

# **COMMUNITY LEVEL FOOD INSECURITY AND VULNERABILITY IN THE VILLAGES OF ORISSA**

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## **Chapter I**

### **Introduction:**

The purpose of the study is two fold. First, we seek to assess the levels of food insecurity and vulnerability of the people in the four villages of Orissa. The second is to evolve strategies for community level interventions, which would alleviate hunger. The project was undertaken by M.S. Swaminathan Research Foundation and funded by World Food Program.

It is important to define vulnerability at the outset. Vulnerability exists, when a person or a house holds is exposed to a risky situation and the mechanism available to cope with the risky situation is inadequate to cover the risk. Such people are termed as vulnerable. Most vulnerable persons often suffer from deprivation of basic needs such as, water, food and shelter. Food and water are the most basic needs of human beings. The study seeks to identify the people who run the risk of facing hunger and starvation at least in some months in a year. Thus we shall be studying two sets of factors -- The factors that expose the households to the risk of going hungry.

The types of risks that are faced by people differ from place to place, group-to-group and household-to-household and individual-to-individual. Levels of vulnerability depend upon the location, natural conditions, the livelihood opportunities, and asset base of the family. Availability of credit at low interest rates, and the social safety nets available such as Public distribution system to purchase food grains at subsidized rates, food for work programme or other employment generation programs during lean seasons, when there is no work are also important.

The capacity to cope with the situation also differs from individual to individual, depending upon the endowments and entitlements. Entitlements include literacy to fight exploitation, education and skills to acquire a job when needed, access to livelihood, assets base of the household such as land and livestock houses implements etc. The level of vulnerability depends upon the net impact of entitlements and positive coping mechanisms available to them

In the absence of positive coping mechanisms, the negative impact is inevitable. The negative impact consists of indebtedness, exploitation by middlemen, loss of assets, reduction in food intake, child labour, bonded labour, distress migration in search of work, and progressive pauperization of the low income population. We attempt in this study to give a graphic description of the problems faced by low-income rural population of Orissa in the tribal villages.

### **Method of data collection and limitations of the survey**

Participatory Rural Appraisal is a more recent method of data collection made popular by the international aid agencies. The dissatisfaction with the lack of representative data at the village level for programme implementation in the nation wide surveys such as NSS, NCAER, NNMB has lead to this method of assessment based on the information collected from the village community. In our case in addition the PRA was also a rapid assessment of vulnerability.

The total village households are divided into four groups. Those who often go hungry and face starvation during lean periods, those who go hungry only during the lean months in a year and those who do not go hungry. This identification was done in two ways. Primarily with the help of the land ownership and livelihood information and then on the basis of the villager's perception of the most vulnerable or ultra poor. Secondly, we adopted a rapid assessment of vulnerability by a group of investigators and the villagers over a period of and half days in each village.

This method has certain advantages and disadvantages. To begin with it is not a representative sample. The villages selected are not typical villages of the region. Hence it is not possible to generalize the findings for the district let alone for the state. Further, the impressions created are different in different seasons, as the food security improves in normal or excess rain fall years and during harvest and sowing seasons. The responses of the people may be biased accordingly. Conflicting statements are difficult to reconcile, with each other, let alone with secondary data.

The advantage is that the situation is described more thoroughly in a participatory approach. Though it is not representative, it looks at many aspects of vulnerability corroborated by the visual facts and just not the statements of people. The study carries more conviction. These are helpful as a preparatory basic approach before a more through

investigation is taken up for program implementation. We have combined the secondary level district data with the PRA study to draw conclusions about the vulnerability of these villages. The major limitation of the study is that the survey was completed in one and half days, and hence the authenticity of the information provided could not be verified. Some times in a group, more influential and vocal members of the village volunteer information which is not contradicted by others. Some times conflicting reports are heard. Hence it is difficult to verify the information in a rapid survey.

We have organized the study into four chapters. The first chapter is introductory in nature, giving information about the selection of districts and method of survey. The second chapter gives the district profiles from secondary data as well as the data collected from the district authorities during discussions. The third chapter gives the village profiles. The fourth chapter is about the characteristics of the vulnerable groups and the coping mechanisms. The fifth chapter is the concluding chapter which discusses the policy interventions and programme interventions that would help the villagers.

### **Selection of districts for the study**

For the purpose of the study, we have selected four districts. The districts were selected after a hierarchical clustering exercise.<sup>1</sup> One district was selected from each cluster for the assessment of food insecurity and vulnerability. One village from each district was chosen for the survey. We have selected villages purposely. Those that are more convenient to study from the practical point of view of familiarity have been selected. In a PRA exercise some rapport will have to be established between the investigators and villagers. The investigators are already involved in the work of MSSRF in some of the villages in the selected districts. Hence these villages are selected for study. Though the sample village is not representative of the district and the exercise is only a case study, qualitative observations and community perceptions gave us considerable insight into the vulnerability issues.

We have collected information through Participatory Rural Appraisals and group discussion with the village community. The vulnerable households have been identified with the help of the village community. Mini survey of eight households, belonging to the vulnerable groups has been undertaken by the team of investigators. All the

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<sup>1</sup> See Appendix 1 for the details of the clustering exercise undertaken.

households in the hamlet have been enumerated for assets and livelihoods, before choosing the vulnerable group.

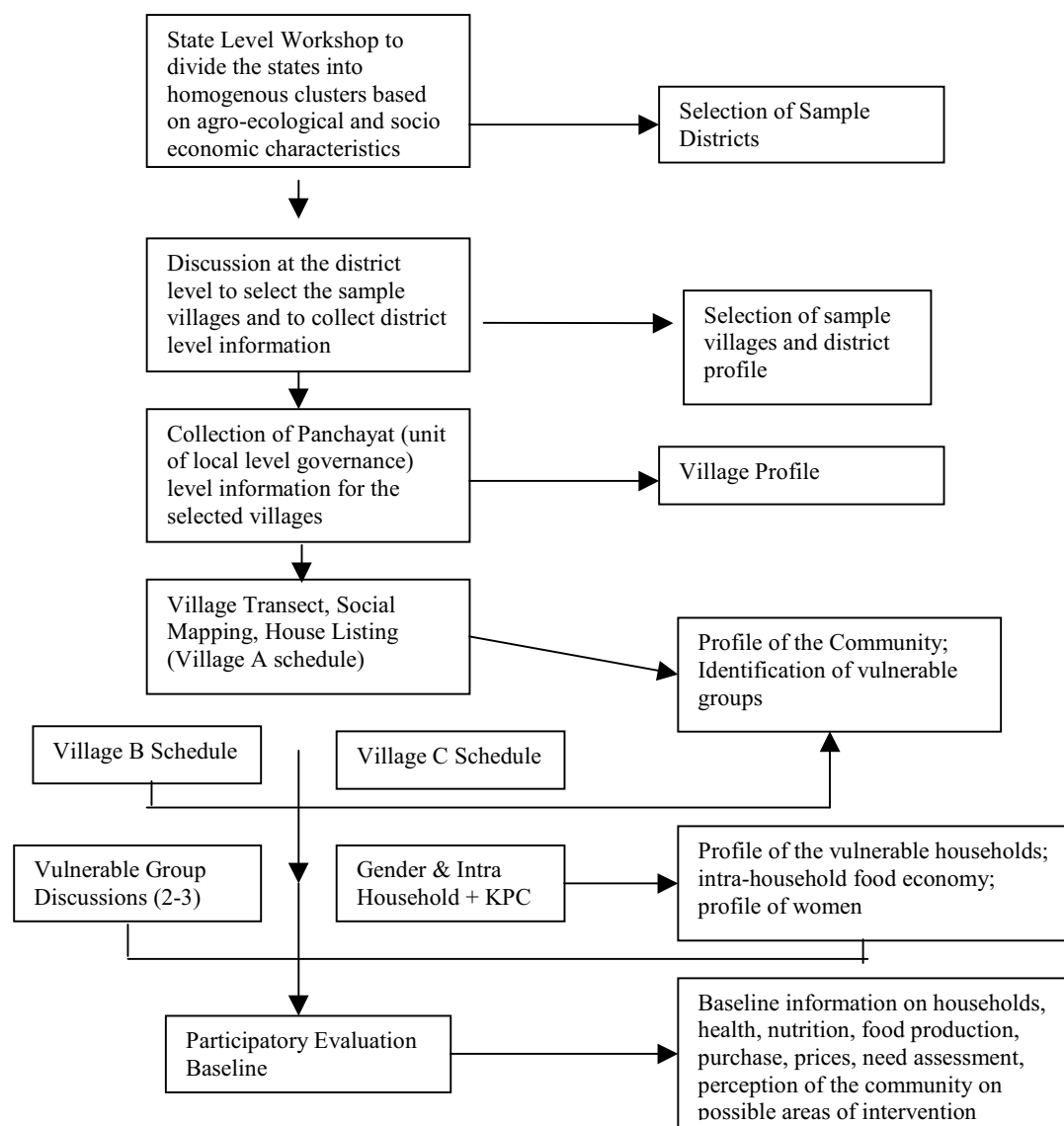
A team of four investigators along with the survey coordinator were given a briefing on the rapid assessment of vulnerability through participatory method in a three-day workshop organized by World Food Programme Official Mr. Dipayan Bhattacharyya. In this method most of the information is reliable as the group as a whole gives the information. Though the land information is not corroborated by the village records, it is appears reliable as the villagers know each other very well at the personal level. Moreover, in all the villages studied MSSRF staff has already established sufficient rapport through the other programmes such as seed banks and improved agricultural practices and bio diversity conservation.

