



**DIAGNOSTIC STUDY OF  
FISHERY CLUSTER, GUDUPAHI, ORISSA**



**By**

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**&**

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### **LIST OF ABBREVIATIONS**

1. UNIDO : United Nations Industrial Development Organisation
2. F & ARD : Fisheries and Animal Resource Development Department.
3. IMC : Indian Major Carp.
4. GNOC : Ground Nut Oil Cake.
5. CIFA : Central Institute of Fresh Water Aquaculture.
6. CIBA : Central Institute of Brackish Water Aquaculture.
7. FFDA : Fish Farmers Development Agency.
8. BFDA : Brackish Water Fisheries Development Agency.
9. M.T. : Metric Ton.
10. H.Q. : Head Quarters.
11. DFO : District Fisheries Officer.
12. DSF : Deputy Superintendent of Fisheries.
13. FEO : Fisheries Extension Officer.
14. MPEDA : The Marine Product Export Development Authority.
15. NESCO : North Eastern Electricity Supply Company.
16. PCR : Polymerase Chain Reaction.
17. ITR : Interim Test Range.
18. RCD : Raw Cow Dung.
19. UNDP : United Nations Development Programme

## **1. INTRODUCTION:-**

Gudupahi is a single Brackishwater Aquaculture cluster situated in the village Gudupahi in Balasore District of Orissa. This village is endowed with beautiful and vast resources for fresh water pisciculture, scampi culture, and shrimp culture. A perennial coast canal is situated on the eastern boundary of the village and it is estuarine in nature and connected with Bay of Bengal.

The economy of the village is primarily agricultural. As the soil is having high percentage of salinity, agriculture production is low and not profitable.

The cluster resource is located adjacent to the coast canal and its creeks. The coast canal originates from river Budhabalanga at Charigachhia and runs towards Basudevpur, via- Gudupahi. The coast canal and its creeks feed brackish water to the cluster due to high tide during full moon and new-moon periods for two to three days during the lunar phases. The canal water recedes down during neap tide when its creeks are devoid of water.

It is a fact that due to saline soil there was almost negligible agricultural production, reducing per capita income of the farmers of that area. When pisciculture, polyculture, scampi culture and shrimp culture practice were standardized as high income generating schemes and introduced in the cluster, the farmers adopted this culture practice in suitable patches to raise their incomes. This culture practice has raised farmers' income 10 to 15 times. Almost 50% of agricultural farmers converted their agricultural lands for fisheries project. However, after 2 to 3 years, the farmers in shrimp culture started sustaining losses due to water pollution, biodegradation, organic deposit in the creeks, white spot disease etc. Presently, most of the shrimp farmers are following extensive culture practices using less feed and seed. However both production and profitability have drastically come down.

The products of this cluster are mainly meant for export markets. During 2004-05 India has exported 138085 MT. of frozen shrimp valuing Rs 4220.67 crores and is now an important player in the global market. It is at the 12th position among exporters of these products. The contribution of Orissa is 10366 MT valuing Rs 322 crores and contribution of Gudupahi cluster is 358 MT amounting to Rs 10.90 Cr. In view of the characteristics of the village and production dynamics, cluster development approach may be an effective tool for its sustainable development and growth.



## **2. PROFILE OF THE CLUSTER**

### **2.1. SIGNIFICANCE OF THE CLUSTER:-**

Gudupahi is a fishery sector cluster consisting of many small, medium and large farmers who have adopted fish, scampi and shrimp culture. The interested producers groups, various technical and financial institutions, support agencies have contributed for the growth and dynamism of the cluster. The cluster has potential for leap growth and is dynamic as observed on the basis of typology of the cluster. (Annexure -1).

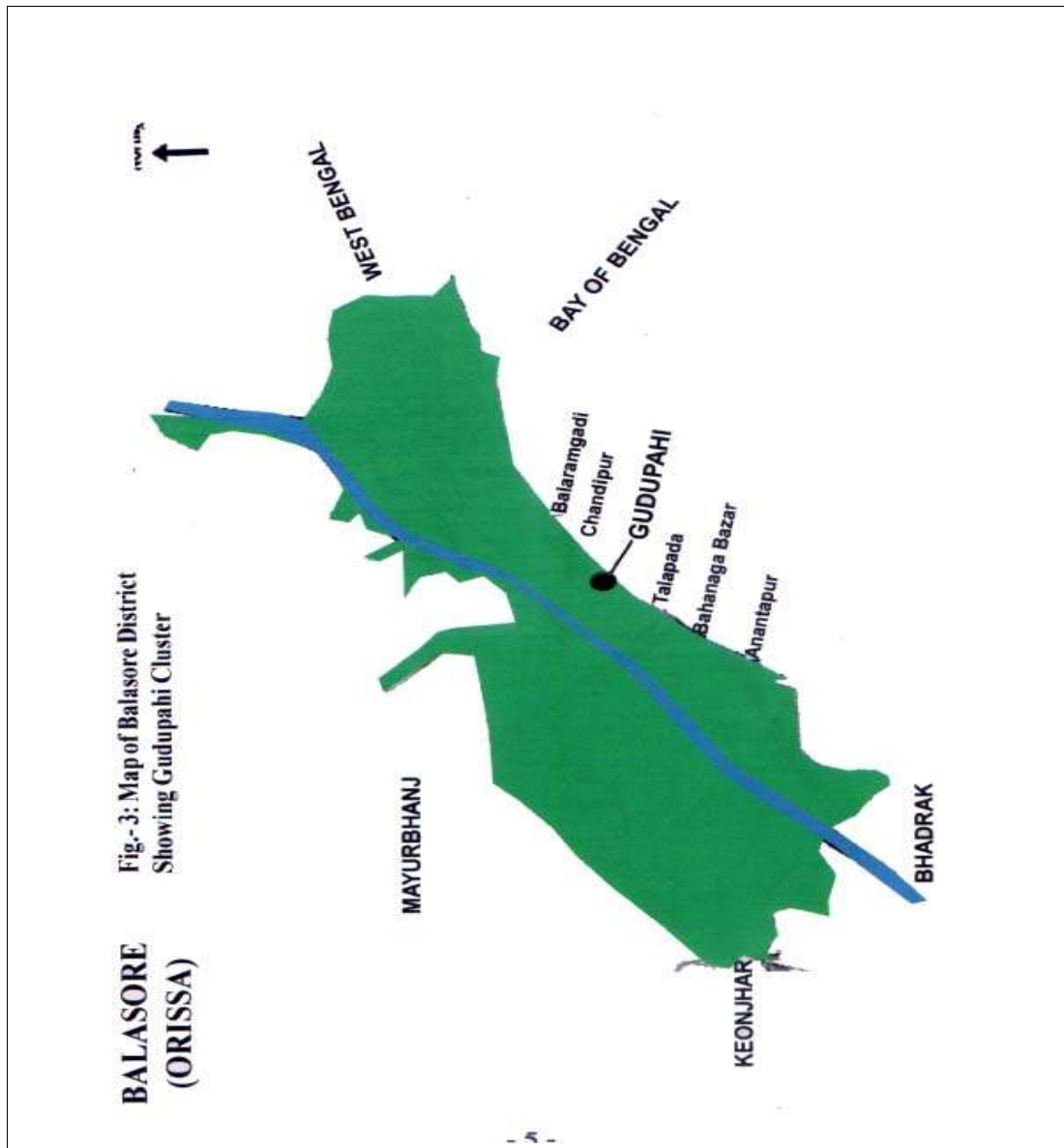
### **2.2 HISTORY OF THE CLUSTER**

Previously the cluster was inundated with Brackish water inflow from the side creeks of coast canal which originated at Chargachhia from river Budhabalanga and run towards Basudevpur, via- Gudupahi. There was no scope for agriculture due to saline soil and dense mangrove forest. In due course by 1950, there was deposition of silt on the land and creeks and forming the agricultural area. The people from West Bengal migrated to this place and started residing here after clearing the mangrove forest and got the record of right (ROR) for said lands in their names. They started agriculture, but the profit was very low i.e. Rs. 1000/- to Rs. 2000/- per hectare. All the people depending on agriculture remained below the poverty line. Some of the agriculturists took up construction of tanks to undertake the fresh water aquaculture and got profit of Rs. 10,000/- to Rs. 20,000/- per hectare area. After fish culture practice was standardised and implemented through FRDA in 1977, the farmers of this village took-up poly culture (IMC. with scampi) and earned about Rs. 25,000/- to Rs. 30,000/- profit per hectare. Then monoculture of scampi was introduced from 1995 in the district. Some of the farmers in Gudupahi village took up culture and earned Rs. 40,000/- to Rs. 50,000/- profit per hectare. After standardisation of shrimp culture by CIBA and due to its high profitability, the big farmers as well as Industrialists from outside the village started shrimp culture in 1985 in different coastal areas/ places of Balasore District and in some patches at Gudupahi. The profit from shrimp culture was the highest i.e. Rs. 50,000/- to Rs. 1,00,000/- per hectare of water area, being 50 times of income due to agriculture within a culture period of 120-135 days. The culture is taken twice a year, and the same farm pond generates double income in a year.

Thus the agriculturists of the village Gudupahi were influenced by this profitability and took up shrimp culture. Within a span of 10 years, almost 50% of the agriculturist converted their cultivable land to shrimp culture ponds. They earned very lucrative income from shrimp culture and their financial status went up. Due to massive culture area, the effluent discharge from shrimp culture ponds **caused deposit** of biodegradable matters in the feeder creeks and polluted the entire ecosystem of the feeder canals, and caused mortality of shrimp due to white spot disease. As a result, the farmers have shifted their culture practice from shrimp to scampi, and shrimp to Indian major crop (IMC) as per the suitability of their ponds. Presently, some are adopting shrimp culture by extensive methods and are getting optimum production of 1500 kg. to 1800 kg. per hectare. However, present fish farmers of the village- Gudupahi are more advanced in IMC, scampi and shrimp culture techniques and attracting the attention of processing plants, Calcutta whole-sale markets and also full filling the fish requirement of Balasore local markets.

### 2.3 CLUSTER BOUNDARY:-

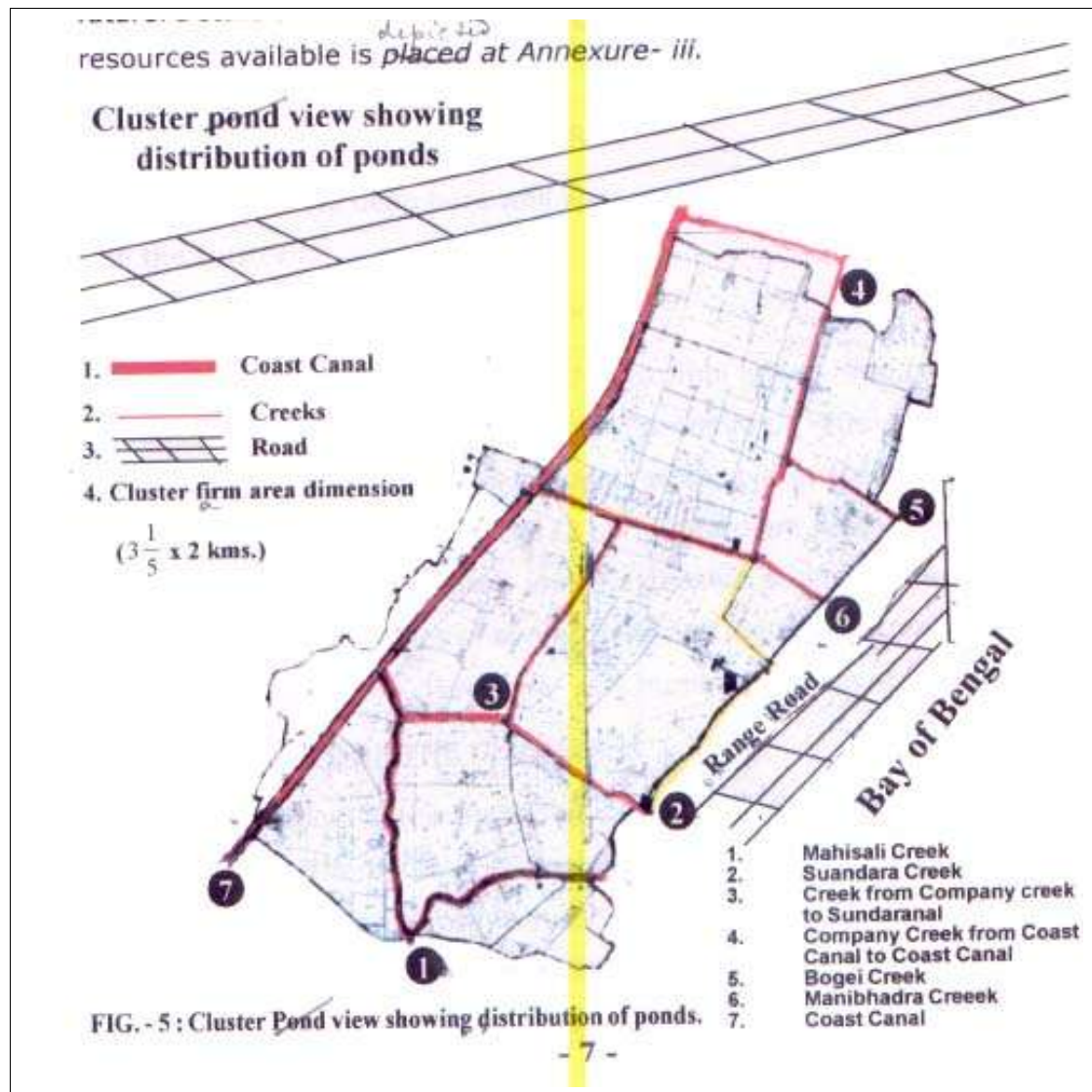
The cluster boundary started from Hidigan G.P. boundary in the North to Jayadev Kasaba G.P. boundary in the south and Bay of Bengal in the East to adjacent side coast canal and it creeks on the west of the village. The cluster is about 14 kms. away from Balasore District H.Q. via Nuanai Chhack. The Revenue cluster boundary map of Gudupahi is at figure 3 & 4.





