processed Sal cups and plates from household processing units, contractual processors and even from processors cum traders and sell it to whole sellers in different states. Value addition takes place at this level in terms of Storage and Packaging.

1) **Company Name** – Sushil Udyog (Partnership)
**Owner** – Mr. Satnarayan Karnani (09437010150)
**Established** – Year 1960
**Block** – Basta (50 km from Baripada)
**Annual turnover** – 15 crores
**Registered Brand** – Ganpati Brand

2) **Company Name** – Trisakti (Partnership)
**Owner** – Mr. Mishra
**Established** – Year 1968
**Block** – Bethonati
**Annual turnover** – 12.5 crores
**Registered Brand** – Trisakti Brand
They are manufacturing and supplying Cups and Plates of Sal leaves to Rajasthan, Uttar Pradesh, Madhya Pradesh, Bihar, Maharashtra, Gujarat, Karnataka, Delhi, Haryana, Punjab, Assam and Andhra Pradesh.

According to them they are not able to meet the current demand for the current product range made from Sal leaves as they don’t have enough manpower to fulfill the demand. They also mentioned that there is scope for the product made up of Sal leaves in foreign countries as it is a biodegradable product and does not pollute the air, but they are not able to meet the quality standards required by them. They are using thin plastic film to stick two layers of Khalis and Dwipatris to make Plates and Cups; this plastic is not preferred in western countries, as it won’t meet the strict environmental rules and norms in western countries. Even after machine stitching there are gaps in leaves where dust gets collected, which is not accepted. The cost of production as per the current production process will go very high even if they achieve the quality standards and meet the environmental norms in western countries due to which the product will not sell.

4) Machine/Die maker
Most of the machine/Die makers are based in Basta block of Balasore district.
Fig. 4) 1. No welder mask used during welding process. 2. LPG gas cylinder are not kept safely, can cause big accident.

Fig.4) Poor set up and not well designed/planned working space.
Unit Visited – R.P. Engineering
Established – Year 2002
Investment – 2 lacs
Loan – Rs. 80000 from bank.
They make manually operated heat pressing machine and their dies. The raw material they use for dies is Aluminium and Cast iron. Casted iron dies are more costly and have better life. Cups and plates made using casted iron dies have better look as compared to those made using Aluminium dies.

Fig.4) scattered and un organized work shop of Dies making
**Recent innovations**

1) **Semi automatic heat pressing machine** – This machine was developed to improve the production capacity of Plates and cups. It has got four dies for pressing and one die for cutting the excess leaf part. This machine is mechanically operated, whereas household pressing machine are manually operated. The operator remains standing and press the leaver at the bottom with legs to operate the die. Many operators using manual operated pressing machine have reported of back pain, knee pain, chest pain, breathing problem and tiredness which is not there in case of semi automatic heat pressing machine.

In case of semi automatic heat pressing machine, the operator can sit and just have to feed in the Khalis and Dwipatri in the die. There is a switch for controlling the temperature. The drawback of this machine is that it is very costly and occupies a large space.

The highlighted areas with red circle are the dies for cups.
The over view of the multi-dies machine.

2) **Aluminum foiled paper** - Aluminum foiled paper is being used on the outer side of the Thali and Donas to improve strength, Quality and leak proof. Aluminum foiled paper plates are already available in the market and are quiet cheap. Using this outside the Thali and Donas will only add to the cost and make the product more costly. We have to look for another option.

3) **Dies with embossing** – This is one of the smart innovations which will not only enhance the look of the product but it can be used to brand the product. A lot can be worked on this.

4) **Stitching of Plates using Sewing machine** - Women’s in SHG are being trained in stitching the leaves using sewing machine, but still lot of improvement needs to be done in the machine and the stitching process which they are following in which, first the leaves are stitched with sticks, then it is stitched with sewing machine and finally the sticks are removed which lengthens the process and more time is consumed.
**Cups and Plates made of other material**

In the recent year there is lot of demand for disposable cups and plates due to the changing food habits of the people. Lot of restaurants, roadside take away food joints have opened up which are mainly dependent on disposable cups and plates for serving their customers. They need cheap yet presentable disposable cups and plates. Disposable cups made of Styrofoam and Plastic has captured the market very strongly because it is cheap, presentable and strong although it is very dangerous for the environment since it is not a biodegradable product.