The vulnerability of Orissa population is mostly due to poverty, lack of livelihood opportunities, frequent disasters such as droughts, floods and cyclones. The problems of degradation of forests area with forty percent canopy cover, reduction in the timber and non-timber forest products in the forests worsened the livelihood security and food security. A vast majority of tribal population is deprived of their livelihoods. Despite good rainfall, there is severe water scarcity for most part of the year. This is partly due to lack of sufficient vegetative cover, at least in the hilly areas. Moisture retention has been poor and the ground water tables go down in summer, causing hardships to the tribal people. In addition flash floods wipe out the crops planted in the water trail.

Orissa has thirty districts. We have selected four districts out of four clusters representing four typologies. Kalahandi, Koraput, Kendrapara and Mayurbhanj. World Food Programme surveyed the district of Bolanghir earlier. Three of the districts with the exception of Kendrapada are tribal in nature and small in size. Some of the findings are included in the present report. These undivided districts of Kalahandi, Bolanghir and Koraput are normally referred to as KBK. These districts are better endowed by nature. Yet they continue to have problems of droughts, floods and lack of food for most part of the year. The population is very poor. Now they have been further divided into 9 districts. Specific Objective of the study is to is to 1. Identifying the most vulnerable groups, and, comparing levels of vulnerability across each group, 2. Identifying the general problems 3. Identifying the most binding constraints to improved availability access and

absorption and assimilation of food. 4. Identifying priority sectors/sub-sectors for intervention. 5. Identifying the appropriate role of food aid in each of those priority sectors/sub-sectors

#### Flow Diagram of Activities for the Preparation of Vulnerability Assessment:



The study was launched in 1<sup>st</sup> September after a debriefing meeting. Debriefing meeting was organized by WFP at MSSRF premises at the end of August. This survey is based on multiple sources of information on food insecurity in Orissa. Extensive schedules were prepared to capture these informations and Participatory community based survey was

undertaken. There were six members in the survey team and the survey was completed by 15th of September 2000. The list of schedules used for the survey are as given:

Schedule 1 – Village Information Part A: Village Over View

Schedule 2 – Village Information Part B: Resources, Livelihood and Vulnerability

Schedule 3 – Village Information Part C: Services and Infrastructure

Schedule 4 – Household Information: Vulnerable Group Focus

Schedule 5 – Gender and Intra-Household Information

Schedule 6 – Health and Nutrition Knowledge and Practice

Schedule 7 – Pilot Community Baseline

Schedule 8 – Participatory Evaluation Baseline

Schedule 9 – District Level Guideline

Schedule 10 – Village Level Guideline

The primary information collected from the survey was supplemented with the available secondary data (economy, natural resource base and people). The method of survey are as discussed below.

### **Transact Walk**

The survey staff was divided into two groups. In this method one expert and two field staff accompanied by the villagers, both male and female collected information through casual talk and impressions created on various aspects of the village. At the end of the day the team met and discussed the outcome. The group meeting at the end of the transact walk was to cross check the information provided with the knowledge gained through the secondary data.

### **Community Group Discussions**

The village heads, important decision makers, government persons living in the village or having knowledge about the village are included in the discussions. At the community level, the focus group should be composed of persons of diverse representation, defined according to income levels, occupation groups, caste/community, ethnicity and gender.

The Village/ Community information questionnaire was filled at the end of the discussion

### **Vulnerable Group Survey**

The Food Insecurity and Vulnerability Profile of Orissa defines several important and known characteristics of vulnerability of households in Orissa by district and village. These characteristics include food availability and consumption, nutrition and health indicators, gender specific aspects and prevalence of scheduled caste and scheduled tribe households etc. These indicators were useful in the process of selecting vulnerable groups for sampling.

To measure the characteristics and prevalence of vulnerability of household in villages, various means of accessing food and adopting strategies to expand and diversify access to food were examined. A systematic methodology was adopted to identify the vulnerable groups within the village. To begin with, households were grouped in accordance with their food self-sufficiency and their dependence on external source of food. Then their economic base was measured by the factors such as land holdings, dependency ratio, quality of land holdings etc. Finally their social status was ascertained through factors such as caste, tribe and gender. The identification of vulnerable groups was based on a house listing to collect information on socio-economic characteristics of the households of that village.



## **Chapter – II**

### **District Profiles**

Following Hierarchical Clustering (see Appendix 1) the districts of Koraput, Kalahandi, Kendrapada, Mayurbhanj and Bolangir were selected. Since Bolangir was already surveyed by WFP, MSSRF surveyed only the other four districts. Hence the village level analysis was restricted to the other four villages. These five districts are situated in different Agro-climatic zones of Orissa. Koraput, Bolangir and Kalahandi are situated in the hilly region of eastern ghat, in the extreme southern part of the state. Kendrapada is situated in the eastern part of the state, in the coastal plain land. Mayurbhanj is located in the northeastern part of the state, which is in the northern plain, characterized by the undulating terrain. Socio-economic characteristics of the four districts also differ from one to another. Kendrapada is the most densely populated district among them with a population density of 448 persons /sq km. Koraput being situated in the hilly terrain is the most sparsely populated (123 persons / sq.km.) district in the state.