## 2.4 RESOURCE OF THE CLUSTER

286.56 hectare is the suitable area for shrimp culture, and 196.89 hectares for fresh water area for scampi and I.M.C culture, out of which 186.44 hectares are developed and utilised for shrimp culture. Out of 196.89 hectares fresh water area, 25.34 hectares are utilised for scampi culture, and 91.55 hectares utilised for IMC culture. Thus a total 116.89 hectares of fresh water area is utilised for IMC and scampi culture. Apart from the above utilised area, still there are 100.12 hectares available for shrimp culture and 79.79 hectares for scampi and IMC culture. Hence, there is scope of further development of fisheries project in the cluster in future. Details of resource available, resource utilised for culture and balance resource available is depicted at annexure - III.



## **2.5 SOURCE OF BRACKISH WATER**

The source of Brackish water is the coast canal, which was constructed during the [period of](#) British Administration for navigational purpose. The coast canal originated at Chargachhia from river Budhabalanga and run towards Basudevpur via-Gudupahi. The adjacent creeks of coast canal are [nature made](#) due to out flow of rain water from catchment area to the coast canal. During high tide, the coast canal [receives](#) tidal back brackish water from river Budhabalanga and feed to all its adjacent creeks. The shrimp culture areas are concentrated on both side of the coast canal and creeks in clusters. IMC and scampi culture areas are concentrated in other patches of the village.

## **2.6 SOURCE OF FRESH WATER**

Rainfall and deep bore well are the main sources of fresh water in the cluster.

## **2.7 CORE CLUSTER ACTORS**

The core cluster actors i.e IMC, scampi and shrimp culturists have mobilized the resources for fishery production. There are 103 pisciculturists and 92 scampi culturists who have utilised 116.89 hectares fresh water area. Besides this, there are 122 shrimp farmers who have utilised 186.44 hectares of Brackish water area through extensive shrimp culture using recommended quantities of shrimp seed and feed. Thus total nos of core cluster actors in the cluster are 317 and its breakup given in *Annexure - iv*.

## **3. PRODUCT OF THE CLUSTER**

The products of the cluster are Indian major carp (IMC) fish, scampi and shrimp. The IMC and scampi are produced from fresh water ponds and shrimps are produced from Brackish water ponds. During 2004-05, the cluster farmers produced 550MT of Shrimps, 10 M.T. of Scampi and 250 MT of fish (details at Annexure - XXXIV)

### **3.1 CULTURE PERIOD OF PRODUCT**

The culture period of shrimp is about 120 to 135 days, with two crops in a year. The scampi and IMC fish culture period is about 6 to 10 months depending on the availability of water in the pond.

### **3.2 PROFITABILITY**

Fishery product per unit area is very high compared to agricultural product of that area. Previously, the income per hectare area [was about](#) Rs 1000/- to Rs 2000/- in a year from agriculture. But with fish culture, profit per unit hector area is Rs. 25,000/- per crop (one crop in a year), and IMC with scampi (poly culture) raised income to Rs. 30,000/- per hectare per crop. The monoculture of scampi has raised income to Rs. 50,000/- per hectare. The shrimp culture within 4 to 4.5 months period (one crop period) per hector area generated profit of Rs. 50,000/- to Rs. 1,00,000/- according to the nature of culture. [The](#) shrimp farmers double their income with two crops in a year.

## **4. CULTURE PRACTICES**

### **4.1 CONSTRUCTION OF POND**

Before construction of a pond, specific lay out is to be demarcated according to farm design. The embankments are constructed with proper slope of 1:2 or 1:3 depending on the soil condition. The tank depth is dug according to the type of culture to be taken-up i.e. short period or long period. In shrimp culture ponds or farms, feeder canal and drainage canal need to be constructed on either side of the pond patch for inflow of tidal water and draining out pond water in need. It is noticed in the cluster area that the inflow of water and drainage of pond water is done through the same creek, which is a great draw back for the shrimp farmers in the cluster.

### **4.2 POND PREPARATION**

Pond preparation means clearing of weeds, tank bottom racuing (in case of old ponds) and application of inputs such as lime, geolite, manure as per the culture technique of each type of culture.

### **4.3 STOCKING OF SEED**

After preparation of tank, stocking of seeds are to be done. It is also stipulated to stock specified P.C.R. tested quality shrimp and scampi seeds. The IMC seeds are to be stocked in appropriate composition and quantities on the basis of water area.

### **4.4 PHASE MANURING AND ARTIFICIAL FEEDING**

Soon-after stocking of seed, phase manuring and application of artificial feeding are necessary because scampi shrimp and fish require natural and artificial feeding during their growth period till harvest. The high F.C.R. export or import shrimp feed is required for shrimp and scampi culture, but in IMC culture GNOC (Ground Nut Oil Cake) and Rice polish are used as feed. The feed is applied in appropriate percentages calculating the weight of fish / shrimp / scampi in the pond as per prescribed artificial feeding chart. A photograph is given [below](#) showing artificial feeding in shrimp pond.



**Fig. – 7: A photograph showing artificial feeding in shrimp pond**

#### **4.5 GROWTH ASSESSMENT**

The sample netting is made at intervals to access the growth and profitability of fish, scampi and shrimp in the culture ponds in comparison to feed utilised. The sample netting also indicates the disease of fish which demands the farmers for taking immediate preventive measures.

#### **4.6 AERATION AND WATER EXCHANGE**

Aeration and water exchange is badly required in the scampi and shrimp culture ponds. Aeration is made by aerators or by water pumps. Water exchange is also necessary to save the crop from depletion of oxygen. Figure - 8 shows the operation of aerator for oxygenating the water of shrimp pond.

#### **4.7 HARVESTING**

The fish, scampi and shrimp are harvested from the pond when they reach marketable size. Fishes are harvested when they attain 500 gm to 1 kg, scampi after attaining weight of 50 to 150 gms. and shrimp after attaining weight of 25 to 30 gm sizes.

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### **5. OTHER STAKE HOLDERS & LINKAGES**

There are a number of stake holders who take part in cluster activities and thus play important roles. They are classified in two groups such as sub-contacting system cluster actors and raw material suppliers in the back wards. [Details of support linkages](#) of the cluster activities are furnished below.

#### **5.1. SUB-CONTRACTORS**

These types of cluster actors are technical advisors, farm designers, parameter testing laboratory etc, who serve the cluster core actors on contact basis.

##### **5.1.1. TECHNICAL ADVISORS FOR SHRIMP FARMERS**

The shrimp farmers in the cluster are not technically trained to diagnose the pond defects during culture period. The feed suppliers/ technicians occasionally visit the cluster ponds and give technical advices about application of shrimp feed on the basis of stock assessment. The technical officer from Dist Fisheries Office, Technical wing of MPEDA, Regional office at Bhubaneswar are also imparting shrimp culture **know hows**. In addition to this, 2 private Professional Technical Advisors are there at Balasore town to advise shrimp farmers on payment of reasonable charges. There are about 15 technical advisors under different sectors available for guiding the shrimp farmers in the cluster. Details about technical advisors are depicted at *Annexure- V*.

##### **5.1.2. TECHNICAL ADVISORS FOR SCAMPI FARMERS**

Scampi and shrimp cultures **are** high technique culture procedures. The scampi feed supplier, distributors, professional technicians, advisors and Dist. Fisheries office technical staffs are guiding the scampi culturist. There are 5 technical advisors (*Details at Annexure - vi*) in this line.

### **5.1.3. TECHNICAL ADVISOR FOR I.M.C. CULTURE**

The IMC fish farmers are experienced and technically sound to take up IMC culture as per their previous practices. When needed, technical staff of District Fisheries office, Fisheries Extension Officer Balasore Sadar Block as well as private professional technical advisers are giving technical advices to the IMC fish farmers. There are 5 technical advisors at Balasore District H.Q. and their services to the fish farmers are occasional. (Details act Annexure - vii).

### **5.1.4. FARM DESIGNER FOR SHRIMP / SCAMPI FARMERS**

Designing of fish farm and project report is the preliminary need of farm development. The Dist. fisheries office, technical wing of MPEDA and other two private farm designers are designing the shrimp / scampi farm on contact basis on payment of their charges. There are 5 farm designers in this line at Balasore District Head Quarters. (Details enclosed at *Annexure - viii*)

### **5.1.5. FARM DESIGNERS FOR IMC FARMERS**

The small IMC farm design is done by engineering personnel of Dist fisheries office and project report is prepared by concerned area D.S.F. In addition to this, two private farm designers are also designing the IMC farm. There are 5 such designers available at Balasore Dist. H.Q. (Details enclosed at *Annexure- ix*) who **have designed and prepared** project report on payment of reasonable charges.

### **5.1.6. SOIL AND WATER TESTING LABORATORIES**

One P.C.R. testing laboratory (Details at *Annexure- x*) was established at Balasore District Head Quarter, for testing shrimp seed but it is not properly functioning. The shrimp/ scampi farmers are facing problem on getting P.C.R. tested seeds.

There are 5 soil and water testing laboratories (Details given at *Annexure- xi*) at Balasore Dist H.Q. and its service to farmers are **occasional**.

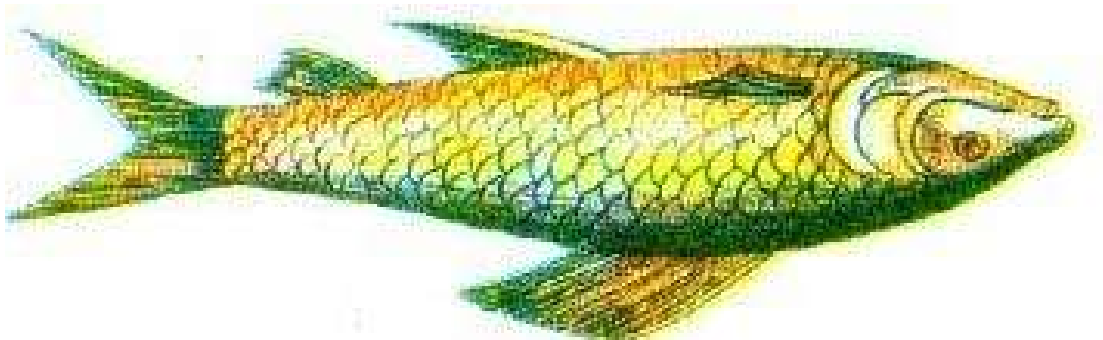
The NESCO, Balasore has facilitated 2 phase power supply to some of the cluster patches against requirement of 3 phase power line.