![Disposable Cups & Plates made up of foam](image1)

![Bowls, Plates and serving trays made up of Areca nut leaves](image2)

Areca nut leaves are also being used to make cups and plates. They are much stronger than Cups and plates made of Sal leaf and presentable also. Laminated paper with aluminium foil is also used for making cups and plates.

**Product Seasonality**

The following table explains the seasonality of collection, processing and sale of the products:

<table>
<thead>
<tr>
<th>S.No</th>
<th>Product</th>
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<tbody>
<tr>
<td>1.</td>
<td>Leaf collection (Desirable)</td>
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<td>2.</td>
<td>Leaf collection (Practice)</td>
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<td>3.</td>
<td>Stitching of plates and cup material</td>
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<td>4.</td>
<td>Processing</td>
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<td>5.</td>
<td>Sale</td>
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Marketing channels
The product moves from primary collectors to the Agents (cyclewallah), from agents to processing units and finally to different levels of traders. From traders the product reaches to the consumers through retailers. Product movement is depicted in the following diagram:
**Value Chain Analysis**

1) **Value addition at different levels of the value chain and entry barriers** - Value addition of the products at different levels as also the access to infrastructure, technology and communications are explained in the following table. From the analysis, it is evident that the primary collectors and agents do not have access to technology, infrastructure, processing facilities and communications. The big traders have access to all these according to their level of operations.

<table>
<thead>
<tr>
<th>Collectors</th>
<th>Agents</th>
<th>Household Processing unit</th>
<th>Medium traders</th>
<th>Big traders</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)Collection b)drying c)Stitching of leaves</td>
<td>a) Agglomeration b) Loose Packing c) Transportation of semi-processed plates to household / medium processing units</td>
<td>a) Agglomeration b) Processing c) Sorting e) Poly Packing e) Transportation to Medium / big trader</td>
<td>a) Agglomeration b) Processing (some of them) c) Sorting d) Poly Packing, e) Weighing, f) Transportation to end consumer or big trader</td>
<td>a) Agglomeration b) Storage c) Branding d) Packaging e) Weighing f) Transportation to wholesaler or exporter</td>
</tr>
</tbody>
</table>

**Infrastructure/Technology/Communication**

| By foot | Cycle | Operate from own house. Pressing Machine, Cutting machine and hired Tempo, Telephone. | Operate as a small industry. Pressing machine, Cutting machine & Hired/owned Mini truck | Operate from an established office with Warehouse facilities. Hired/own Trucks & temps, telephone, mobile |

**Entry barriers**

| Low – Access to forest and knowledge of forest | Low – small working capital (less than Rs 1000) and a cycle | Medium – Access to electrical driven machines | High – higher working capital and marketing links | High– much higher working capital, warehousing and national marketing linkages and linkages with exporters |
2) Value Chain Analysis (1 bundle of Cups containing 2100 cups)

3) Value Chain Analysis of Plates (1000 plates)
**Scope for Technology up-gradation, Operation and Process Innovation**

Sal leaves is abundantly available in forests which can be developed into lots of products which has not been explored till now since the raw material base(Sal leaf) is not strong due to which the products which are developed are basically use and throw products. Till now people see it as a raw material to make cups and plates which has the limitations that it can be used only one time and thus there is not much of development done in terms of Design as well as Technology.

1) First we need to develop this raw material into a strong workable raw material which:

a) Can be used to increase the product range.

b) Can be cleaned easily.

c) Has good breaking strength.

d) Can be made into a stiff product by joining layers of it together.

e) Quality of the products made from it can be controlled in terms of size and look.

f) Processed Raw material which is used to make different products, itself can be standardized in terms of size, color, strength, thickness and look.

g) Defects of leaf like black spots, holes can be worked upon.

h) Eliminate the process of joining the leaves using bamboo twigs/juna grass which is labor intensive and can lower the product quality if these twigs get loose, come out from the leaf and leaf in the plates or cup separates.

i) Makes it more hygienic and leak proof for products which is used for eating or drinking purpose.

j) The products made up of it can attract the national market more strongly and can rise to a level where it can enter the international market.

2) To develop this raw material into a strong workable raw material we need to develop the process and the machines for mass production which is production friendly and cost effective also.

3) Till now, there has been very little up-gradation in the Heat pressing machine which was developed 30 years ago. The process to heat pressing Khalis and Dwipatris is same, they do it by jerking their legs on the paddle to press the die and cut the waste out. This process has lot of side effect on the health and body of the operator. There are complains of severe back pain, chest pain, weakness, knee pain and breathing problem. In summers when the temperature is high, it is very difficult for them to work. A semi-automatic heat pressing machine was also developed which can heat press four donas in one go and it is motor operated, but this machine occupies a huge space and the cost to buy it is very high. Hydraulic heat pressing machine is production and user friendly but it is too costly and out of reach for common man.