### **Climate and Rainfall**

They enjoy southwest monsoon rainfall. Normal rainfall of these districts varies from 1300 mm to 1700 mm. Its highest in Mayurbhanj (1648.2 mm) and the lowest in Bolangir (1275.6 mm). Studying from the rainfall, all the districts seem to be free from droughts. (Table 1)

### **Per Capita Production**

Per capita rice and cereal production is highest in two tribal districts of Kalahandi and Mayurbhanj. Per capita rice production is 19.80 kg per month and 17.59 kg per month and per capita cereal production is 20.76 kg and 18.18 kg per month respectively. Bolangir comes next to these two districts both in per capita rice and cereal production (16.92 and 17.48 kg per capita per month respectively). Per capita rice production is the lowest in Koraput district (9.30 kg/month). But the cereal production is not the lowest in

this district. It shows that other cereals like Jowar and Maize are also important in this district. Per capita rice (11.64 Kg/month) and cereal production (11.68 Kg/month) is the lowest in Kendrapada. It can be inferred that rice is the major cereal crop in this district. Per capita pulses production is very high in Kalahandi district (4.25 kg/month) and Bolangir comes next to that (2.37 kg/month), whereas in other district it is very nominal. Kalahandi has highest per capita production of oilseeds (2.57 kg/month). Per capita vegetable production is good all over Orissa. Koraput stands first in per capita vegetable production (19.28 kg /month). Per capita vegetable production is least in Kendrapada (8.25kg/month). (Table 1)

### **Crop Production**

Wheat yield is highest in Kendrapada (1480 Kg/ha) and its lowest in Kalahandi (1003 kg/ha). Large amount of maize is produced in Orissa and again Kendrapada accounts for the highest yield with 1533 Kg/ha. In the case of jowar Koraput stands first with an average yield of 718 Kg/ha. Pulses yield is highest in the districts of Mayurbhanj (483 Kg/ha) and Kalahandi (466 Kg/ha). Largest amount of oilseeds is produced in Kendrapada where the average yield is 1090 Kg/ha. Kalahandi accounts for the largest vegetable production, the average yields being 9084 Kg/ha. The lowest average yield of vegetable is 6335 Kg /ha and it is reported in Bolangir. Bolangir is the district where spices yield is also the least (956 Kg/ha). Yield of spices is highest in Koraput (1372 Kg/ha). (Table 1)

### **Cropping Pattern**

The crops grown in these districts are rice, wheat, oilseeds, pulses and vegetables. Rice is the major crop grown. In Kendrapada and Mayurbhanj more than 50 percent of the area is under rice cultivation . Koraput has the lowest area under rice (28.48 %) , but it has the highest area under oilseeds (15.90 %). Kendrapada has only 4.61 percent of cultivated area, which is the lowest under this crop among all the districts. In all these districts area under wheat is very nominal , except Mayurbhanj none of the districts has more than one per cent of the area under wheat.

Pulses come next to rice in terms of acreage. Kalahandi has the highest area under pulses which is 28.37 % of the cultivated area. All five districts can boast of a moderately good vegetable production. Both subsistence and large scale production is practiced.

Highest area under vegetable cultivation is in the district of Koraput (7.98%). Spices are also important in these districts. More than one percent of the area are under spices in each district. Area under fruits is also significant in these districts. Koraput has the largest area under fruits that is about 6.71 percent. Rest of the districts have less than 3 percent area under fruits (Table 1).

### **Irrigation**

Kendrapada has the highest percentage of gross irrigated area to the total gross cropped area (32.85%) and Koraput comes next with 26.09% of gross irrigated area to gross cropped area, whereas Bolangir has least percentage of gross irrigated area to total gross cropped area (16.92%). In other two districts Kalahandi and Mayurbhanj gross irrigated area to gross cropped area at more or less the same (19.75 & 20.56 respectively). (See Table 1)

### **Forest Area**

The extent of forest cover or the area under forests as a percentage of the geographical area of the district is one of the indicators of sustainability. The tribal districts of Kalahandi and Mayurbhanj have large area under forests. Kalahandi has 46.95% of forest to the total geographical area and Mayurbhanj has 44.91 % of forest cover. (Table 1)

### **Animal Production**

The per capita availability of milk per day is very low. Among these Bolangir stands first with 44 gms of milk per day, while Mayurbhanj has the lowest percapita availability of 22 gms per day. All these districts being coastal districts Pisciculture is one of the important occupation in these districts. Per capita fish production is highest in Kendrapada (1.67 kg/month). In all other districts per capita fish production is less than 1 Kg/month. Its the least in Koraput where the per capita fish production is (0.12 kg/month). (Table 1)

### **Occupational Structure**

Agriculture is the main occupation in these districts. The occupational structure reveals that about 50% of the population are cultivators. In Kendrapada district percentage of cultivators (55.91) is highest whereas percentage of agricultural labour (20.35) is the lowest among the five districts. Bolangir has second largest cultivator (49.04) and second

lowest agricultural labourer (30.89) population among these districts. Majority of the farmers are small or marginal farmers and have land holdings below 1.0 ha land. Percentage of marginal farmers (having below 1.0 ha land) is high in Kendrapada and Mayurbhanj district and it is 57.10 and 56.91 respectively. ( Table 1)

### **Poverty**

The percentage of population **below poverty line** is much higher in Koraput district when compared to the other districts and also the state as a whole. About 66 percent of population is below poverty line in state whereas in Koraput percentage of population below poverty line is 84.6%. Percentage of population below poverty line is less than the state averages in Kendrapada (55.9%) which shows the better economic condition of the coastal district. Bolangir comes next to Kendrapada with 59.4% of population below poverty line. Again the percentage of population below poverty line is high in Mayurbhanj (77.9%). The percentage of population below poverty level is high in those two districts where there is more concentration of scheduled caste and scheduled tribe population. Percentage of population below poverty line in Kalahandi (63.1 %) is also high though it is less than the state average (66 %). (See Table 2)

### **Scheduled tribe population**

Largest concentration of scheduled tribe population is found in Mayurbhanj. It has 15.51% of schedule tribe population of the state, and 57.87% of total population of the district is schedule tribe. Kendrapada has very low percentage (0.06) of schedule tribe population compared to the other districts. Koraput is also considered as a tribal district because about 50% of the district's population are of scheduled tribe, which comprises 7.42% of the state population. Kalahandi has 4.64% of schedule tribe population of the state. In Bolangir percentage of schedule tribe population is lower when compared to the other three districts, but it has considerable percentage of scheduled tribe population of the state (3.86) and district (22.06). (See Table 2)

### **Educational Status**

The coastal district of Kendrapada enjoys a better position in terms of educational status. The literacy rate of 63.61% in Kendrapada, is much higher than the state average (49.09%). Except Kendrapada the percentage of literates is much below the State average in all the districts. Percentage of literate population is least in Koraput district (24.64%).

Gender disparity in literacy is also very high in all districts except Kendrapada. In these districts less than 50% of the females are literate compared to the literate male person. This disparity is highest in Kalahandi; where percentage of female literacy is only 15.28 whereas male literacy is 46.85%. Female literacy is 50.67 in Kendrapada compared to the male literacy of 76.82%. Bolangir comes after Kendrapada in terms of total literacy, but even here the gender discrimination in literacy is high.

The state average of tribal literacy is 22.31 %. The district of Koraput has the lowest tribal literacy (8.34%) among the five districts. Bolangir (24.86) and Mayurbhanj has tribal literacy percentage higher than the state average (24.10). In Kendrapada and Kalahandi it is 16.86% and 18.54% respectively. (See Table2)

### **Child Labour**

Percentage of child labour is high in the tribal dominated districts because of poor socio economic conditions. Percentage of child labour is more or less same in Kalahandi and Koraput (12%), which is more than double the state average (5.87%). Bolangir comes next to Kalahandi and Koraput with 8.52% of children employed in labour force. The percentage of children employed in the labour force is least in the Kendrapada (1.24%), which reflects the better socio economic condition of the district.(Table 2)

### **Infrastructure**

In Kendrapada 87.82% villages are electrified as on 1999, March, which shows better infrastructure condition of the district. Bolangir comes next to Kendrapada with 84.89% villages electrified. Percentage of electrification of villages is 59.34% in Mayurbhanj and 53.92% in Kalahandi. The picture of electrification shows again the better condition in the coastal district, whereas the tribal district of Koraput is poor in infrastructure. In Koraput less than (46.16%) of the villages are electrified. Koraput is poorest among all in road length (1059.01km/'000sq km). Road length per thousand sq. km is highest in Kendrapada (1750.78 km per thousand sq. km) among the five districts as on 1999, March. Kalahandi comes next to Kendrapada with 1480.39 km of road length per thousand sq km. In other two districts, Bolangir and Mayurbhanj road length per thousand sq km is 1333.69 km and 1150.41 km respectively.