## **5.2. RAW MATERIAL SUPPLIERS**

The raw material for the core cluster activities are lime, manure, fertilizer feed, probiotics, growth promoters etc. These are described category -wise here under.



**SCAMPI (M ROSEN BERGH)**



**INDIAN MAJOR CARP FISH (ROHU)**



**SHRIMP (P. MONODON)**

**Fig. 6: FISHERY PRODUCT OF GUDUPAHI CLUSTER**

### **5.2.1. SHRIMP FEED WHOLE SELLERS (IMPORTED FEED)**

There are two shrimp feed (imported) whole sellers (*Details depicted at Annexure-xii*) at Balasore. They import quality feed and supply to the retailers or dealers of the Dist. The imported brand feeds are GROW BEST, SMART, LEADER, HIGASI, GOLD COIN etc.

### **5.2.2. SHRIMP FEED RETAILERS (INDIGENOUS)**

There are 7 shrimp feed retailers at Balasore Dist, Head Quarters (*Details depicted at Annexure- xiii*) who are supplying indigenous shrimp feed through the dealers of the cluster or directly at Balasore H.Q. from their stores. They supply feed of brands namely ULTRA C.P, AVANTI, VICTOR, NASA, BIN-TANG etc.

### **5.2.3. SHRIMP/SCAMPI FEED DISTRIBUTORS**

There are 7 Nos of shrimp / scampi feed dealers in the cluster who receive feed from retailers from Balasore and distribute to the core cluster. The details are depicted at *Annexure xiv*.

### **5.2.4. SCAMPI FEED DISTRIBUTORS**

Scampi feed of indigenous varieties are available from 3 scampi feed suppliers at Balasore Dist, H.Q. (*Details depicted at Annexure-xv*). They supply feed to the core fish farmers through the dealers or directly from their stores at Balasore.

### **5.2.5. IMC FEED SUPPLIERS**

The IMC feed such as GNOC and Rice polish in the ratio 1:1. is used by IMC farmers according to recommended percentage of fish body weight. This is available at Balasore Dist. H.Q. There is no problem on availability of GNOC and Rice polish at Balasore Dist, H.Q. as because 6 distributors (*Details depicted at Annexure xvi*) are meeting the IMC feeds demand of the cluster.

### **5.2.6. INPUT SUPPLIERS FOR SCAMPI / IMC**

R.C.D. (Raw Cow Dung) & lime are main inputs for IMC and scampi culture which is being supplied to the farmers by 4 distributors (*Details at Annexure- xvii*) whose retail out let's are at Balasore H.Q.

### **5.2.7. FISHING EQUIPMENT SUPPLIERS**

Nylon and synthetic framed drag net, float, rope, weaving etc. are main equipment required by the fish farmers of the cluster. They procure these from 6 distributors (*Details depicted at Annexure xviii*) at Balasore Town.

### **5.2.8. GROWTH PROMOTOR, PROBIOTICS AND MEDICINE DISTRIBUTORS**

The growth promoter, probiotics and medicines are absolute need for shrimp and scampi culture. The medicine is used for treatment of disease, probiotic is used for purifying water in the tank and growth promoter is used in appropriate quantities for growth of shrimp & scampi as per recommended dose. There are 8 distributors (*Details depicted at Annexure xix*) at Balasore town who are supplying these materials.

### **5.2.9. RAW MATERIAL SUPPLIERS & OTHER ACTORS**

The support service providers for the culture activities are outsiders. They are also called as business development service providers to the principal production system i.e. farmers of the cluster. The BDS providers are classified as follows:

#### **SHRIMP SEED HATCHERIES**

The shrimp seeds are most essential item of shrimp culture. It should be pure and of the best quality. The shrimp seed requirement of the cluster farmers are being met from the 7 shrimp seed Hatcheries (*Details depicted at Annexure-xx*). The seeds are lifted by farmers from Hatcheries on negotiated dates to their pond site.

#### **SCAMPI SEED HATCHERIES**

The scampi seeds of PL- 20 are required by scampi farmers of the cluster which are being supplied through 10 scampi seed hatcheries (*Details depicted at Annexure-xxi*). The farmers receive seeds from concerned Hatcheries on suitable dates and carry up to the tank side and stock after acclimatization.

#### **I.M.C. (FISH) SEED HATCHERIES**

IMC Fish seeds are being supplied to the IMC fish farmers by 8 fish seed hatcheries (*Details depicted at Annexure-xxii*) in and around Balasore district.

#### **ICE PLANTS**

Fishes, scampi and shrimps are perishable product and require immediate preservation at low temperature. There are 8 ICE plants (*Details depicted at Annexure-xxiii*) in the peripheral area of the cluster, which meet the ICE requirement.

#### **FINANCING BANKS**

The fish farmers require capital and recurring expenditures to take up culture. The financing Banks are SBI (A.D.B), Balasore, D.C.C.B, Balasore for this cluster. There is no Bank extension counter in the cluster area for day to day transaction. There are only 2 Banks (*Details depicted at Annexure-xiv*) extending credit facility to the cluster.

#### **TOOLS AND MACHINERY DISTRIBUTORS**

The core cluster actors i.e. farmers require water pumps, aerators, generators, PVC pipes etc. for the cluster activities such as water supply aeration etc. These are being supplied through 12 suppliers (*Details depicted at Annexure-xxv*) from Balasore Town.

#### **SCIENTIFIC EQUIPMENT DISTRIBUTORS**

The culture procedure of core cluster actors, i.e. farmers, requires scientific equipments for testing water and soil parameters during culture period. The scientific laboratory instruments are supplied by 4 distributors from Balasore Town. (*Details depicted at Annexure-xxvi*)

#### **CROP INSURANCE CORPORATION**

The crop Insurance substantiates crop Insurance claim for the farmers during loss of crop by natural calamities. Though, there are 4 crop Insurance corporations (*Details depicted at Annexure-xxvii*) at Balasore Town, none of them has taken up crop Insurance in the cluster culture ponds. Hence there is no linkage with Insurance company and cluster actors.

## **6. SUPPORT INSTITUTIONS**

There are 11 institutions (*Details depicted at Annexure xxviii*) supporting the principal production system of the cluster. Coastal Aqua culture Authority, Chennai approves shrimp project proposals after verifying the feasibility. The Central Research Institutes such as C.I.F.A and C.I.B.A. have standardized scientific fish, scampi and shrimp culture methodology. M.P.E.D.A. is taking part in export and promotion, recommending massive shrimp, scampi and IMC project proposals and releasing subsidy. Commissioners cum Secretary F & A.R.D. Bhubaneswar, Orissa and Director of Fisheries, Orissa, Cuttack are the administrative Heads of Orissa state Fisheries Department. District Fisheries Officer F.F.D.A. and B.F.D.A. Balasore is the implementing Agency at District level for all Fisheries on going programmes in the district as well as in the cluster. The Collector and Tahasildar, Balasore are administrative Heads of Govt. land at district/ Tahasil level and leasing out Govt. land to interested beneficiaries on long term lease. The District Rural Development Agency, Balasore is the coordinating Agency who arranges credit facility to BPL line beneficiaries for their tank development in the district as well as in the cluster area. The Orissa state Government Training Institutes have transferred technical know how of standardised procedures of Research Institute to Fish / Scampi/Shrimp farmers time to time. The District Fisheries officer F.F.D.A and B.F.D.A. Balasore as well as Deputy Director M.P.E.D.A., Regional Office at Bhubaneswar are joint coordinators for the core cluster activities. Since they are presently heading multifarious departmental activities in the district, their involvement in the core cluster activities has been minimised.

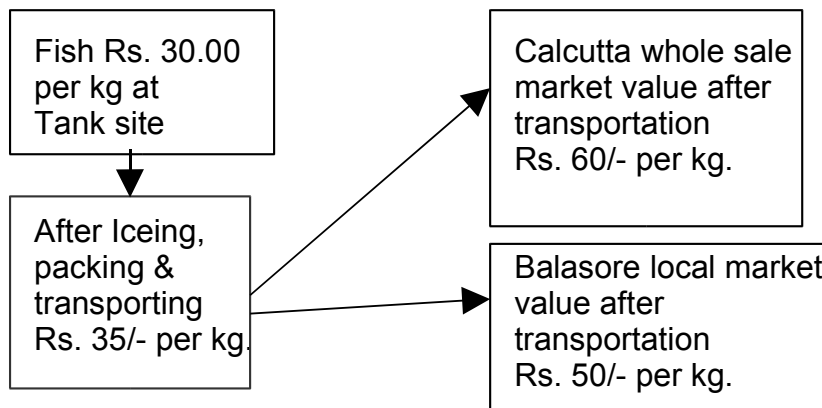
## **7. MARKETING SYSTEM**

There is very good forward linkages (marketing system) for disposal of Fish/ Scampi/ Shrimp in the cluster due to active involvement of 5 processing plants (*Details depicted at Annexure-xxix*) in the cluster and these are also receiving major core product of the cluster such as Scampi/ Shrimp and exporting after standardising the quality as per export market choices and value. The IMC fish produced in the cluster are disposed up to Kolkata wholesale market outlet as well as to 6 local markets in Balasore District. It is seen that the market prices of scampi and shrimp fluctuate in the export market and market price of fish varies as per Calcutta whole sale market price and Balasore local market price.

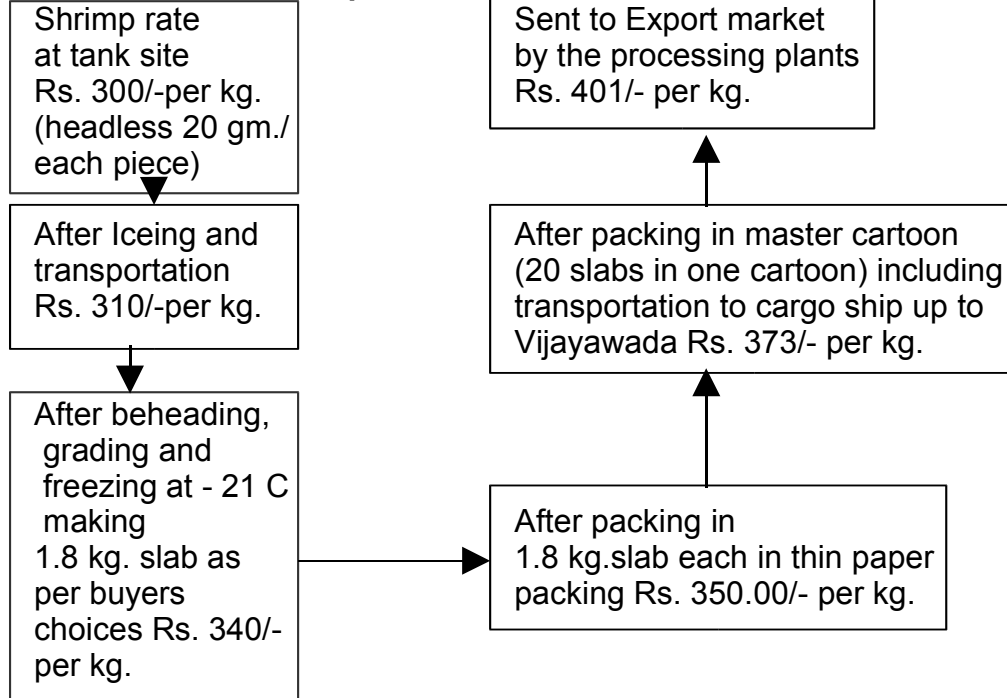
## **8. VALUE CHAIN ANALYSIS OF MAJOR PRODUCTS**

The core product of the cluster are fish, scampi and shrimp which are disposed up to market outlets in accordance of the market choice as per following value chain system of individual product.