4) Till now the products are limited to different designs of cups and plates, once we develop a new range of products there will be need to develop new machines (As thought – Induction plate machine to save electricity and make process faster, with heat regulator, combined with hydraulic of technology) and process.

**Scope for product design, redesign, and Product development**

Aluminum foiled paper is added now to make the cups and plates leak proof but again it is increasing the price of the product. There are products completely made up of aluminum foiled paper available in the market. The use of foiled paper with Sal leaf will lower the importance of Sal leaves; it will lose its individuality. So we need to develop products entirely made from Sal leaves and other materials as accents only. There is a need to increase the product range apart from Cups and plates to increase its market and customers both at national and international level as it is getting a tough competition from its
counterpart made up of Thermocol, Plastic and Paper in this range. If this can be worked upon it can help us in fighting pollution and global warming which is increasing due to the extensive use of Thermocol and Plastic based Cups and plates globally and the process to make it.

As thought- we can develop Popcorn glass (which has huge market in theatres around the globe). The current Popcorn glass is made of paper. Making popcorn glass of Sal leaf will help us saving environment and tree.

**Training and Skill up-gradation**
Gram Swaraj is one of the NGO which has actively contributed in the development of the Sal leaf cluster in Mayurbhanj district since 2005. They are providing guidance and points to improve the quality of the end product. Also they are educating the primary collectors about the importance and benefits related to quality of the product. Since these primary collectors are mostly tribal people and are uneducated, there is a need to educate and train these people, starting from collecting of right kind of leaf for making Sal leaf products, sorting and cleaning of leaf, so that the product made from it, which is the next level will have good quality and will fetch them better price and also save their time and strength involved in making a bad product, basically they should be educated about a bad and good product, how it is made and what are the benefits of it. Problems like counting of leaf and its correct packaging are one area which needs to be focused and corrected, as it is hampering the goodwill of the seller and hence the product also. Quality control at primary level is very important for the growth of Sal leaf products.

**Ergonomic and Environment factors**
The process to heat pressing Khalis and Dwipatris is same, they do it by jerking their legs on the paddle to press the die and cut the waste out. They have to stand and operate the machine for hours at stretch. This process has lot of side effect on the health and body of the operator. There are complains of severe back pain, chest pain, weakness, knee pain and breathing problem. In summers when the temperature is high, it is very difficult for them to work.
**Exhibition/Display design opportunities**

Since in the present scenario, there is a lack of strong product base in terms of Raw material, design, its range and its production process, there is not much to display and exhibit. There is a lot of scope in terms display design and marketing once a strong product base is developed. Participation in Fairs and Exhibitions organized at local, state, national and international level for exposure to all type of market will be the next step once the Process and products developed by the cluster is upgraded. The coordination among several Govt. Organizations like DIC, DC (Handicraft), EPCH, NABARD is indeed essential for participation in various fairs, buyers/sellers meet in India and abroad. India International Handicraft and Gift Fair which is held twice in a year in the month of February and October in Greater Noida (U.P.) can be one such big platform for these clusters to display their products and get exposed to national and international market.

**Credit issues in the cluster**

1) Credit requirement

1.1) **Primary collectors** - It was assessed through a PRA exercise in the villages that household requirement of credit in a year for production as well as consumption purposes is Rs. 6,000-8,000 on an average. Households require consumption loan during the months of July to August and during the “Makar” festival in January. Production loan is required in the month of September and October for agricultural operations.

1.2) **Household processing units** - The household processing units operate with a working capital of Rs. 1000 to Rs. 1500. Working capital is mainly required to purchase raw material. Household processing units need credit for installing more machines, bulk purchase of raw materials and storage facilities in order to upscale their business. Their requirement is around Rs.15000 to Rs.20000.

1.3) **Contractual processors** - Contractual processors mainly invest money on machinery and labor. Some of the processors who are also engaged in trading invest money in bulk purchase of raw material and storage. Access to additional capital of about Rs.4-5 lakhs would help the processors to undertake trading as well. At the present level of capital investment contractual processors are not able to meet the market demand.