If road length per thousand persons is considered Kalahandi stands first with 9.28km/000persons. Koraput is next with 7.10 km road length per thousand person

followed by Bnolangir and Mayurbhanj (6.65 & 5.94 km /000 person). Kendrapada has the lowest figures with (3.63 km /000 persons). The tribal districts seem to have a better position in terms of road length per thousand persons. (Table 2)

### **Mortality Rates**

Infant mortality rate and child mortality rate is very high in all districts even in some cases it is higher than the state average. Highest IMR and CMR are found in Kalahandi (137 & 158 respectively). Though Mayurbhanj is a tribal district both IMR and CMR (91&125 respectively.) are lowest in this district when compared to the State average of infant mortality rate (125) and child mortality rate (133). In the coastal district of Kendrapada CMR is higher than the state average but IMR is less than the state average. In Bolangir though both IMR and CMR rate are high , both are less than the state average (101 & 139 respectively). (See Table 3)

### **Nutritional Level**

Percentage of malnourished children in the age group of 0 to 3 years is 30.50 and 3 to 6 years is 26.62% in the State. Percentage of malnourished children is low compared to the state average only in Kendrapada, whereas all other districts have a higher than State average figures for malnourishment. Kalahandi has highest percentage of malnourished children for both age groups (33.62 &31.18) respectively. Percentage of malnourished children in Kendrapada is 26.44 and 23.99 respectively for the both age groups. Bolangir has a lower percentage of malnourished children than the state average (30.50 & 26.62 respectively in both age groups) (See Table 3)

### **Health Infrastructure**

Primary health centres(PHC) per thousand population is highest in Kalahandi district,with Kendrapada close behind. PHC's/1000Population is 28.39 and 28.30 in Kalahandi and Kendrapada respectively. Population per PHC is least in Koraput district (21.42 PHC/1000Population) and in Mayurbhanj population per PHC is 24.96 and Bolangir it is 27.83. (See Table 3)

Population per hospital bed is very high in Kendrapada district (4938) This may be due to the high density of population in Kendrapada. Population per hospital bed is also more or less high in Koraput and Bolangir (3137 & 3023population per hospital bed

respectively).In Kalahandi and Mayurbhanj it is only 2514 and 2670 persons per hospital bed.

The above discussion points to the fact that Kendrapada is a better district as far as socio economic conditions of the districts goes. Koraput emerges as the worst district among the five from the same angle.

## **Chapter III**

### **I. Village Profile**

This chapter is in two sections. The first section is a general study of the villages in terms of the various facilities. In the second section special emphasis has been given on the health facilities available for the women and children.

Four villages were selected from four different districts with different agro – climatic and socio – economic conditions. The villages so selected were Khardapada , Bhodusol, Cherkaput and Gunduri.

#### **Khardapada Village**

This village is located in Rajgarh Panchayat, Mahakalpada block of Kendrapada district.

**Demography :** Khardapada Village presently has 64 households, of which 40 belong to the scheduled caste community and the rest belong to the general caste. The sex ratio in the block is 962, which is lower than the district figure of 1007. The total population of the village is 363 (244 –SC, 119 – Gen). 50 families or 78.1 % of the population are classified as belonging to the vulnerable group. The dependency ratio in the village is high at 2.3. 20 families of the general caste families and 11 families of the 40 scheduled caste families have their own land.

86 % of the land is owned by the general castes, indicating skewed distribution. 63% of the household are landless, of which 89 % belong to the SC community.

**Infrastructure :** This village is located in the coastal district of Kendrapada, so topographically it is a plain land. So this village is well connected by the all weathered road. This village is poor in drainage and sanitation system, only one family has a septic latrine and one family has a barapali latrine, rest have no latrine facilities. There are 3 tubewells, 2 ponds and 2 chuas in the village. The village is electrified.

**Supply of food grains:** Village weekly market is held in Gayespur, which is only 1 km from the village. Another weekly market is in Mahakalpada, which is 8 km from the village. Local market and the PDS are the major sources of food during both normal period and crisis period. In Khardapada it has been noticed that during crisis period the



supply of food grains is more from the local market than the PDS. This is because grains come to local market during crisis to earn more profit. The village is affected by flood and cyclone and hence the village always receives Government aid.

**Educational Status :** The nearest primary school is in Mantri village which is 0.5 km from this village and nearest high school is in Binapani village, which is 3.5 km away. In this village 75% women and all men are literate. The most highly educated in the village is a science graduate. Education level is more among the general caste people than the tribal people. Dropout rate is higher among the scheduled caste. Adult education was also active in this village from 1985 to 1988 , it was discontinued due to some internal problems. Integrated Development Society is operating a Non Formal Education centre in this village.

**Cropping Pattern:** Of the 20 acres of agricultural land, 80 % is medium land and the rest is low land. Paddy is the main crop. There is no surplus crop. No cash crops are cultivated. 50 families have backyard land ranging from 8 cents to 16 cents, and produce vegetables for subsistence. Around 40 households are tenant cultivators

**Livestock Practices:** The villagers maintain cows, bullock, goat, sheep, duck and poultry. The cattle are of local breed and their yield is low. Paddy straw is used as livestock feed. It is also used for thatching houses and hence sometimes becomes short of supply. There is no grazing land in the village. People graze cattle in the agricultural land 2 months after harvest.

**Non – Farm Activities :** The extent of labour migration is high. 80 % of the labour migrate to the nearby villages or to distant places like Kendrapada, Paradeep and even Surat in Gujarat. Brick making is a popular and preferred activity, mainly because of higher wages. While the average daily wage for male labour is Rs 50/ it is Rs 100/ in brick making. 54 % of the village income is from agricultural and non – agricultural labour.

**Health Services:** There is no PHC in this village. Nearest PHC centre is 5 km away from the village near Marsaghai. ICDS service is not accessible in this village because no Anganawadi centre is working in the village. The nearest centre is in Gayashpur.

**Natural Hazards:** Khardapada is a coastal village, which experiences flood and cyclone all most every year. Flood and cyclone affect the economic conditions of the village.

Agriculture is affected because of flood. Loss of crops leads to the loss of access to food. Beside these livestock rearing is also affected by the heavy rain and flood. Life loss, demolitions of houses, loss of livestock are common during that period. All these lead to the loss of access to food, labour employment and loss of income. Added to this water logging in all areas cause spread of different diseases like fever, diarrhoea, fever and sometimes epidemics also break out in the village.

**Interventions Urgently Needed:** Improve Infrastructure arrangements like health, education and sanitation. Tackle the problem of landlessness and unemployment. Agricultural Extension Services, Non – Farm Income Generation Programmes are also to be implemented.

### **Bhodusol Village**

The village is located in Podagada Panchayat, Joshipore Block in Mayurbhanj district. It is approachable from Joshipore over a distance of 33 kms, through tar road, village road and 12 kms of forest road. The forest is a major source of income for the population.