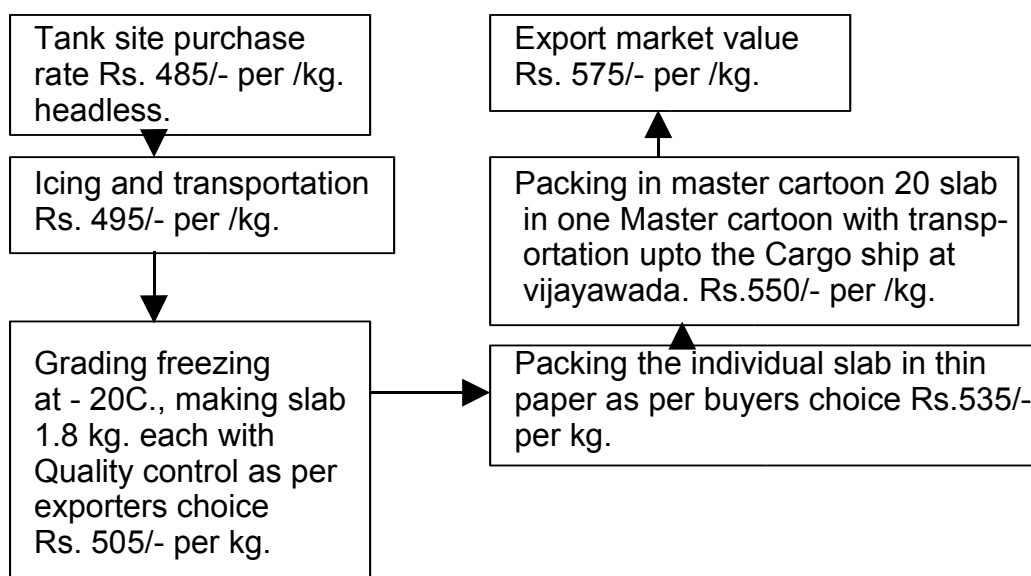
**(A) Value chain of fish**



**(B) Value chain of shrimps**



**(C) Value chain of scampi**



The above value chain analysis indicates that there is difference of Rs. 10/- to Rs. 15/- per kg of fish between the production centre and whole sale market, excluding transportation and icing; and it is the profit of Adatdar who send the fish. Similarly there is difference of Rs.28/- in a kg. of shrimp at tank site and export market outlet and the profit of Rs. 28/- per kg. excluding processing charges and transportation goes to processing plant. Similarly the scampi purchase rate is Rs. 485/- per kg at tank site, whereas export market value is Rs. 575/- per kg. Rs. 25/- per kg, excluding processing charges and transportation is the profit of processing plants. The sale rate of fish can also vary on the basis of weight and export market rate and choice of International buyer.



Fig 9: A photograph of Sri S. Pattnaik (farmers group leader) narrating problems of the cluster at his farm side

## 9. PROBLEMS

During cluster visit and interaction with 50 core cluster actors i.e. fish farmers and their group leaders, the following defects were noticed. Figure-9 Photograph of Sri Susil Patnayak, Gudupahi (farmer group leader) naratting problem of the cluster of his farm.

### **Lack of pucca approach road**

Presently the East side coast canal embankment from Chandipur - Balasore main road to Gudupahi is metalized with morrum topping. The Ranasahi, Gudupahi Pucca approach road is completed up to village Girisahi and there is about 2 kms mud road from Girisahi village to Gudupahi. Both the roads are necessary for business activities of the cluster. Presently, both the roads are not vehicle approachable and during rainy season condition of the roads are going worse even for movement of two wheelers. Rainy season is the peak period for all the activities of the cluster i.e. stocking of seed, transportation of feed and inputs and marketing of cluster product for which the farmers are facing a lot of difficulties. Hence, Ranashi to Gudupahi approach road from village Girisahi up to Gudupahi about 2 kms and the coast canal road about 5 Kms from Nuanai Chhak up to terminal point of Gudupahi cluster should be made pucca approach road for all weather vehicle movement purpose.

### **Lack of pucca feeder road from main road**

The four feeder roads (*Details depicted at Annexure- xxxiii*) from main coast canal road to core cluster area are mud built and during the rainy season, they become more muddy and not walkable. It is very difficult on the part of the poor farmer of the cluster to move up to the project site during peak period of culture. These roads require metaling with morrum topping or pucca road for all weather business activities of the cluster.

### **Need of IMC & scampi hatchery**

During interaction with the core cluster actors, it has come to notice that one IMC hatchery and one scampi hatchery is necessary for the cluster activities. These are required to minimise the transportation cost of fish seed carried from distance places up to the tank site.

### **Need of brackish water inflow system**

The creeks from main coast canal were silted and filled with biodegradable substances. The creeks remain devoid of water except 1 to 2 days on or before of full-moon and new moon phases. The inlets from coast canal to creek side are narrow i.e. in the form of Humepipes. The silted creek and narrow inlets restricting free inflow of tidal water which cause scarcity of brackish water for about 20 days in a month and affecting shrimp crop and hence brackish water uniflow system should be taken care of.

### **INPUT LOAN FROM FINANCING BANKS**

Banks in this area of operation of the cluster are not financing input loan (recurring expenses) to farmers for which the farmers of the cluster are facing a lot of problems to take up culture and hence approach the middle men like processing plants owners, feed supplier and agents. There should be bank extension counter for day to day transaction in the cluster and disbursement of loan.

### **Need of reasonable rate of product**

To take up culture, the farmers are taking the help of feed supplier and processing plants owners, who pay them all recurring expenses and feeds on credit. They are charging 2 to 5% excess than the actual rate of the feed per bag. If farmer is utilising 20 bags of feed in a crop, he has to pay Rs. 4000/- in excess on account of the feed in a crop.

Similarly when they are procuring the product, they are paying Rs.2/- less per kg. to the farmer, and if the total product is 500 kg. the farmer is loosing Rs. 1,000/- in a crop. Thus, in a crop, a farmer is losing Rs. 5,000/- in total. This is a case study of a 0.2 Hectares shrimp pond. Thus it will be 5 times more i.e. Rs. 25,000/- per hectares and accordingly the profit will come down by Rs 25,000/-. The middle men are getting more profit from the farmers.

Hence there is a need for awareness building on day to day market price/ product for the farmers.

*Fig. 10: A Shrimp farmer of Gudupahi is narrating about High Cost of production of shrimp, usefulness of reservoir & reason collation of coast canal water*

### **No reservoirs at brackish water inflow point**

There is no reservoir/ bio pond at Brackish water inflow points as a result the biodegradable water released by other shrimp farmers passing through the feeder canal is polluting the inflow water and its system. This draw back was not checked by the implementing Agency initially when the farmers were ignorant. So reservoir/ bio pond should be developed.

### **Lack of drainage canal**

There is no drainage canal intervally in the cluster. The naturally created creeks presently are used both for water Intake and drainage system. The drainage water is full of effluents containing biodegradable substances, polluting the creek and there is risk of disease and mortality in the shrimp crop.

*Fig. 11: Two Shrimp farmer of Gudupahi are narrating about need of farm electricity and widening water inflow point.*

### **Lack of effluent treatment tank**

There is not even a single effluent treatment tank in the cluster project area for purifying the drainage water released from shrimp farms. This effluent water is draining out through the creek to the coast canal and the entire water intake systems has been polluted by obnoxious gases and biodegradable substances causing disease and ultimately lead to total crop failure. This should be rectified.

### **Need of 3 phase power supply**

There is 2 phase power supply line to some of the nearest patch ponds provided by NESCO, Balasore. The interior and terminal shrimp pond patch not yet electrified, is causing problem for watch and ward and operation of aerators. Presently, 3 phase power line is required for farm illumination and operation of aerators.

### **Lack of skilled labour**

The tribal people from Mayurbhanj District are engaged for farm work and are not skilled to handle the steps of shrimp culture. The farm managers are also not having technical and managerial skill for sure success of the crop i.e. production.

### **Lack of scientific knowledge on culture**

The fish farmers in the cluster are not technically sound to take up shrimp culture practices independently and hence require training on scientific culture aspects by different institutions like BFDH, MPEDA etc.

### **Need of crop insurance**

The Insurance companies at Balasore are not yet covering crop Insurance in the cluster as a result during loss of crop the farmers are not getting the benefit. The company should be motivated for the same.

### **Need of police outpost**

Gudupahi comes under area of operation of Chandipur Police station. It is about 10 kms away from Gudupahi. The shrimp culture is lucrative one and there is every chance of poaching. For dispute, theft etc one police outpost is badly necessary.

### **Lack of drinking water**

The ground water level in the cluster has gone down and presently it is available at a depth of 500 ft. Due to want of drinking water, the farmers and farm labourers in the cluster are facing lots of problem for drinking water.



**Fig. 12: Three & one worker of Gudupahi are narrating about Haphazard construction of shrimp ponds & problem of feeder roads.**

### **Haphazard construction of shrimp ponds**

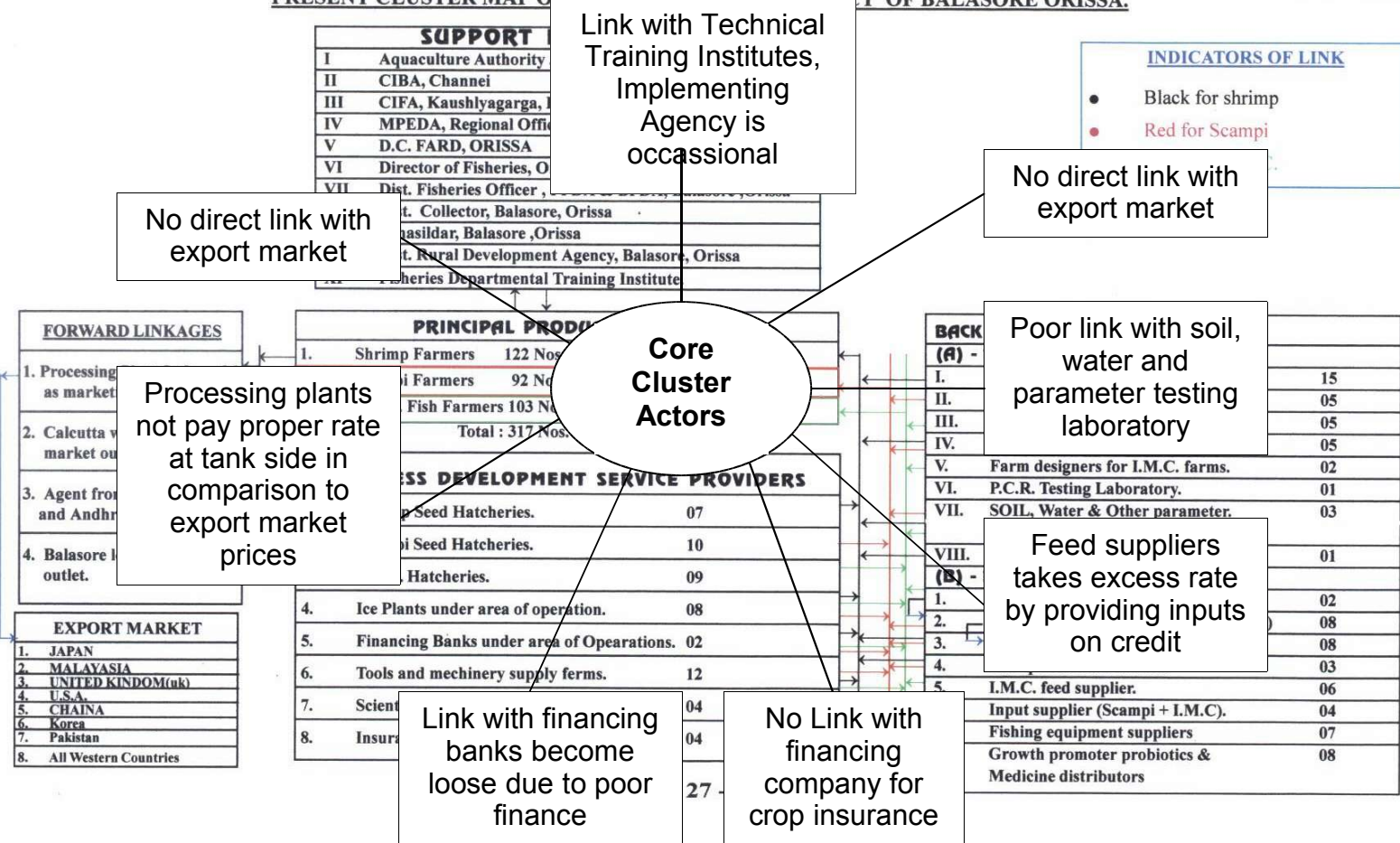
The shrimp culture ponds in the cluster were haphazardly constructed without following the principles of shrimp aqua culture. Such haphazard pond construction and want of proper drainage canal system have degraded the eco system, which is detrimental to the shrimp and other fishery production of the cluster.