1.4) **Traders** - Capital is the crucial factor for this category of market players. Higher capital helps the traders to deal with the gestation period between supply of products and receiving the sale proceeds. It was shared by the big traders that when 3 to 4 truck load of products are supplied to the market payment for one truck is received immediately and the rest after a month. The working capital requirement of traders would be around Rs.15 to 40 lacks a month depending upon the size of operations.
1.5) Machinery suppliers - Machinery suppliers usually operate with a working capital of Rs. 5 to 10 lakhs. The business requires double this amount during the peak season (December to March) due to higher orders for supply of machines. Machinery suppliers have good business relationship with the banks and it is not difficult for them to access loans from the Banks.

1.6) SHGs of collectors - The Bank has disbursed more than Rs.64 lacks of credit to 154 SHGs in the cluster during the past 6 years. It was observed that more than 70 % of the loan amount has been used for consumption and agricultural purposes. Most of the SHGs do not have the loan absorption capacity due to lack of investment opportunities and hence could not access repeated loans.

1.6a) SHG Savings - Members of the SHGs save Rs.10-15 every month. Most of the members are not regular in saving on a monthly basis. As per the data supplied by the Bank (SBI), 113 SHGs collectively saved Rs. 6 Lakhs during the past four years. On an average each SHG saved Rs.5000. It was noticed that the low savings is due to irregular monthly meetings, long distance to the Bank and lack of handholding by the facilitating agency. In some places, SHG leaders are not willing to take the responsibility to deposit the savings in the Bank due to long distance, cost and time involved in depositing the money in the Bank. With some support and capacity building, the SHGs can be revived and the Savings and Loan repayment activities can be streamlined.

Support institutions
1) Forest Department - Forest department is an important state government agency entrusted with functions of conservation, aforesstation and protection of the biodiversity of the area involving people’s participation. The Joint forest management Committees (JFC) formed under the world food program in 95 villages in Baripada is very effective in conservation and protection of the forest. The forest department had the control on NTFPs till 1999. Data and information on NTFP procurement and sale were available as the department kept the records while collecting royalty on forest produce. In 1999, the state government has transferred this responsibility to Gram Panchayats through a separate regulation. Since then very little information is available on the trade of NTFP.
Forest department still has the authority to collect royalty on the Sal leaf plates and cups when they are transported to other districts and states. The royalty presently charged is Rs.60 per quintal load of pressed plates / cups.

2) Panchayat - Panchayat Raj institutions operate in a three tier system in the district viz. Gram panchayat (Village level), Panchayat samiti (Block level) and Zilla panchayat (District level). Gram Panchayats play an important role in the development and Governance at the village level. The State Government recently equipped them with the responsibility of issuing licenses and collecting royalties for 69 NTFPs. Panchayat samitis also have the responsibility of fixing the annual rates for each of these NTFPs. The district Panchayat officer monitors and controls the activities at district level. Traders In Baripada cluster presently are not approaching the panchayats for license as listed NTFPs are not collected in volumes from the forest area. Two major products collected and traded in big volumes are Sal leaves and Sabai grass which do not fall under the declared 69 NTFPs.

3) District Rural Development Agency - The District Rural Development Agency (DRDA) implements many development programs under different Government schemes in the District. Swarnjayanti Gram Swarojgar Yojana (SGSY) is a big Central Government Scheme which is being implemented by DRDA in the district. There are 800 BPL SHGs formed in the cluster with the help of ICDS and NGOs. Out of these members of 154 SHGs are dealing in Sal leaves. 31 SHGs are extended financial assistance under the SGSY scheme. As per the practice, after 1st gradation of SHGs, DRDA provides a revolving fund to SHG with a bank loan. When the SHG repays the loan on time, a second gradation of the SHG is done. After second gradation, DRDA supports the SHG with a subsidy of Rs. 125000 and a bank loan to undertake any income generation activity identified by the SHG. DRDA also provides skill oriented training to SHGs. A separate provision for infrastructure support to SHGs is also available within the scheme. So far 10 SHGs operating in Sal leaves have benefited from the scheme in the cluster.

4) Integrated Tribal Development Agency - ITDA is a state level agency exclusively working on integrated development of tribals. This agency implements an SHG support scheme which provides vocational training, and provides subsidy with a bank loan and also extends marketing support. ITDA has initiated activities revolving around apiculture, tusar silk spun and reeling, rubber plantation and fisheries. ITDA supported 5 tribal SHGs in the cluster to start agriculture based income generation activities.