**Demography:** The village has a population of 374. There are 71 households, of which 66 households (93%) are of schedule tribe and the rest are OBC. 60 households are classified, as belonging to the vulnerable group. 10% of the families are landless. The dependency ratio is low at 0.84. The sex ratio in the block is 992. The literacy levels are 50 % among males and 38 % among females.

**Infrastructure:** This village is lying in the undulating terrain of Mayurbhanj district, and so the roads are of very poor condition. The roads are full of rocks. There are 4 tubewells and dugwell in this village. Tubewells are used for drinking water. There is no water in the single pond that exists in the village. The village has poor sanitation facility. The village has no electricity connection.

**Educational Status:** The village has one primary school. Majority of the population belong to scheduled tribes. Literacy rate is very low in the village. Only 50% of the male and 38% of the female are literate. Highest level of education in the village is 12<sup>th</sup> standard. The school drop out rate is high in the village. The poor economic conditions of the villagers force them to engage their children in household activities or agricultural

activities. Percentage of child labour is high in very high in Mayurbhanj district. Adult Education has not been successful here.

**Cropping Pattern:** The total arable land is 151.5 acres, which is entirely in the hands of the 64 ST families. The maximum size of the holding is 20 acres and the minimum is 0.3 acres. There is no practice of tenancy cultivation. The major crop is paddy, which is a Kharif crop. It meets 32% of food needs and accounts for 27% of the family income.

**Forestry:** Forests are a major source of income . They provide substantial amount of Non Timber Forest Produce (NTFP). The villagers collect mahua flower and seed, sal seed, kusum seed, timber, fuel wood and fruits. 20 % of the income is from the sale of NTFP. During crisis periods, forests supply 40 % of the food. The forests are also a good source of tubers and fruits for their consumption.

**Health Services:** There is no PHC in this village. The nearest PHC is 12 – 25 km away. The village has an Anganawadi and hence there is a full fledged ICDS service.

**Other Services:** The village has a high tribal population. There is a Large Size Adivasi Multipurpose Society (LAMPS) IN Durdura, which is 10 km from the village. This society helps in tribal welfare. A nationalised bank, Bank of India is there in Durdura. Grain Bank is very popular in this village. The Grain Bank is well organised and is a major help to the poor and needy during times of crisis. In normal periods, the bank meets 18 % of the food needs. The villagers also lend grain from the Grain bank at minimal rates of interest.

**Natural Disasters:** Drought is a common phenomenon in Bhodusol for the last several years. Crop loss also had become a common occurrence. But in this village people are mainly depend on forest products for consumption and selling. Loss of Non Timber Forest Produce and loss of forest foods especially tubers are the problem created by the drought.

Social impacts of drought are that villagers are forced to migrate; they sell their assets to meet their needs, increase in school dropout, and borrowing also increases. Food intake pattern also changes. Decrease in food intake and switching over to cheaper substitutes are common during this period.

**Interventions Urgently Needed:** Agricultural and veterinary extension services. Improvement in health and sanitation services, literacy / education programmes and

livelihood generation programmes are of vital importance for the improvement of the village.

**Cherkaput Village:**

The village is located in Digapur panchayat, Kundru Block of Koraput district. It is a tribal village with high level of poverty.

**Demography:** The village has a population of 446. There are 97 households, out of which 49 families (50.5%) are of general caste, 39 families (40%) belong to the schedule tribe category and the remaining are of scheduled caste. 23 families (24%) are landless. The sex ratio in the block is 1004 women per thousand men. It is higher than the district figure of 991. The dependency ratio in the village is 0.70 . 93 % of households (90 households) are classified as vulnerable groups.

**Infrastructure:** The village lies in the Eastern Ghat region, which is characterised by the upland topography of the State. This village is mainly tribal dominated and poor in socio – economic condition. The roads are of very poor condition. There is no electricity connection in this village. Wells are the main source of drinking water. Poor sanitation and drainage system makes the village environment very unhygienic.

**Educational Status:** The village has no schools. They have a traditional school system (Chatashali). Literacy rate is very low, only 13 % males are literate. There is not a single literate woman in the village. The highest educational level reached by the villagers is 3rd standard. There is no adult education system. School drop out rate is high among girls. Because of poor economical condition children are mainly engaged in different economic activities.

**Agriculture:** The total arable land in the village is 184.3 acres, owned by 74 families. The General caste families own 64% of the total arable land and tribal families own 29% of this land. 53% of the total landless families are scheduled tribes. The maximum size of land holding is 10 acres and the minimum is 0.5 acres. Paddy is the main crop of the village. They don't raise a second crop.

**Non-Farm Activities:** Tamarind deseeding and selling is a major non – farm activity. Firewood selling accounts for 16% of the income. Non-agricultural labour accounts for 30% of the income.

**Health Activities:** There is no PHC in this village, nearest centre is 9 – 10 km away in Boipariguda village. ICDS service is not accessible in this village. The village is in hilly terrain and covered by forests. So most of the development works does not reach here.

**Interventions Urgently Needed:** Agricultural and veterinary extension services are not sufficient in this village. Health and sanitation and services, literacy/ education programmes are of vital importance for the improvement of the village.

**Gunduri Village:** This village is situated in the Kalahandi district. It is under Lajigarh Block and Gunduri Panchayat. It is located 12 km east of the district headquarters and has an approachable road.

**Demography:** Total number of households in the village is 88, of which 47 households belong to the scheduled tribe, 8 to the scheduled caste (9.1%) and 33 to khatriya community (37.5%). The sex ratio in the block at 1002 women per thousand men is favourable to women. 23% of the families are landless, of which, 55% are of scheduled tribe. Of the 77% landed families, 53 % belong to the scheduled tribe. The dependency ratio in the village is 1.14.

**Infrastructure:** The village is a hilly terrain; hence the roads are of poor condition. Since the village is in a drought-affected district, Government provided the village with tube wells. Main source of drinking water is tube wells. In addition to this there are two ponds and five wells in the village. The village has no electricity connection. There are no sanitary facilities also. The village has one panchayath office and one post office.

**Supply of food grains:** There is a regular PDS supply in all the villages. It supplies mainly rice in normal and crisis period. In Gunduri they have their own village shop. Supply of food decreases from PDS during crisis period in Gunduri also. In Gunduri the supply becomes half during crisis than the normal period. Gunduri falls under drought affected area, so it also receive Government aid during the crisis period

**Educational Status:** There is one school associated with an ashram where they have upto class 7<sup>th</sup>. The only high school is situated some 11 kms away from the village.

Literacy rate is very low, only 23% of men are literate. Female literacy is nil. The highest level of education reached in the village is class 9<sup>th</sup>. The enrolment rate in schools is only 43% of which 25% are girls. An adult education centre was started way back in 1997 but it was closed due to several reasons.

**Agriculture:** Paddy is the main crop. Other crops are black gram, green gram, horse gram, channa, til, ragi and cotton. Vegetables are taken up as subsistence cultivation. Mainly they produce cucumber, waxgourd, mustard, pumpkin, brinjal, lady's finger, tomato, chilli, saru, cowpea, beans etc. The maximum size of land holding is 15 acres and the minimum is 0.1 acres.

**Forestry:** 30 – 40% of the people depend on forests for fuel, NTFP, timber, charcoal, collection of firewood, and grazing for animals. The forest cover in the village has come down due to unscientific use of forests. On the one hand unorganised collection of timber, charcoal, tree felling and shifting cultivation are all responsible for deforestation.