## **10. Cluster Map**

The linkage has been shown in the cluster map by arrow marks in different colours (*Details depicted at Annexure- xxxi*). There is no linkage in core production system with crop Insurance company. The linkages with support organisations are not strong, but forward and backward linkages and linkages with Business Development Service providers are strong. The cluster has no linkage with P.C.R. testing laboratory at Balasore as because it is not functioning. The linkages with private technical advisors and feed supply technical advisor are very strong. The linkage of core shrimp/ scampi product with export market is indirect i.e. through processing plants. The linkages with Calcutta whole sale market & Balasore local markets are also not direct. The involvement of support institutions for the cluster core activities is occasional as their organization/ institution are involved in many multifarious departmental works and there are not giving proper attention to these cluster activities. The poor linkages of service providers with core cluster actors are cited here under by diagrammatic representation.



**PRESENT CLUSTER MAP OF CUDURAH IN THE DISTRICT OF BALASORE ORISSA.**



**11. CLUSTER VISION**

It is envisioned that after effective interventions as detailed in the report the cluster would be able to double the export products. The detailed calculations are given in later page.

**12. STRATEGY**

The strategy for growth of this cluster would be two fold. The problems related to infrastructure would be addressed by collective action of farmers as well as by convergence and synergy of ongoing schemes of the government. The other strategic focus would be to forge linkages of farmers with banks resulting into increased production and earning of the farmers.

## **(A) Infrastructure needs**

### **Construction of pucca main approach road**

The East side metallic morrum top main coast canal Road from Nuanai chhak of Chandipur main road up to Gudupahi and Rana sahi to Gudupahi pucca approach road, mud built portion from Girisahi to Gudupahi should be made to pucca Road for all weather vehicle movement facilities. These roads will facilitate for transportation of feed, seeds and other inputs up to the cluster and marketing of fishery product to marketing outlets.

### **Construction of pucca feeder road from main road to core cluster area**

The muddy feeder Roads (*Details depicted at Annexure-xxxiii*) connecting the project patch from main approach Road should be made pucca or metallic with morrum top. This will facilitate transporting seed, feed and other inputs up to the project side and disposal of product to market outlets during all season and also free movement of farmers in the cluster area for their business activities.

### **Desilting and widening of brackish water in-flow creeks**

The creeks (*Details depicted at Annexure - xxxii*) to the core cluster activities have been silted and are full of biodegradable substances. This will cause either mass mortality of shrimp or invite disease of shrimp. So for free inflow of tidal brackish water the natural creeks should be desilted, widened along with widening of narrow Hume pipe inlet.

### **Construction of drainage canal**

The shrimp farmers have not constructed main drainage canals during construction of shrimp projects intervally all along the project area for outflow of project drainage water. The natural creeks are presently used as feeder canal and drainage canal. This can cause mass mortality of shrimp due to toxic water. So construction of drainage canal intervally all along the project patch is absolutely necessary for sustainability of the cluster activities.

### **Construction of effluent treatment pond or bio-pond**

The effluent treatment pond or Bio-pond should be constructed on the terminal part of drainage canal with proper inlet and outlet facilities. The effluents i.e. pond discharges flowing through drainage canal should be properly treated and the residual water be allowed to drain to sea in the opposite side of the inflow water system i.e. entry point of inflow water. This will prevent water pollution of inflow tidal water system and ensure survivability of shrimp crop from definite mortality.

### **Construction of reservoir in the inflow water entry points**

One reservoir in the water inflow entry point is necessary so as to settle the biodegradable material there itself by treatment, and the hygienic water is allowed to flow in the feeder canal for use in the farm tank. This will ensure quality water supply to culture ponds to save the shrimps from disease and mortality.

### **Power supply facility to all shrimp farm patches**

NESCO, Balasore should supply 3 phase power supply to all the shrimp farm patches of the cluster for better illumination, operation of aerators and proper watch and ward of the shrimp ponds. Previously installed 2 phase power line should be made 3 phase for the above purpose.

### **Fish farmers training**

The fish/scampi/shrimp farmers should be trained on scientific fish scampi / shrimp culture activities and its management.

### **Skill upgradation training to workers and managers**

The manager and workers are to be trained on technical aspects to handle the pond management and to enhance physical and financial prosperity.

### **Exposure visit to other progressive farms**

The farmers in the cluster should be interally sent to ideal farms inside or out side the state so as to develop their skill by visit and interaction with other progressive fish farmers.

## **(B) TECHNICAL ASPECT**

In order to have sustainable project in the cluster, technical aspect is more vital.

### **Follow existing resource based culture-avoid high technique**

The high technique culture with out proper infrastructure facility adversely affects the product. Hence the following points should be avoided on sustainable basis. In the cluster, most of the important infrastructures such as drainage canal, effluent treatment tank, wide feeder canal with broad in lets, all weather feeder road to project side, 3 phase power line are lacking. In this stage high technique shrimp culture practice is not advisable. The farmer should follow extensive or modified extensive method of culture with use of less seed and less high F.C.R. feed for sustainable core cluster activities.

### **Provision of funds for social security**

The core cluster actors should generate revolving funds for resource need infrastructures of the cluster activities. The state/Central Government/ International Institution may be actively involved for reviving/ constructing the recommended infrastructures and other linkages in this fishery Industries.

## **(C) FINANCIAL ASPECT**

The financing Bank in that area of operation are not cooperating for extending credit to fish / shrimp / scampi culturist for their recurring expenses as a result the farmers are going to processing plants and feed suppliers to borrow money. They are exploiting the farmers charging higher rate (2% to 5%) on feed and paying less rate (2 to 3 rupees) per kg. on product. Therefore, Bank finance for recurring expenses is necessary to enhance profit range of poor cluster actors. Some more Banks should come forward to finance input loan to those farmers.

## **(D) MARKETING ASPECT**

There is no major problem of marketing of the products. However, to increase the outreach, market positioning and survey of new areas need to be undertaken.

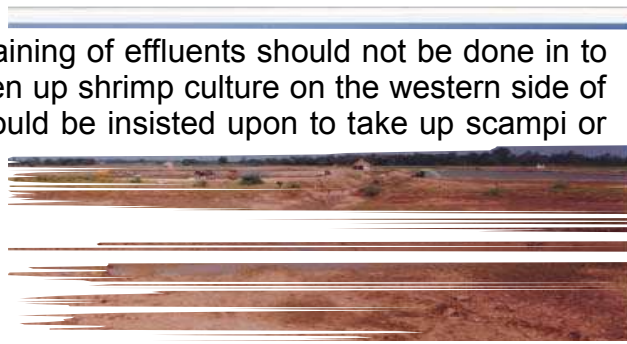
### (E) SUSTAINABILITY ASPECT

For survival of cluster activities, involvement of successors of cluster actors is necessary to guide the cluster actors on various aspects.

#### Prohibition of drainage water to coast canal, to check pollution

The shrimp farmers from west side of coast canal are draining effluents (washed water of ponds) to coast canal due to want of drainage canal on that side. That water is polluting the coast canal

water all along up to its origin. The draining of effluents should not be done in to coast canal by farmers, who have taken up shrimp culture on the western side of coast canal. Rather these farmers should be insisted upon to take up scampi or IMC culture, so that the coast canal water remained free from biodegradable substances. When this water will flow to tanks/ ponds of west side patch of ponds of the coast canal it will ensure better



survivability of shrimp as the drainage flow to Bay of Bengal directly through create congenial ecosystem and thus and thereby minimize cost of production.

*Fig.-13: A photograph of Coast canal showing farm ponds on west side its drainage system to coast canal polluting coast canal water.*

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#### Active involvement of qualified persons

Sustainable cluster activity is one of the most crucial points. On this issue, it is suggested that educated successors of the present core cluster actors should form an organization and see the welfare of the cluster activities already suggested in the foregoing discussion. They should watch the project activities, evaluate these and take immediate steps as and when required / desired for the cluster need.

#### Construction of seed hatcheries

It is observed that the demand of scampi seeds and IMC seeds are increasing due to diversification of culture practice by core farmers from shrimps to scampi and shrimp to I.M.C. fish. Hence construction of scampi and IMC seed production farms hatcheries are necessary. In the clu



*Fig.-14: M.C.D. IMC fish farm of Sri Azam Alli Khan, Hidigaon whose farm remodeling proposal is initiated for fish seed production*

the farmers/ Industrialists are inter cluster area. So feasibility certificate in favour of the interested farmer/ Industrialist may be issued for construction of the hatchery or the same may be constructed by Govt. organization.

#### Formation of cooperatives for better cluster activities

Presently Bankers are not coming forward to finance recurring loan for shrimp culture purpose. The farmers borrowed the same loan from processing plants or shrimp feed suppliers who are middlemen in the linkage system and generating more profit from farmer product. In this situation a Fishery cooperative tagging all core cluster actors i.e farmers should be organised so as to avail Bank loan, marketing of fishery product and other activities of the cluster with team work spirit

### **Diversification of culture practices**

The creeks and coast canal are presently biodegraded due to drainage from culture pond water by farmers. There is no specific feeder canal and drainage canal of farm ponds and the creeks are used for both water supply and draining out of water and this practice is harmful for shrimp culture. If all resource based infrastructures proposed above are not possible, the farmer should shift culture practice from shrimp culture to scampi culture in the same ponds so as to maintain their livelihood.

### **13. ACTION PLAN**

The vision statement and findings of diagnostic study of Gudupahi fishery cluster brought some valid strategic objectives which need to be realised for upgrading the under developed dynamic cluster. The strategic objectives in term suggested a range of actual needs and these are required to be achieved. Further all of those objectives are not feasible to be implemented at a time because these relate to a number of line Departments for detail estimates and execution. The execution is also time consuming process and depends on availability of funds to execute the works. So immediate need based works within available funds can be taken up under short term action plan and rest items which require more time and funds should be taken up under long term action plan.

At present basing on the present culture practice of shrimp, scampi and fish the following plans are drawn up for sustainability of core cluster activities, on short term or long term action plan. Fund either from state Govt. or Central Govt./ any International organization should be utilized to assist the cluster for over all development.

#### **A. CONSTRUCTION OF MAIN PUCCA APPROACH ROADS**

The following 2Nos. main approach roads are to be made pucca road for all weather communication facilities.

- (i) Construction of Ranasahi to Gudupahi pucca approach road, the mud built portion from Girisahi to Gudupahi- 2 kms.
- (ii) Metaling and black topping of east side coast canal road from Nuanai Chhak to Gudupahi Terminal point- 7 kms.

#### **B. REMODELLING OF FEEDER ROADS**

The following 4 Nos. mud built feeder roads are to be made pucca or metallic with morrum top for all weather cluster activities.

- (i) Feeder Road from coast canal to Gudupahi High School, Via-Hazira Chhak (mud built road)-2 kms..
- (ii) Feeder Road from Mahisali to Gudupahi

- (iii) (mud built road)-2 kms.  
Feeder Road from Company Chhak Adivasi Sahi to ITR operating building No. 3 (mud built road)-1 kms.
- (iv) Feeder road from Chandipur ITR road to Mahisali , Via.- Tarini Patra Chhak (mud built road)-2 kms.

**C. WIDENING AND DESILTING OF FEEDER CANALS**

The following 6 Nos. feeders canals (creeks) are to be widened with desilting for inflow of tidal Brackish Water to the shrimp culture ponds and easy draining of pond waters to sea.

- (i) Mahisali creek from coast canal to Bay of Bengal -3kms.
- (ii) Sundara creek direct Bay of Bengal to coast canal- 2 kms.
- (iii) Creek from Company Creek to Sundara creek -2 kms.
- (iv) Company creek from coast canal to coast canal , Via- Gudupahi & Hidigan Village 6 kms.
- (v) Manibhadra creek from company creek to Bay of Bengal presently silted and blocked by ITR , Chandipur- 3 kms.
- (vi) Bogeinal creek from company creek to Bay of Bengal presently blocked by ITR- 3 kms.