5) Orissa Forest Development Corporation - This is a state affiliated agency mainly dealing with timber trading. Involve and supporting production of oils from sal seeds.

6) NABARD - The National Bank for Agriculture and Rural Development (NABARD) is a national bank which plays an important role in finance and refinance. NABARD prepares the district potential plan with the help of lead district bank. NABARD conducts need based technical training programs under various schemes. NABARD has an office in Baripada and operates through the local DDM office in the District.

7) Self Help Groups (SHG’s) – There are 256 SHG’s (Self Help Group) in Mayurbhanj district to which Gram Swaraj is associated with. These SHG’s are involved in:

a) Collection and processing of NTFP’s (Non Timber Forest Products)

b) Sal and Sabai grass products.

SHG’s are mostly founded by women’s. Each group has 10-12 members. They start with money saving practice, which becomes there capital, on this they apply and take loan from the Banks to start their business.

7.1) Benefits of SHG’s – They have benefits at three levels:

1) 1st level - This start with money saving practice, which becomes there capital, on this they apply and take loan from the Banks to start their business. This helps them in avoiding, lending money from
landlords at higher rate of interest. They become self dependent. They are provided revolving fund by the bank. A subsidy of 30% is given on loans.

2) 2nd level – Aggregation of material in group increases due to which there bargaining capacity for selling price increases. The production and transportation charges get divided among the members due to this per head charges are less and hence more profit to each member.

3) 3rd level – Business gets more organized. Information sharing takes place and keeps every member aware of things.

8) Role and Help from Government – Government is providing 30% subsidies on loans taken from banks. Earlier government levied sales tax on Sal leaf products, but after agitation from Sal leaf traders, this sales tax was removed but they levied a royalty of Rs. 60/quintal on Sal leaf products. This royalty is generally paid by the traders. To avoid increase in the price of the Sal leaf products due to this royalty the traders buy Khalis and Dwipatris from the primary collectors at lower price.

9) Role of Bank – To avail the facility of loan from bank, primary collectors must group themselves into an SHG (Self help group) which mostly comprises of 10-12 ladies. They should possess the voter ID card and the BPL card to open a joint account. Each member should save a minimum amount which is fixed by the members in this saving account for 6 months initially. After 6 months only the bank will provide the loan to the SHG on the basis of amount saved. Generally they can get 4 times the amount saved in 6 months as loan. The interest rate is 10% on the balance principal amount after the deduction of 30% subsidy on loans which is provided by the government.

There are many nationalized banks which are providing these loans like SBI, Bank of India, Punjab National bank, Syndicate bank, Canara bank, Andhra bank, and IDBI. Regional banks like Baitarani Gramya bank which has 102 branches in Keonjhar and Mayurbhanj district, Kalinga Gramya bank in Coastal Orissa, Rushikulya bank in Southern Orissa are also providing the loans to these SHG’s.

10) Role of NGO’s – Gram Swaraj is one of the NGO which has actively contributed in the development of the Sal leaf cluster in Mayurbhanj district since 2005. They are providing guidance and points to improve the quality of the end product. Also they are educating the primary collectors about the importance and benefits related to quality of the product.

10.1) Internal Business Linkages - They have introduced the concept of Inter business linkages among the SHG’s to nullify the role of Middle men, hence increasing the profit margin. Transparency is there and people at every level knows what value addition is being done at different level and they know about the value chain which helps them, as they get self motivated to upgrade themselves to next level. They also help in marketing and selling of the Sal leaf products.

SWOT Analysis of cluster:

**Strength**

- **Thick forest**: A well protected dense forest of 10,000 hectares exists in the cluster. More than 80% of the plant species in this forest are Sal trees
- **Other NTFPs**: The forest is enriched with a wide variety of NTFPs and medicinal plants available in the forest. They could provide an alternate source of livelihood.
- **Strong Social Capital that helps protection of forests**: JFPC has a strong network in the villages in the form of village level forest protection committees. The activities of JFPC are limited to conservation and protection of forests.
- **Big Sal leaves Market**: The largest market for Sal leaf plates and cups is located in Betnoti in the cluster.
Opportunities

- **Potential for Value addition in villages**: Value addition by processing can be shifted to villages
- **Potential to diversify to other NTFPs**: There is a good potential to promote other NTFPs for alternate livelihoods.
- **Government Schemes**: Government support is available under different schemes such as, *Swarna Jayanti Gram Swarojgar Yojna* etc.
- **Presence of banks in the cluster**: SBI and some other banks are operating in the cluster. SBI has a branch in Budhikhamari
- **Immense potential in raw material.**
- **Immense scope of environment friendly product development and diversification**