**Health Services:** There is no PHC centre in this village. A Govt ayurvedic dispensary is located in this village. Traditional practitioners are common in this village. There is one ICDS centre in the village. The Anganawadi workers help in immunization programmes etc. The village has Mid Day meal programme. NGO's like the Development Agency for the Poor and Tribal Awakening (DAPTA), Mahila Development Committee (MDC) have taken up development activities in this villages. DAPTA has also organised Self Help Groups in the village.

**Natural Hazards:** Drought is very common in these villages in almost every year, in Guduri has experienced drought for last four years. The problems faced due to drought situation are mainly loss of agricultural production due to dependence on rain-fed agriculture, drying of irrigation sources thereby loss of agriculture labour work and loss of income. Drought also affected the livestock rearing due to non-availability of grass and fodder. All these lead to the loss of access to food.

**Interventions needed:** The activities of Agricultural Officers and veterinary services have to be intensified. Health and educational services need to be improved.

The above discussions are depicted in a concise manner in the tables given in the appendix 2.

## **II. Health and Nutrition Situation of the Villages Studied:**

The various practices in terms of feeding behavior, childcare, hygiene etc. influence the nutritional status of individuals.

### **Shelter**

Most of the houses of these villages are thatched mud house. People prefer mud house because they are easy to maintain. There are five houses in Khardapada with RCC roof. t. Houses of scheduled caste community are very small. There is no house with RCC roof in Bhodusol which shows the extent of poverty in this village. There are very few houses in Cherkaput and Gunduri with RCC roof.

### **Water and Sanitation**

Main source of drinking water is tube well in Khardapada and the space surrounding the tube well is gradually becoming swampy and unhygienic due to water logging. There are two tube wells and both are used for drinking purposes. Ponds are put to other uses. Ponds are also reported to be becoming shallow due to lack of maintenance. There is a canal in the north side of the village, which is mainly used for bathing, washing clothes, and cleaning cattles. In Bhodusol village main source of drinking water is tube well, and here it is located in a relatively clean area. The villagers have more hygienic and clean practices. In Cherkaput main source of drinking water is well and in Gunduri tube well is the source of drinking water.

In Khardapada village only one family has septic latrine and one family has Barapali type of latrine. Though all the villagers know about the importance of latrine to keep the environment hygienic but they can't afford to have proper sanitary facilities .

Other study villages also reported absence of sanitary facilities and they go for open defecation. Except the villagers of Bhodusol village other villagers were atleast aware of the advantages of having proper sanitary facilities and the positive impact it has on the surroundings.

### **Garbage Disposal**

The villagers in all the survey villages are aware of the detrimental effect of open disposal of garbage causing spread of diseases. They dispose their garbage in their backyard and this serves as a natural compost for their kitchen gardens.

### **Health Seeking Practices**

All the villages of the study area are mainly depend on home remedies for diarrhoea in the initial stage, and then they go to Anganwadi centers or PHC centers. There is no PHC center in these villages, PHC centers are in nearby villages.

In Khardapada nearby PHC is 3 km away, it is in Pasta and main hospital is 15 km away in Kendrapada Anganwadi workers are very irregular. They also consult the village quacks.

In Bhodusol nearest PHC center is in Durdura 10 km away and nearest main hospital is 15 km away in Jashipur. Anganwadi workers are very co operative here. They have easy access to traditional healing process using materials from forest.

In Cherkaput nearest PHC center is in Boipariguda, 10 km away from village and hospital is in Jeypore, 35 km away. Anganwadi service is not adequate in this village. In this village also the village quacks have a major role to play.

In Gunduri PHC center is in Lanjigarh block and main hospital is in Bbhawanipatna, 15 km away from the village. The Anganwadi workers are very regular in this village, but sometimes they themselves go to the village quacks for some help.

In all the villages the physical and economic accessibility of hospitals is a distant dream.

### **Antenatal and Postnatal Care and Maternal Nutrition**

There is no change in diet during pregnancy in Khardapada and Cherkaput. Their workload gets reduced due to the support extended by the joint family system. They work even in the last trimester of their pregnancy, however they get assistance in cooking, water fetching and other household work. The village women go to Traditional Birth Attendance during pregnancy period and for after delivery care. They do not get any apECIAL care before or after childbirth. They do not take any iron (IFA) tablets during pregnancy, as they do not have facility of any such services.

In Bhodusol village Anganwadi workers help the pregnant women by giving advise and providing before and after childbirth care. There is no change in diet during this period.



But they take iron tablets because they know it increases blood and make child healthier. Here they do not get any support from the family during pregnancy.

In Gunduri village women are aware of the importance of pregnancy care and they also get help from the Anganwadi workers. These workers visit the village and give them medicines and injections. They also take iron tablets, as they know it is good for both mother and child. They do not get help from family members but they go to Anganwadi centers for help and advice.

### **Childcare Practices**

Childcare is being addressed in terms of breast-feeding and complementary feeding practices within community and immunization.

#### Breast Feeding

In India breast-feeding practice is guided both by cultural and religious practices. They believe that stored milk is impure and heavy to digest for the child. Except Khardapada women started breast-feeding immediately after birth. In Khardapada they start breast-feeding after 3 days of the birth. In Cherkaput village women do not have any knowledge of the advantages of breast-feeding. Other women of other villages are aware that it makes child strong and avoid diseases. They believe that indigestible food taken by breast-feeding mother may cause diarrhoea to the child.

#### Complementary Feeding Practices

Complementary feeding is usually started at the fifth or sixth month with the child being given semisolid diets. Solid food like rice biscuits etc are given after eight months.

Cold, cough, diarrhea are the common diseases among the children in all villages. A type of fever, *Bati Jara* is common in Cherkaput village and malaria is common in Gunduri. In Gunduri scorching heat causes diarrhea. Sometimes diarrhea may cause death.

Villagers of Khardapada don't use any home-based treatment, they get ORS from hospitals. Villagers of Bhodusol and Gunduri give limewater with sugar and salt as a preliminary treatment and after that they get ORS from Anganwadi center. In Cherkaput either they do have any idea of home-based medicine or they get ORS from any Anganwadi centre. There are also times when Anganwadi workers come to the villages and give ORS to those suffering from diarrhea.

#### Immunization

In Khardapada people are knowledgeable about the immunization programmes and that it prevents diseases. But they know only about the Pulse polio vaccines and not other vaccination. Some children specially children of scheduled caste community are not immunized because of ignorance. In Bhodusol and Gunduri village people are aware of immunization. They know it prevents diseases. All the children of these villages are immunized by Anganwadi workers. They give vaccination of pulse polio, DPT, measles. In Cherkaput are ignorant about the immunization programmes and not a single child is immunized here due to ignorance. There are no Anganwadi's to create awareness in this village.

Most of the villagers do not have any idea of taking anthropometric measurements regularly. Sometimes some of them measure their body weight. But the villagers of Cherkaput village are totally ignorant of taking measurement or weight.

Infant Mortality Rate is also at an alarming rate in these villages.