**D. DESILTING OF COAST CANAL FROM JAYDEV KASBA TO CHARIGACHHIA**

- (i) The coast canal from Charigachhia to Jaydev Kasaba is to be desilted by dredging so as to facilitate more inflow of tidal water to coast canal- 20 kms.

**E. WIDENING OF TIDAL WATER INFLOW POINTS**

The following 6 Nos. of tidal water inflow points on coast canal are to be widened by small bridge with shutter system so as to open it during high tide for inflow of water and close during draining of water to sea. This will check biodegradation of coast canal and creeks.

- (i) One at Company Creek at Hidigan on coast canal.
- (ii) One at Company Creek at Gudupahi on coast canal.
- (iii) One at Sundaranal on coast canal at Gudupahi Terminal.
- (iv) One at Maiti Sahi on coast canal.
- (v) One at Sahu sahi on coast canal.

**F. EFFLUENT TREATMENT TANKS REQUIRED AT OUTLET POINTS OF CREEKS**

- (i) One at Mahisali creek Muhana to sea.

- (ii) One at Sundara creek muhan to sea.
- (iii) One at Bogeinal Muhan to sea.
- (iv) One at Manibhadranal Muhan to sea.

**G. 3 PHASE POWER LINE**

3 phase power line is required to interior farm patch for illumination and operation of aerators as per estimate. The 2 phase power line drawn earlier may be upgraded to 3 phase for aforesaid purpose.

**H. ONE SCAMPI HATCHERY FOR SCAMPI SEED SUPPLY**

The farmers are shifting culture practice from shrimp to scampi and IMC to Scampi for which the demand of scampi seed will go up. So one scampi hatchery is required for the cluster. This may be established by Govt. or by private Agency/entrepreneur.

**I. REMODELLING OF M.C.D. , IMC. FISH FARM**

There is no major carp fish seed hatchery near by Gudupahi cluster. The farmers are facing problem to get seeds. One IMC fish farm is existing at Hidigan named as MCD, IMC fish seed farm owned by Azam Ali Khan. He is interested to remodel his farm for IMC seed production constructing Nursery Tanks, Raring Tanks with Intalation of Chinese circular hatchery. Feasibility may be issued in his favour for remodeling his farm. This will meet the IMC demand of Gudupahi Cluster along with other near by farmers.

**J. CONSTRUCTION OF ONE MARKETING STORE**

There is no marketing store for icing shrimp and scampi till disposal to processing plants. One marketing store may be constructed of appropriate size with requisite equipments. This will be beneficial for the cluster farmers during marketing the product.

**K. TRAINING & EXPOSURE VISIT OF CORE CLUSTER ACTORS**

Training to fish farmers/ managers/ workers is necessary in different aspects of culture. This will increase efficiency of farmers to produce more. They may be trained batch wise to carry out culture practice, either by MPEDA/ District Fisheries Officer FFDA & BFDA , Balasore or from any Departmental fisheries training institute of the State. Exposure visit may be taken off for betterment of the farmers.

**L. CONSTRUCTION OF ONE MECHANICAL WORK SHOP**

One mechanical workshop with mechanics is required for the cluster. Any cluster actor or his successor should be imparted mechanical training from any Technical Institute so as to repair aerators/ water pumps/ Generators etc.

**M. CONSTRUCTION OF ONE PRIMERY HEALTH CARE CENTRE**

The cluster has no primary health care centre (PHC) though the cluster has reserved 1 acre of land for the purpose. Steps may be taken to establish one primary health care centre building at Gudupahi on Govt. coast.

**N. COSNTRUCTION OF ONE COMMUNITY HALL FOR FARMERS WITH VISUAL AND INTERNET FACILITY**

This cluster consists of a large number of farmers for whom a community hall is necessary for farmers meeting, getting export market rate by internet, conducting refresher training programme etc. for the benefit of the farmers. The visual such as T.V. will facilitate the farmers for getting current news on their trade.

**O. DRINKING WATER FACILITY TO 12 SAHIS (HEMLETS):-**

There are 12 sahis in the cluster. Drinking water facility is not there to each sahi as a result the cluster actors are facing drinking water problem. Presently, drinking water facility for 7 sahis is necessary (Details depicted at Annexure - xxxv). Since water is presently available at 500 ft. & the depth poor farmers cannot construct tube well on their own. So, one tube well for each sahi is to be provided by Govt.

**P. TESTING LABORATORY**

Especially to meet the need of small farmers, there is need for setting up a testing laboratory.

**14. FUTURE CLUSTER MAP**

The future cluster map with all linkage will remain same as present cluster map. The business with additional service providers such as fish seed hatcheries and marketing agents will be added in due course. The further addition of ponds and farmers strength will also be added in principal production system. *The future cluster map is enclosed herewith*



**FUTURE CLUSTER MAP OF GUDUPAHI IN THE DISTRICT OF BALASORE ORISSA.**

SUPPORT INSTITUTIONS	
I	Aquaculture Authority , Channei
II	CIBA, Channei
III	CIFA, Kaushlyagarga, Bhubaneswar, Orissa
IV	MPEDA, Regional Office, Bhubaneswar ,Orissa
V	D.C. FARD, ORISSA
VI	Director of Fisheries, Orissa
VII	Dist. Fisheries Officer , FFDA & BFDA, Balasore ,Orissa
VIII	Dist. Collector, Balasore, Orissa
IX	Tahasildar, Balasore ,Orissa
X	Dist. Rural Development Agency, Balasore, Orissa
XI	Fisheries Departmental Training Institute.

INDICATORS OF LINK	
●	Black for shrimp
●	Red for Scampi
●	Green for I.M.C.

FORWARD LINKAGES	
1. Processing Plant Ltds. as marketing outlet.	06
2. Calcutta whole sale market outlet.	01
3. Agent from west bengal and Andhrapradesh.	10
4. Balasore local market outlet.	07

PRINCIPAL PRODUCTION SYSTEM			
1.	Shrimp Farmers	122 Nos.	122 Farmers 186.44 ha.
2.	Scampi Farmers	92 Nos.	92 Farmers 25.34 ha.
3.	I.M.C. Fish Farmers	103 Nos.	103 Farms 91.55 ha.
Total : 317 Nos. 117 Farms 303.33 ha.			

BUSINESS DEVELOPMENT SERVICE PROVIDERS		
1.	Shrimp Seed Hatcheries.	07
2.	Scampi Seed Hatcheries.	10
3.	I.M.C. Hatcheries.	09
4.	Ice Plants under area of operation.	08
5.	Financing Banks under area of Operations.	02
6.	Tools and mechninery supply ferm.	12
7.	Scientific equipments distributors.	04
8.	Insurance Companies for crop insurance.	04

BACK WARD LINKAGES		
(A) - Sub-Contacting system		
I.	Technical Advisor Shrimp Farms.	15
II.	Technical Advisor Scampi Farms.	05
III.	Technical Advisor I.M.C. Farms.	05
IV.	Farm designers shrimp/scampi farms.	05
V.	Farm designers for I.M.C. farms.	02
VI.	P.C.R. Testing Laboratory.	01
VII.	SOIL, Water & Other parameter. Testing laboratory.	03
VIII.	Power Supply (NESCO).	01
(B) - RAW MATERIAL SUPPLIERS		
1.	Shrimp feed whole sellers (Imported)	02
2.	Shrimp feed Retail outlets (Indigenous)	08
3.	Shrimp / scampi feed dealers	08
4.	Scampi feed distributors.	03
5.	I.M.C. feed supplier.	06
6.	Input supplier (Scampi + I.M.C).	04
7.	Fishing equipment suppliers	07
8.	Growth promoter probiotics & Medicine distributors	08

EXPORT MARKET	
1.	JAPAN
2.	MALAYASIA
3.	UNITED KINGDOM(uk)
4.	U.S.A.
5.	CHINA
6.	Korea
7.	Pakistan
8.	All Western Countries

- 40 -

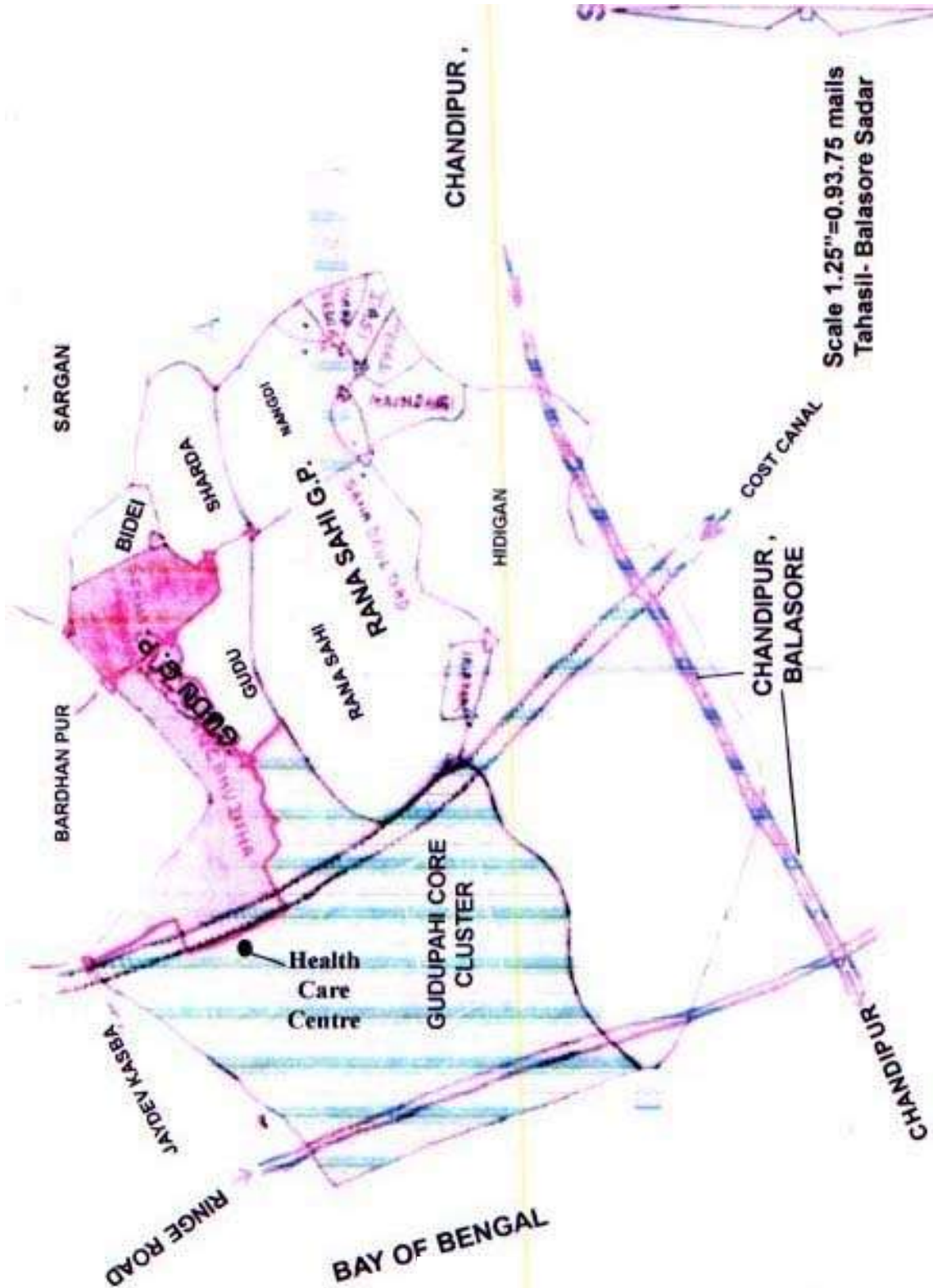
6.	Total production to be sent to export market (in MT)	200	(From 2 crops)	-
7.	Rate of export value as per present rate per MT in Lakhs Rs.	4	5.75	-
8.	Total export value generation (in million Rs.)	200	25	-

**TYPOLGY OF GUDUPAHI CLUSTER**

<b>SI.No.</b>	<b>Nature of Information</b>	<b>High or Low</b>
1.	No of Principal farms	High
2.	Domestic market share of principal farms	High
3.	Export market share of principal farms	High
4.	Structural growth of principal farms	High
5.	Number of support firms	High
6.	Relationship between principal farms and support firms	Herarchial
7.	Presence of support service providers	High
8.	Presence of Technical Institutions	High
9.	Productiviness of Technical Institutions for growth of principal farms	High
10.	Planed efforts for growth through co-operation frame work	High

N.B.: High level indicates that “Gudupahi is a Dynamic cluster.”