Weakness

- **Poor Infrastructure**: Villages have very poor or no infrastructure. Many villages do not have electricity supply. No facility of warehouses exists in the villages.
- **No updated machine and equipments been developed**
- **No well set production centre are available.**
- **Poverty**: Collectors are very poor and not in a position to invest.
- **Poor Knowledge**: Lack of knowledge of processing techniques and processing equipments at primary collector’s level is another weakness of the cluster. Similarly, Lack of technical knowledge, entrepreneurial and marketing skills at primary collector’s level is another issue.
- **Lack of market**: No market exists for other NTFPs in the cluster.
- **Poor design and technology inputs.**

Threats

- **Forest Fire**: Many a times there is a forest fire in the cluster. No fire fighting mechanism is available in the cluster.
- **Illegal tree felling**: Illegal tree felling is a major threat to the cluster
- **Unsustainable collection practices**: Unsustainable collection of sal leaves by the collectors is a major threat to the cluster. Similarly, Use of Sal Twigs by villagers for teeth brushing is a threat to Sal forests
- **No proper up-gradation of tools and machines and products as per tie and requirement.**
Sabai Grass is a tufted perennial grass with basal sheaths woolly with whitish hairs. Stems (culms) are 1.5-3 ft high. Leaf-blades are mostly basal, up to 60 cm long, 2-3 mm wide, hairless, sometimes hairy towards the base, hairy at the mouth of the sheath, rigid, sub erect, folded.

Most of the Sabai Grass plantations are located in the Revenue Sub-division of Baripada and Kaptipada of Mayurbhanj District. Roughly the total area under Sabai Grass in district at present is about 22758 hectares Sabai Grass was in cultivation long since in the district, however, substantial extension of area was achieved during the 8th, 9th and 10th plan period. Up to the end of 7th plan the total area under Sabai Grass was estimated to be 9218 hectares.
Sabai Grass is cultivated mostly by poor marginal and small farmers on their degraded lands. It is also collected by them as well as by the landless poor from the common pool village lands where it grows naturally. The per acre cost of production of Sabai Grass in the initial year works to around Rs.2,200. The cost for the second year is roughly Rs.650 and from the third year to ten year Rs.1000 per year. The produce is finally harvested in the 11th and 12th years. In the 11th year, the cost of harvesting is estimated at Rs.400 and in the 12th year at Rs.250. In the last two years, no maintenance is required and hence no maintenance costs. Thus the total cost of production over a period of 12 year works out Rs.11500 per acre.

The returns are realized from the sale of dry Sabai Grass which has a good market in the Mayurbhanj district. The total yield per acre over a period of 12 years was about 96 quintals (qt). The gross returns from the sale of Sabai Grass were estimated at the 2008 market price of Rs.500 per quintal. The gross returns over a period of 12 years were estimated to be Rs.48, 000 per acre and net return to be Rs.35, 500. The average net return per acre per annum over the 12 year period was Rs.3041. This represents a significant income from (land) resources that is degraded and whose opportunity cost is almost zero.

Sabai Grass of the Mayurbhanj district of Orissa is of good quality and has been accepted widely in the Indian market. Most of the traders prefer the Ropes made out of the Sabai Grass of this region. A large number of people are involved in this cottage industry (harvesting and rope making) or as a trader sending the produce (ropes) to the urban areas, both near and distant.

The total harvesting area of the Mayurbhanj district is 4.47 lakh hectar of which 43.70 percent is highland with very poor water retention capacity. The highlands are generally not suitable for harvesting of crops or orchards. But they are suitable for harvesting of Sabai Grass. The agro climatic conditions obtaining in the district are also suitable for Sabai Grass production. According to general estimate the total production of Sabai grass in Mayurbhanj district of the state is about 15000 to 20000 metric ton/per annum of which some 9000 to 12000 metric ton is converted into ropes and the remainder is used for other purposes. At an average/minimum price of Rs.10 per kg of ropes and Rs.5 per kg of grass the total value of the produce works to Rs.16crore per annum which is quite a significant contribution to the economy of the Mayurbhanj district.

The total 9.3% of the population of the district Mayurbhanj is involve in the trade and as per the record there is no such fix numbers units available.