<b>Villages</b>	<b>ICDS service</b>	<b>PHC</b>	<b>Immunization</b>	<b>Breast Feeding</b>	<b>Common Diseases (children)</b>	<b>Antenatal &amp; Postnatal care</b>
Khardapada	No	One PHC at Pasta 3km away	Only pulse polio, no other vaccination	From 3 months	Cold, cough, diarrhoea	They get help from family and TBA but no special service
Bhodusol	Yes	One PHC at Durdura 10km away	All children immunized	Immediately after birth	Diarrhoea, vomiting, fever, stomach pain	No help from family but help from Anganwadi centre by getting IFA (iron) tab, advice
Cherkaput	No	One PHC at Boipariguda 10km away	Children are not immunized due to ignorance	Immediately after birth	Diarrhoea, fever, Bati Jara(fever)	They get help from family and TBA but no idea of special service
Gunduri	Once in month	One PHC in Lanjigarh	All children immunized	Immediately after	Cold cough, diarrhoea,	No help from family but help from

				birth	malaria	Anganwadi centre. by getting IFA (iron) tab, advice
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## Chapter IV

### Vulnerable Group Profile

Eight households from each village, which fall under vulnerable group of household category were chosen for more intensive study. The major characteristics of vulnerability are somewhat similar across different villages of Orissa. The major characteristics of vulnerability are high dependency ratio, lack of access of land, poor quality of land, permanent indebtedness etc. Food insecure and vulnerable households in Orissa invariably include those who are landless, who have poor quality of land etc. In addition this is also true that those households with female headed, with less number of able-bodied workers, less percentage of own cultivation etc. are also included in this group. The identified vulnerable sectors belonged to the lower income classess. Most of these groups belong to scheduled castes and scheduled tribes and other socially deprived sections. They are either landless labourers or cultivators who are mainly tenants.

Another group of most affected persons during the crisis period in the study villages are women and children of vulnerable group. Given that most of the burden of the work falls on women and they are often subject to discrimination, a separate study on the women among the vulnerable group has been undertaken.

#### Khardapada Village

Eight households were randomly selected which were believed to fall in the vulnerable group. These households belong to the scheduled caste community with 49 members. Average household size of the vulnerable group is 6. All the households of this community are male headed. Child population (upto 5 years) and elder people (above 60 years) is very low in this community. Among 49 people only 3 members are children and 2 members are elderly people. Maximum number of able-bodied worker is 4 in one household and the lowest is 1. Every household has atleast one able bodied worker.

### Household Characteristics

HH (No)	1	2	3	4	5	6	7	8
HH size	10	5	5	5	7	3	5	9
Gender of household head	M	M	M	M	M	M	M	M
No of adult men (15-60yrs)	6	3	3	2	2	1	1	4
No of adult women (15-60yrs)	2	2	1	2	3	1	1	3
No of children (upto 5 yrs)	2	-	-	-	-	-	-	1
No of elderly members (above 60yrs)	-	-	-	-	1	1	-	-
No of able bodied workers	2	1	2	2	3	1	1	4

The highest educational qualification of the households is class10 and lowest is class 3 among men. In each and every household atleast one male member is literate. Not even one female per two households are literate.

### Educational Status

HH (No)	1	2	3	4	5	6	7	8
Max. yrs of educ. Of men in HH	8 <sup>th</sup>	10th	8th	4th	10th	3rd	9th	5th
Max. yrs of educ. Of women in HH	3 <sup>rd</sup>	10th	5th	4th	-	-	3rd	3 <sup>rd</sup>
School-aged boys	1	-	-	-	-	-	1	-

Six households among eight households are landless only two of them own very little land. Only one household is a agricultural household with own land. Rest of the household are engaged in agricultural labour. They are also engaged as casual labourers or in fishing and petty trading.

### Occupational Structure

HH (No)	1	2	3	4	5	6	7	8
Major income sources of farm activities	AT	AT + F	AT+ CL	A+AT	A	AT	AT	AT

<b>Major income sources of non farm activities</b>	PT	PT	CL	AL+CL	AL+CL	AL+CL	AL+CL	AL+CL
<b>Land Holdings (acres)</b>	0	0	0	0	0.5	0.25	0	0

AT-agriculture in tenancy, P-petty trading, AL-agricultural labour, CL- casual labour

The above table shows that the vulnerable group are mainly landless. So they are more food insecure specially during crisis and as well as normal period.

Main source of income of this vulnerable group is agriculture. It accounts 57% of the total income. Income from agricultural source includes both own cultivation and agricultural labour. Both are same important in economy. Out of the total of 57% cultivation accounts 30% whereas agricultural labour accounts 27% of the total income. Non-agricultural labour is another important source of income. They derive 27% of income from this source. Petty trading accounts 13% of the income.

About 66.8% of the total income is in cash, which includes labour wages and petty trading. The rest 33.2% is in kinds, which includes farm produce and livestock.

#### **Main Source of income of vulnerable group**

<b>Income from farm activities</b>	<b>Own cultivation</b>	<b>Agricultural labour</b>		<b>Total from farm activities</b>
	30%	27%		57%
<b>Income from non-Farm activities</b>	<b>Non-agricultural labour</b>	<b>Petty trading</b>	<b>Livestock selling</b>	<b>Total from non-Farm activities</b>
	27%	13%	3%	43%

#### **Bhodusol Village**

Among eight households of this village six households are of scheduled tribe community and two households are under Other Backward Class (OBC) with a total of 47 members. Average household size of the vulnerable group is 6. Except one household all other households of this community are male headed. One household is female-headed household. The community has no one above 60 years. Population of children (upto 5 years) is high in this community of this village. One-third of the population are children

Among 47 people 16 are children. The highest number of able-bodied worker in any one household is 5 and lowest is 2.

#### Household Characteristics

HH (No)	1	2	3	4	5	6	7	8
HH size	8	5	7	8	6	4	3	6
Gender of household head	M	F	M	M	M	M	M	M
No of adult men (15-60yrs)	3	1	2	1	1	1	1	1
No of adult women (15-60yrs)	2	2	3	4	1	1	1	2
No of children (upto 5 yrs)	3	1	2	1	3	2	1	3
No of elderly members (above 60yrs)	-	-	-	-	-	-	-	-
No of able bodied wkers	5	2	3	3	2	2	2	3

There are only two school-aged boys and girls. Maximum educational qualification is class12 and minimum is class 9 among male members. Among female members highest educational qualification is 10<sup>th</sup>. But only three households have literate female members.

#### Educational Status

HH (No)	1	2	3	4	5	6	7	8
Max. yrs of educ. Of men in HH	-	10th	-	12th	-	9th	12th	-
Max. yrs of educ. Of women in HH	-	10th	-	8th	-	-	9th	-

In Bhodusol village most of the households have land. Among eight households only two households are landless. 75% household has own land whereas 25% has no land. Though most of the households have land but all of them are marginal farmer. As Bhodusol village has rich forest resources people are engage themselves in collection and selling of Non Timber Forest Product. They are also engaged in casual labour, which

includes blacksmith work. Two households are engaged in blacksmith as well as agriculture and NTFP collection and selling.

### Occupational Structure

HH (No)	1	2	3	4	5	6	7	8
<b>Major income sources of farm activities</b>	Nil	Nil	A	A	A	A	A	A
<b>Major income sources of non farm activities</b>	NTFP	S NTFP	CL NTFP	PDS Dealer	CL NTFP	CL NTFP	CL NTFP	CL NTFP
<b>Land Holdings (acres)</b>	0	0	1.3	2.5	0.7	0.3	1.5	1.3

A-agriculture, CL- casual labour, S-service, NTFP-non timber forest produce

Main source of income of this vulnerable group is non-farm activities. It accounts 55% of the total income. Bhodusol village is rich in forest so collection and selling of NTFP account for an important share of income. It accounts for 20% of the total income. Agriculture is also important in total income. They get 45% of their income from farm both from own cultivation and agricultural labour. Own cultivation accounts for 27% of the income.

About 65% of the total income is in the form of cash, which includes labour wages and petty trading. The rest 35% is in kind, which includes farm produce and livestock.