**REVENUE CLUSTER MAP OF GUDUPAHI FISHERIES CLUSTER**



**RESOURCES OF THE CLUSTER**

A. SUITABLE RESOURCES AVAILABLE

<u>Type of resources</u>	<u>Area of hectares</u>
i. Brackish water	286.56
ii. Fresh water	196.68
<b>Total</b>	<b>483.24</b>

B. RESOURCE DEVELOPED AND UTILISED FOR CULTURE

<u>Type of resources</u>	<u>No. of farmers</u>	<u>Area of hectares</u>
i. Brackish water	122	186.44
ii. Fresh water		
(a)	For Scampi	92 25.34
(b)	For IMC fish	103 91.55
<b>Total</b>		<b>303.38</b>

B. SUITABLE RESOURCE AVAILABLE FOR FUTURE DEVELOPMENT

<u>Type of resources</u>	<u>Area of hectares</u>
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i.	Brakish water	100.12
ii.	Fresh water	79.79
	<b>Total</b>	<b>303.38</b>

**ANNEXURE - IV**

**CORE CLUSTER ACTORS IN THE PRINCIPAL PRODUCTION SYSTEM**

<u>Type of Cluster actors</u>	<u>Type of Farming</u>	<u>No. of Farmers</u>
1. Shrimp farmers	Shrimp farming	122
2. IMC farmers	IMC fish farming	103
3. Scampi farmers	Scampi farming	92
<b>Total</b>		<b>317</b>

**ANNEXURE - V**

**TECHNICAL ADVISORS FOR SHRIMP FARMERS.**

<u>Sl. No.</u>	<u>Name and Address of the Technical Advisors</u>	<u>No.</u>
1.	Fast Aqua Laboratory, Gadagadia Chhak, Balasore.	1
2.	C.P. Laboratory, Nelibag, Balasore.	1
3.	Water Base Laboratory, Rajabagicha, Balasore.	1
4.	D.F.O.-cum-CEO, FFDA & B.F.D.A., Balasore with D.S.F., BEDA	2
5.	Fisheries Extension Officer Balasore Sadar Block, Balasore.	1
6.	8 Technical Advisors of all Shrimp feed suppliers of reputed companies supplying feed to the cluster.	
7.	Suriya Kumar Mohanty,	

Sunhad, Balasore.

1

**Total**

**15**

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**ANNEXURE - VI**

**TECHNICAL ADVISORS FOR SCAMPI FARMERS**

<u>Sl.No.</u>	<u>Name and Address of the Technical Advisors.</u>	<u>No.</u>
1.	Fast Aqua Laboratory, Gadagadia Chhak, Balasore. (Private Consultant)	1
2.	S.K. Mohanty, Sunhat, Balasore.	1
3.	District Fisheries Officer, FFDA & BFDA Balasore.	1
4.	Fishery Extension Officer, Balasore, Sadar Block, Balasore	1
5.	D.S.F., (Brakish Water) District Fisheries Office, Balasore.	1
<b>Total</b>		<b>5</b>

**ANNEXURE - VII**

**TECHNICAL ADVISORS FOR IMC FARMERS**

<u>Sl.No.</u>	<u>Name and Address of the Technical Advisors</u>	<u>No.</u>
1.	Fast Aqua Laboratory, Gadagadia Chhak, Balasore. (Private Consultant)	1
2.	Fishery Extension Officer, Balasore, Sadar Block, Balasore	
3.	District Fisheries Officer, FFDA & BFDA Balasore.	1
4.	D.S.F., (Brakish Water) District Fisheries Office, Balasore.	

5.	Juniour Fisheries Officer, H.Q. District Fisheries Office, Balasore.	1
	<b>Total</b>	<b>3</b>

**ANNEXURE - VIII**

**FARM DESIGNERS SHRIMP/SCAMPI FARMS.**

Sl.No.	Name and Address of the Technical Advisors	No.
1.	MPEDA, Regional Officer, Bhubaneswar.	1
2.	District Fisheries Office, FFDA & BFDA, Balasore.	1
3.	Fast Aqua Laboratory, Gadagadia Chhak, Balasore.	1
4.	Manoranjan Panda, Gadagadia Chhak, Balasore.	1
5.	Surya Kumar Mohanty, Sunhat, Balasore.	1
	<b>Total</b>	<b>5</b>

**ANNEXURE - IX**

**FARM DESIGNERS FOR IMC FARMS**

<u>Sl.No.</u>	<u>Name and Address of the Technical Advisors</u>	<u>No.</u>
1.	District Fisheries, Officer, Balasore.	1
2.	Fast Aqua Laboratory, Gadagadia Chhak, Balasore.	2
<b>Total</b>		<b>3</b>

**ANNEXURE - X**

**PCR TESTING LABORATORY**

<u>Sl.No.</u>	<u>Name and Address of the P.C.R. Testing Laboratory and Location</u>	<u>No.</u>
1.	P.C.R. Testing Laboratory Memkapada, Balasore.	1
<b>Total</b>		<b>1</b>

**ANNEXURE - XI**

**SOIL, WATER AND OTHER PARAMETER TESTING LABORATORY**

<u>Sl.No.</u>	<u>Name of the Laboratory with Address</u>	<u>No.</u>
1.	Fisheries Departmental Laboratory Dighirahania, Balasore.	1
2.	Fast Aqua Laboratory, Gadagadia Chhak, Balasore	1
3.	C.P. Laboratory, Neliabag, Balasore.	1
<b>Total</b>		<b>3</b>

**ANNEXURE - XII**

**SHRIMP FEED WHOLE SELLERS (IMPORTED QUALITY)**

<u>Name of the Wholesaler</u>	<u>Export Brand</u>
1. Kunal Aqua, Gadagadia Chhak, Balasore Wholesaler for Bhadrak, Balasore and all Orissa.	(a) Grow BEST (b) SMART (c) Leader (d) HIGASI

2. Bijaya Agency,

(a) Gold Coin

Station Road, Balasore.

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**ANNEXURE - XIII**

**SHRIMP FEED RETAILERS (INDIGENIOUS)**

<u>Name of the Retailer</u>	<u>Manufacturing</u>	<u>Trade/Brand</u>
<u>with Address Place</u>	<u>Name</u>	
1. Balaji Marine, Naliabag, Balasore	Vizag (A.P.)	ULTRA
2. AQUAMED Januganj, Balasore	Vizag (A.P.)	AVANTI
3. SEVE SEA FOOD Sahadevakhunta, Balasore	Vizag (A.P.)	CP STAR
4. BIJAYA ENTERPRISER Neliabag, Balasore	Vizag (A.P.) Chennai (T.N.)	IRWAN
5. Hari Distributors Near Orissa Plastic, Bls.	Chennai (A.P.)	BIN-TANG
6. FALCON MARINE EXPORT LTD. Branch Office at, Balasore	Vizag (A.P.)	NASA
7. DEEPSON, (P) LTD. Chandipur, Road, Balasore.	Rajmandir	C.P.
8. Partha Aqua Feeds Indiragandhi Marg, Bhoisahi.	DO	Do

**ANNEXURE - XIV**

**SHRIMP/SCAMPI FEED DISTRIBUTORS**

<u>Name of Dealer</u>	<u>Address</u>
1. Maa Taranga Agency	Akatpur, Balasore
2. Babu Jena	Gudupahi, Balasore

3.	Susil Pattnayak	Gudupahi, Balasore
4.	Jagannath Das	Gudupahi, Balasore
5.	Santosh Mandal	Gudupahi, Balasore
6.	Babula Mandal	Gudupahi, Balasore
7.	Ananta Patra	Gudupahi, Balasore
8.	Susanta Patra	Gudupahi, Balasore

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**ANNEXURE - XV**

**SCAMPI FEED DISTRIBUTORS**

Name of Distributor	Address
1. Hena Enterprisers	Motiganj, Balasore
2. Bijaya Agency	Nilibag, Balasore
3. ABANTI FEEDS	Haripur, Balasore

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**ANNEXURE - XVI**

**IMC FEED SUPPLIERS (GNOC & RICE POLISH)**

Name of the supplier	Type of Feed
1. Arnapura Distributor Fakirmohan Chhack, Balasore	GNOC & Rice Polish
2. Agarwal Feed Supplies Near Hanuman Mandir, Balasore	GNOC
3. M/S 'Paribar' Motiganj Bazar, Balasore	GNOC & Rice Polish
4. M/S 'Nature'	GNOC & Rice Polish

M/S United Traders	M.O.C, GNOC
Motiganj, Balasore	& Rice Polish
6. Cattle Feed Supplies	GNOC & Rice Polish
Motiganj, Balasore	

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**ANNEXURE-XVII**

**INPUT SUPPLIERS FOR IMC/SCAMPI**

<u>Name of Supplier</u>	<u>Type of Input</u>
1. Fare Deal Corporation Cinema Bazar, Balasore	Lime & geolite
2. M/S Paribar Motiganj, Balasore	GNOC Rice Polish
3. M/S United Traders Motiganj, Balasore	GNOC Rice Polish
4. GOSALA Sahadevkhunta, Balasore	Raw Cow Dung

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**ANNEXURE - XVIII**

**FISHING EQUIPMENT SUPPLIERS**

<u>Name of the supplier</u>	<u>Type of materials</u>
1. DURGA BHANDAR Kacheri Bazar, Balasore	Authorised Dealer of Garfil net, weaving, rope and floats.
2. Raghunath Agarwallah Banka Bazar, Cuttack	- Do -
3. Susmita Agency Motiganj, Balasore	Local net, weaving, rope, floats etc.

4.	Durga Dutta Gopiram	- Do -
5.	M/S Shyam Store Motiganj, Balasore	- Do -
6.	Ali Supplier Jholasahi, Cuttack	Happa, Conditioning Happa, Breeding Happa & Plankto net
7.	OPDC Extension wing Mancheswar, Cuttack	Weaving, net, rope etc

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**ANNEXURE - XIX**

**GROWTH PROMOTERS PROBIOTICS & MEDICINES  
DISTRIBUTORS**

Name of the Firm	Address
1. Lucky Agency	Gopalgan, Balasore
2. Aqua-Nutrients	Near Convent School Vivekananda Marg, Bis.
3. Prawn care	F.M. College Road, Balasore
4. Kunal Aqua Sales	Gadagadia Chhak, Balasore
5. NEOSPARK	Damodarpur, Balasore
6. P.V.S. Chemicals, Ltd.	Gadagadia Chhak, Balasore
7. WOCKHARD	Niliabag, Balasore
8. Fare Deal Corporation	Cinema Bazar, Balasore

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**ANNEXURE - XX**

**SHRIMP SEED HATCHERIES**

Name of the Firm	Address
1. Orissa Shrimp Seed Production Supply & Research Centre	Gopalpur on sea, Ganjam, Orissa
2. M/s. Srinivash Marine Export (India) Ltd.	Gopalpur on sea, Ganjam, Orissa
3. M/s. Chandra Bhaga Prawn Hatchery	Chandrabhaga, Konark Puri, Orissa
4. M/s. ORIQUA LTD.	Jawaharlal Nehru Road Kolkata, West Bengal.
5. M/s. Gangaram Hatcheries (P) Ltd.	23- Park tower, Ganganagar Bhubaneswar, Orissa
6. DIP-SUN, INDIA, LTD.	Gopalpur, Ganjam, Orissa
7. Andhra Pradesh Shrimp Seed Production Supply & Research Centre.	Visakhapatnam (AP)

**ANNEXURE - XXII**

**INDIAN MAJOR CARP SEED HATCHERIES**

1. Dighi Rahania, Govt. Fish Farm Dighirahania, Balasore, Orissa.
2. O.P.D.C., Hatchery, Saramanga, Bhadrak, Orissa.
3. Kathapal, Govt. Fish Farm, Kathapal Mayurbhanj, Orissa
4. M/s. Saffique Ahamad Fish Seed Hatchery, Harasahapur, Saragan, Balasore, Orissa.
5. M/s Narotam Panda Fish Seed Hatchery, Kherana, Saragan Balasore, Orissa.
6. M/s Ramanath Sethi Fish Seed Farm Remuna, Balasore, Orissa.
7. Private Fish Seed Hatchery, Jaleswar, Balasore, Orissa.
8. Private Fish Seed Hatchery, Astapur, Baisinga, Mayurbhanj, Orissa.
9. M.C.D., I.M.C. Fingerling Rearing Fish Seed Farm, Hidigan, Balasore, Orissa.