1) Primary collectors/Grass Harvester/Processors – They are men and women’s living in the nearby villages around the forests; men’s are mostly engaged in the transportation and selling activities. They mostly belong to tribal communities, schedule caste and other backward class. Family members perform the Harvesting and collection of grass from the nearby forest, drying and twisting into ropes. The investment at this level is almost very low.

1) Unit holder – Nirdravati Bahupuja
Village - Masinakati (70km from Baripada district headquarter)
District – Mayurbhanj

1) Unit holder – Phulmoni Soren
Village - Masinakati (70km from Baripada district headquarter)
District – Mayurbhanj
Over view of Sabai grass process and Cluster problem areas.
Proper tools need to be designed, the tools currently being used are self made by artisans.
Fig:- Sabai ropes been rubbed by the artisans to smoothening/polishing the surface with the help of tree branch. It is clearly reflects the lack of Infrastructure/technical inputs in the cluster.
Fig:- Sabai Grass Artisan working on the road, reflects no proper planned space available for work.
**Sabai Grass Craft**

Sabai grass is practically considered to be "The Money Plant" which ensures cash receipt throughout the year. The industry is associated with various activities of raising production of grass and processing of consumer goods such as ropes, mats, carpets, sofa sets, wall hangings and other sophisticated fashionable articles. The Sabai grass industry has tremendous export potential.

With the involvement of NGO’s, local people are looking into the possibilities of expanding the product range. They are working on lot of new products especially Home décor, storage items etc. which can be easily made by weaving the Sabai grass. They are also dyeing the grass with synthetic colors and thus increasing the design options. They are using other NTFP (Jute ropes) along with Sabai grass to develop new products.

**Current Sabai Grass Products Status at Cluster**

No design inputs and training has been given towards product designing or development. Also proper tools are not available for making products apart from rope making. Products available in cluster’s neither appealing nor aesthetic. For the reference please refer the fig.1

![Fig.1).sabai Product](image-url)
Fig. 1) Basket—neither appealing design nor good quality is available.

Fig. 1) Coaster—not well finished product available.
Products Developed outside clusters by various organization using the rope made at cluster
1) Ropes
2) Storage boxes
3) Floor mats
4) Coasters
5) Tablemats
6) Baskets
7) Trays
8) Bowls
They are also participating in State organized fairs where they display their products and they are getting good response. Still lot of improvement need to be done in terms of increasing the Product range, Quality, detailing, Packaging and Marketing. This craft has got lot of Potential to grow.
Sabai Grass Products developed by inmates of Baripada Central Jail
Baripada Central Jail was established in the year 1885; Inmates of the jail are made to engage in local craft work during their punishment period. Sabai grass furniture’s and products is one of the craft done by jail inmates since its establishment.
As per the Mr. Golak Bihari Mohanty the Senior Superintendent of Baripada central jail, Raw material like bamboo used for making the frame of the furniture and the Sabai grass ropes is purchased from the local market to make furniture. Sabai grass furniture is only made in the jail, and sold in the local market. The technique to make this furniture is not known to Sabai grass craftsmen outside jail or any local people. Due to security reasons Jail officials cannot allow the jail inmates to train other people outside the jail. These jail inmates have been making beautiful Sabai grass furniture, Door mats and large floor mats.

**Manufacturer and Traders**

These are the manufacture and traders of sabai grass ropes and product.

1) Unit holder – Mr. A.K. Chanasoren  
   Village - Gondhigoda (45km from Baripada district headquarter)  
   District – Mayurbhanj

1) Unit holder – Mr. Pungi Soren  
   Village - Gondhigoda (45km from Baripada district headquarter)  
   District – Mayurbhanj

**Scope for product design, redesign, and Product development**

Sabai grass is a very versatile material which can be easily converted into interesting and beautiful products. There are some points which can be worked upon, they are:

a) Products made of Sabai grass is susceptible to water. It will get damaged if it comes in contact with water.

b) Chemical dyes are being used at present to color the products, which is harmful to skin. Natural dyes can be used in place of that.

c) New designs and product range need to be increased.

d) Although the products are unique but there is a need of Quality control to raise the standard of the product, which is missing.

e) Sabai grass can be weaved into beautiful products. This is one design aspect which has not been explored much as compared to other materials like leather.

f) Sabai grass can also be beautifully combined with other material to increase the product range.

**Training and Skill up-gradation**

DASI is one of the NGO which has actively contributed in the development of the Sabai grass cluster in Mayurbhanj district.

**Support institutions**

1) **Forest Department** - Forest department is an important state government agency entrusted with functions of conservation, aorestation and protection of the biodiversity of the area involving people’s participation. The Joint forest management Committees (JFC) formed under the world food program in 95 villages in Baripada is very effective in conservation and protection of the forest.

2) **Panchayat** - Panchayat Raj institutions operate in a three tier system in the district viz. Gram panchayat (Village level), Panchayat samiti (Block level) and Zilla panchayat (District level). Gram Panchayats play an important role in the development and Governance at the village level.
3) **District Rural Development Agency** - The District Rural Development Agency (DRDA) implements many development programs under different Government schemes in the District. Swarnjayanti Gram Swarojgar Yojana (SGSY) is a big Central Government Scheme which is being implemented by DRDA in the district. There are BPL SHGs formed in the cluster with the help of ICDS and NGOs. Out of these members of SHGs are dealing in Sabai grass. 31 SHGs are extended financial assistance under the SGSY scheme.

As per the practice, after 1st gradation of SHGs, DRDA provides a revolving fund to SHG with a bank loan. When the SHG repays the loan on time, a second gradation of the SHG is done. After second gradation, DRDA supports the SHG with a subsidy of Rs. 125000 and a bank loan to undertake any income generation activity identified by the SHG. DRDA also provides skill oriented training to SHGs. A separate provision for infrastructure support to SHGs is also available within the scheme. So far 3 SHGs have benefited from the scheme in the cluster.

4) **Integrated Tribal Development Agency** - ITDA is a state level agency exclusively working on integrated development of tribals. This agency implements an SHG support scheme which provides vocational training, and provides subsidy with a bank loan and also extends marketing support. ITDA supported 5 tribal SHGs in the cluster to start agriculture based income generation activities.

5) **NABARD** - The National Bank for Agriculture and Rural Development (NABARD) is a national bank which plays an important role in finance and refinance. NABARD prepares the district potential plan with the help of lead district bank. NABARD conducts need based technical training programs under various schemes. NABARD has an office in Baripada and operates through the local DDM office in the District.

6) **Self Help Groups (SHG’s)** – There are 52 SHG’s (Self Help Group) in Mayurbhanj district to which DASI is associated with. These SHG’s are involved in: Sabai grass products.

SHG’s are mostly founded by women’s. Each group has 10-12 members. They start with money saving practice, which becomes there capital, on this they apply and take loan from the Banks to start their business.

6.1) **Benefits of SHG’s** – They have benefits at three levels:-
1) 1st level - This start with money saving practice, which becomes there capital, on this they apply and take loan from the Banks to start their business. This helps them in avoiding, lending money from landlords at higher rate of interest. They become self dependent. They are provided revolving fund by the bank. A subsidy of 30% is given on loans.
2) 2nd level – Aggregation of material in group increases due to which there bargaining capacity for selling price increases. The production and transportation charges get divided among the members due to this per head charges are less and hence more profit to each member.
3) 3rd level – Business gets more organized. Information sharing takes place and keeps every member aware of things.

7) **Role and Help from Government** – Government is providing 30% subsidies on loans taken from banks. Earlier government levied sales tax on products, but after agitation from traders, this sales tax was removed.
8) **Role of Bank** – To avail the facility of loan from bank, primary collectors must group themselves into an SHG (Self help group) which mostly comprises of 10-12 persons. They should possess the voter ID card and the BPL card to open a joint account. Each member should save a minimum amount which is fixed by the members in this saving account for 6 months initially. After 6 months only the bank will provide the loan to the SHG on the basis of amount saved. Generally they can get 4 times the amount saved in 6 months as loan. The interest rate is 10% on the balance principal amount after the deduction of 30% subsidy on loans which is provided by the government.

There are many nationalized banks which are providing these loans like SBI, Bank of India, Punjab national bank, Syndicate bank, Canara bank, Andhra bank, and IDBI. Regional banks like Baitarani Gramya bank which has 102 branches in Keonjhar and Mayurbhanj district, Kalinga Gramya bank in Coastal Orissa, Rushikulya bank in Southern Orissa are also providing the loans to these SHG’s.

9) **Role of NGO’s** – DASI Gram swaraj are the NGO which has actively contributed in the development of the Sabai grass cluster in Mayurbhanj district. They are providing guidance and points to improve the quality of the end product. Also they are educating the artisan about the importance and benefits related to quality of the product and product development. The above NGO’s also supports in marketing of sabai products through exhibitions and supplying to retail stores.