**ANNEXURE - XXIII**

**NO. OF ICE PLANTS (Ice Distributor)**

Sl. No.	Nam of the Ice Plant	Location	Production Capacity
1.	Padmabati Ice Plant Proof Road, Digiria	Balasore	10 MT
2.	Saragan Ice Plant M/s. S.K. Saffig, Sarnan Mahamad, Saragan, Balasore, Orissa.		12 MT
3.	Arnapurna ICE Plant, Bardhanpur, Balasore Orissa.		10 MT
4.	Sibagauri ICE Plant, Gudupahi, Balasore, Orissa		9 MT
5.	Mahalaxmi ICE Plant Patrapada, Balasore, Orissa		10 MT
6.	Subarna ICE Plant, Naupalgadi, Chandipur Balasore, Orissa.		15 MT
7.	Singh Bhabani ICE Plant, Sinduri, Balasore, Orissa.		10 MT
8.	Sankar ICE Plant & Processing Industries, Naupalgadi, Chandipur, Balasore, Orissa.		10 MT

**ANNEXURE - XXIV**

**NAME OF FINANCING BANKS**

Sl. No.	Nam of the Bank	Area of Operation
1.	SBI (ADB) Balasore	Gudupahi
2.	D.C.C.B, Balasore	All Villages of Gudupahi G.P.

**ANNEXURE - XXV**

**TOOLS AND MACHINERY SUPPLIERS.**

Sl. No.	Nam of the Bank	Address
1.	Hari Distributor	Near Orissa Plastic Balasore
2.	Kunal Aqua	Gadagadia Chhak, Balasore
3.	Mahabir Service Station	Kacheri Road, Balasore
4.	Crompton and Grieves	Medical Road, Balasore
5.	Jagadhatri Hardware Store	Motiganj, Balasore
6.	Ganesh Hardware Store	Skatpur, Balasore
7.	M/s. Steel Corporation, Kacheri Road, Balasore	Kacheri Road, Balasore
8.	M/s. Fare Deal Corporation	Motiganj Cinema Bazar, Balasore
9.	Eastern India Fisheries Agro Product (F) Pvt. Ltd.	Telenga Sahi, Balasore
10.	Mahabir Services Station Kacheri Road, Balasore	
11.	ORIPLAST, Balasore, (Whole seller)	
12.	Universal Iron & Steel Company, Kacheri Road Balasore	

**SUPPORT INSTITUTIONS**

Name of institutions with address

1. Coastal Aqua Culture Authority of India, Chennai,
2. Central Institute of Brakish Water Aqua Culture, Chennai.
3. Central Institute of Fresh Water Aqua Culture, Kaysalyaganga, Orissa.
4. MPEDA Regional office Bhubaneswar, Orissa.
5. Commissioner-Cum-Secretary FARD, Bhubaneswar, Orissa.
6. Director of Fisheries, Orissa, Cuttack.
7. Dist. Fishery Officer FFDA & BFDA, Bls., Orissa.
8. District Collector, Balasore, Orissa.
9. Tahasildar, Balasore, Orissa.
10. District Rural Development Agency, Bls, Orissa.
11. Fisheries Training Institutes of State Fisheries Department Orissa, at - Paradeep & Balugaon.

**ANNEXURE - XXVIII (Part - 2)**

**FISHERIES TRAINING INSTITUTES/Tech Institution**

<u>Name of training Institute</u>	<u>Location</u>
1. Departmental Fisheries Training Institute, Balugaon (For DPT. Technical Staff)	Puri, Orissa
2. Brackish Water Training Centre, Paradeep (For Shrimp Farmers)	J.S. Pur, Orissa
3. Central Institute of Fresh Water (For I.M.C./Scampi Farmers)	Khurda, Orissa
4. Orissa University of Fisheries, Technology Rangeilunda, Gopalpur on sea. (For B.F.Sc & M.F.Sc. students)	Ganjam, Orissa
5. MPEDA, REGIONAL OFFICE	Khurda, Orissa

Bhubaneswar.

6. Dist. Fisheries Office, FRDA & BFDA, Balasore, Orissa.  
Balasore.

**ANNEXURE - XXIX**

**PROCESSING PLANTS  
EXPORTING SHRIMP/SCAMPI**

<u>Name of Processing plant</u>	<u>Location</u>
1. SURYOUUDYOG LTD. Nayapali, Bhubaneswar, Orissa	Branch Office at - Balasore, Orissa
2. FALCON MARINE EXPORTS LTD. FALCON HOUSE, Cuttack Road Bhubaneswar, Orissa.	Branch Office at - Balasore
3. KONARK AQUATICS & EXPORTS PRIVATE LTD. Sahidnagar, Bhubaneswar, Orissa.	Branch Office Balasore.
4. SEA GOLD EXPORT (P) LTD.	Telangasahi, Balasore
5. MAGNUM EXPORTERS	Balasore, Orissa
6. SUN TECHNOLOGY	Balasore, Orissa

**ANNEXURE - XXX**

**BALASORE LOCAL MARKETS**

<u>Name of the local market</u>	<u>Location</u>
1. Motiganj, Balasore	Motiganj, Daily Market
2. Nayabazar, Balasore	Nayabazar, Daily Market
3. Bahanaga Bazar, Bahanaga, Bls.	Bahanaga Bazar
4. Nilgiri Market, Balasore	Nilgiri Town
5. Remuna Market, Remuna, Balasore	Remuna hat
6. Sergarh Market, Sergarh, Balasore	Sergarh Chhak.
7. Khantapada Market, Khantapada, Bls.	Khantapada Bazar.

**ANNEXURE - XXXI**

**PLACED WITH CLUSTER VISION**

**ANNEXURE - XXXII**

**NAME OF CREEKS TO BE DEVELOPED**

<u>Name of the creek</u>	<u>Distance in kms.</u>
(i) Mahisali creek from coast canal to Bay of Bengal	3 kms.
(ii) Sundara creek direct Bay of Bengal to coast canal	2 kms.
(iii) Creek from Company Creek to Sundara Creek	2 kms.
(iv) Company creek from coast canal to coast canal, Via-Gudupahi & Hidigan Village	6 kms.
(v) Manibhadra creek from company creek to Bay of Bengal presently silted and blocked by ITR, Chandipur	3 kms.
(vi) Bogeinal creek from company creek to Bay of Bengal presently blocked by ITR	3 kms.

**ANNEXURE - XXXIII**

**NO. OF FEEDERS ROAD REQUIRED FOR DEVELOPMENT**

<u>Name of the Feeder Road</u>	<u>Distance in kms.</u>
1. Feeder Road from Coast canal to Gudupahi High School Via - Hazira Chhak	2 kms.
2. Feeder Road from Mahisali to Gudupahi High School	1.5 kms.
3. Feeder Road from Company Chhak Adibasi Sahi to ITR operative building No. 3	1 kms.
4. Feeder Road from ITR Road to Mandal Sahi Via - Tarani Patra Chhak.	2 kms.

**ANNEXURE - XXXIV**

**SHRIMP, SCAMPI, FISH PRODUCED FROM GUDUPAHI  
CLUSTER DURING THE YEAR 2004 - 2005**

<u>Type of Culture</u>	<u>Area of</u> <u>covered in Ha.</u>	<u>Rate of</u> <u>Production</u> <u>per Ha.</u>	<u>Total Production</u> <u>in M.T.</u>
1. Shrimp (extensive culture)	186.56	1.5	550.00 (two crops)
2. Scampi (intensive culture)	10.00	1.0	10.00
3. Fish (intensive & extensive culture)	100.00	2.5	250.00

**ANNEXURE - XXXV**

**SAHIS (HAMLETS) REQUIRE DRINKING WATER FACILITY**

<u>Name of the Sahis</u> <u>(Hamlets)</u>	<u>Purpose</u>	<u>No. of Tubwells required</u>
1. Das Sahi, Gudupahi	Drinking Water	1
2. Sahu Sahi, Gudupahi	Drinking Water	1
3. Maity Sahi, Gudupahi	Drinking Water	1
4. Mandal Sahi, Gudupahi	Drinking Water	1
5. Koili Sahi, Gudupahi	Drinking Water	1
6. Satpara Sahi, Gudupahi	Drinking Water	1



**ANNEXURE - XXXVI**

**ECONOMICS OF SHRIMP/SCAMPI/FISH CULTURE SCHEME  
IMPLEMENTED THROUGH STATE FISHERIES DEPARTMENT, ORISSA**

Type of culture Profit	Method of Culture	Stocking Rate/Per Ha.	Recurring Expn./Per Ha.	Rate of	Sale of Production	Net
Product	Per Ha.					
				in MT		
1. IMC 59,500/- (Indian Major Carp)	Intensive	5000 (Fingerlings)	28,000/-	2.5	87,500/-	
2. Poly culture 1,11,625/- (IMC+Scampi)	Intensive	2000 (Fingerlings) 12,500 (Scampi PL-20)	41,500/-	2.5 MT fish 0.37MT Scampi	87,500/-	
65,605/- 1,53,125/-						
3. Monoculture 2,00,000/- of scampi	Intensive	50,000 PL-20	80,000/-	1,20,000/-	1.00,1000/-	
4. Shrimp 2,35,000/- 1,95,000/-	Extensive	1.8		60,000/- 4,32,000/-		

**PERCEPTION OF CLUSTER ACTORS (FISH FARMERS)  
ABOUT THE RULE OF CLUSTER ACTIVITIES  
(Period of study 29.08.05 to 5.10.05)**

- 1. Loan** : Not Timely
- 2. Subsidy** : On regulated basis after registration from Aquaculture authority, Chennai.
- 3. Input Supply** : Timely on credit basis from input suppliers.
- 4. Marketing** : Through processing plants and Agents (middle man business).
- 5. Leasing of pond** : By Revenue Dept. baing on certain rules.
- 6. Training** : Organised by MPEDA Regional Office, at: Bhubaneswar and Dist. Fisheries Officers cum CEO, FFDA & BFDA, Balasore. By camp training programme. The training is occasional i.e. on availability of funds.
- 7. Technical Expertise :** By Pvt. Consultant, MPEDA, Regional Office at Bhubaneswar and Dist. Fisheries Officers, FFDA & BFDA, Balasore. The Technical Expertise is not in time, as and when required by the farmers.
- 8. Employment Generation** : 3 persons per Ha. area. in full time and 2 persons on wage basis on part time.

**INTERVIEW SCHEDULE FOR CLUSTER ACTORS.**

- 1. Education : Primary, Secondary, Higher Secondary rarely graduates.**
- 2. Caste : Maximum other caste.**
- 3. Occupation**
  - (a) Main : Fish, Shrimp & Scampi culture.**
  - (b) Subsidiary : Agriculture in some cases.**
- 4. Income**
  - (a) Total Income : Rs. 50,000/- to 2 lakhs basing on fish culture practice.**
  - (b) Income from fisheries : Rs. 50,000/- to 2 lakhs on the basis of fish culture practice.**
  - (c) Income from other sources : Nil**
- 5. Size of holding for agriculture : 1 acre to 5 acres.**
- 6. Size of pond : .2 hectares pond to 5 hectares farms.**
  - (a) Owned : 80% personal ponds owned by cluster hectares & 20% Govt. owned ponds.**
  - (b) Leased : 20% only.**
- 8. Details of training programme : Camp Training programme on various aspect of fish production conducted by MPEDA, Regional Office, Bhubaneswar, Orissa State Fisheries Departmental Training Institute & Dist. Fisheries Officer FFDA & BFDA, Balasore.**

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