### Main Source of income of vulnerable group

Income from farm activities	Own cultivation	Agricultural labour				Total from farm activities
	27%	18%				45%
Income from non-Farm activities	Non-agricultural labour	Petty trading	Livestock selling	Old age Pension	NTFP Selling	Total from non-Farm activities

	6%	14%	7%	8%	20%	55%
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### **Cherkaput Village**

Among eight households of this village five households are of scheduled tribe community and three households are under general caste with 37 total members. In this village vulnerable community population is less than that in the other villages. Average household size of the vulnerable group is 5. All households of this community are male headed. Out of 37 people 2 are above 60 years. Children population (upto 5 years) is high in this community of this village. They constitute about one fourth of the total population. Every household has atleast one able bodied worker.

#### **Household Characteristics**

<b>HH (No)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>HH size</b>	4	2	4	4	7	5	5	6
<b>Gender of household head</b>	M	M	M	M	M	M	M	M
<b>No of adult men (15-60yrs)</b>	1	1	1	1	1	2	1	2
<b>No of adult women (15-60yrs)</b>	1	1	1	-	2	2	1	2
<b>No of children (upto 5 yrs)</b>	2	-	1	-	2	1	2	2
<b>No of elderly members (above 60yrs)</b>	-	-	-	2	-	-	-	-
<b>No of able bodied workers</b>	2	1	1	1	3	4	2	3

There are only three school-aged boys and two school-aged girls . Educational status is very poor in this community. Most of the members had no formal education and are illiterate. Highest educational qualification is class 3 that too only among male members.

#### **Educational Status**

<b>HH (No)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>Max. yrs of educ. Of men in HH</b>	-	-	-	-	-	-	3rd	-
<b>Max. yrs of educ. Of women in HH</b>	-	-	-	-	-	-	-	-

In this community of Cherkaput village 50% household own land though the landholding is very marginal. Among eight households four households are landless. Though 50% household own land due to the small size of the land their produce is not enough for their



consumption. So they also engaged themselves as agricultural labourers and in other occupation like fishing, firewood collection.. Cherkaput village is very rich in forest resource so people engage themselves in collection and selling of firewood. They are also engaged in casual labour, petty trading.

### **Occupational Structure**

<b>HH (No)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>Major income sources of farm activities</b>	Nil	A AL	Nil	A	A AL	AL	A AL	AL
<b>Major income sources of non farm activities</b>	CL	FW	FW Pension	F	Nil	CL PT	Nil	CL
<b>Land Holdings (acres)</b>	-	0.2	-	2.0	0.5	-	0.5	-

A-agriculture, P-petty trading, AL-agricultural labour, CL- casual labour, FW-firewood collection

Main source of income of this vulnerable group is non-farm activities. It accounts 60% of the total income. Cherkaput village is rich in forest so collection and selling of firewood are an important source of income. It accounts for 15% of the total income. Agriculture is also important in total income. They get 40% of their income from farm both from own cultivation and agricultural labour. Percentage of population having own cultivation is very less because most of the households do not have own land or if at all they have land it is highly fragmented land. Own cultivation they contributes only 8% whereas agricultural labour accounts for 32% of the total income.

About 60% of the total income is in the form of cash, which includes labour wages and petty trading. The rest 40% is in kind, which includes farm produce and livestock.

### **Main Source of income of vulnerable group**

<b>Income from farm activities</b>	<b>Own cultivation</b>	<b>Agricultural labour</b>				<b>Total from farm activities</b>
	8%	32%				40%
<b>Income from non-Farm</b>	<b>Non-agricultural labour</b>	<b>Petty trading</b>	<b>Livestock selling</b>	<b>Old age Pension</b>	<b>Firewood Selling</b>	<b>Total from non-Farm activities</b>

<b>activities</b>						
	30%	12%	1%	2%	15%	60%

### **Gunduri Village**

Among eight households of this village five households are of scheduled tribe community and three households are under general caste with 33 total members. In this village population in vulnerable community is least compared to the other village. Average household size of the vulnerable group is 4. All households of this community are male headed. No elderly person (above 60 years) is there in this community. Children population (upto 5 years) is also not high in this community of this village. Among 33 people only 8 are children. Maximum able-bodied worker is 3 in one household and least is 1.

### **Household Characteristics**

<b>HH (No)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>HH size</b>	4	4	6	7	3	3	2	4
<b>Gender of household head</b>	M	M	M	M	M	M	M	M
<b>No of adult men (15-60yrs)</b>	1	1	1	1	1	1	1	1
<b>No of adult women (15-60yrs)</b>	1	1	1	1	1	1	1	1
<b>No of children (upto 5 yrs)</b>	-	2	1	2	-	-	-	2
<b>No of elderly members (above 60yrs)</b>	-	-	-	-	-	-	-	-
<b>No of able bodied workers</b>	1	1	3	2	2	2	2	2

There are only four school-aged boys and six school-aged girls . Among the four school-aged boys two are enrolled and among six of the girls only two are enrolled. There is 50% enrolment among boys and 25% enrolment among girls. Educational status is very poor in this community. Most of the members have no formal education and most of them are illiterate. Highest educational qualification is class 9th .

### **Educational Status**

<b>HH (No)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>Max. yrs of educ. Of men in HH</b>	-	9th	-	4th	-	-	-	-
<b>Max. yrs of educ. Of women in HH</b>	-	-	-	-	-	-	-	-

In this community of Gunduri village among eight households only three households have land. Except one household rest of the households have small landholdings since landholding is small the majority of the population engage themselves as agricultural labourers and casual labourers. As Gunduri is also rich in forest resources people also engaged themselves in collecting and selling of firewood and NTFP. One household is engaged in craft work. Some households are also engaged as agricultural labourer.

### **Occupational Structure**

<b>HH (No)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>Major income sources of farm activities</b>	AL	Nil	Nil	AL	AL	Nil	Nil	A
<b>Major income sources of non farm activities</b>	CL	CL	FW	NTFP FW	CL Craft	CL	CL	FW
<b>Land Holdings (acres)</b>	-	-	-	1.1	0.5	-	-	2.0

A-agriculture, AL-agricultural labour, CL- casual labour, FW-firewood collection, NTFP-Non Timber Forest Product

Main source of income of this vulnerable group is non-farm activities. It accounts 59% of the total income. Gunduri village is rich in forest so collection and selling of firewood and NTFP account as an important source of income. It accounts a major portion (45%) of the total income. They get 41% of their income from farm both from own cultivation and agricultural labour. Percentage of own cultivation is very less because most of the households do not have large land holdings. From own cultivation they get only 3% whereas agricultural labour accounts 38% of the total income. From craft work they earn about 5% of the income.

About 75% of the total income are in the form of cash, which includes labour wages and petty trading. The rest 25% is in kind, which includes farm produce and livestock.

### **Main Source of income of vulnerable group**

<b>Income from farm activities</b>	<b>Own cultivation</b>	<b>Agricultural labour</b>			<b>Total from farm activities</b>
	3%	38%			41%
<b>Income from</b>	<b>Non-</b>	<b>NTFP</b>	<b>Firewood</b>	<b>Craft</b>	<b>Total from</b>

<b>non-Farm activities</b>	<b>agricultural labour</b>	<b>selling</b>	<b>Selling</b>	<b>Work</b>	<b>non-Farm activities</b>
	9%	7%	38%	5%	59%

From the above discussion it is clear that in all villages vulnerable group are of scheduled caste or scheduled tribe or other backward community. Mostly the people of vulnerable group are landless or ones with very small land holdings. So their earning from own cultivation is very low. They do not have permanent source of income even during normal periods. They are not food secure in normal as well as crisis period although we can say that the situation worsens during crisis period. This community is also backward in educational status. Most of them are illiterate. These factors make these community vulnerable.

### **Status of Women Among the Vulnerable Groups**

This section deals separately on women, an often-discriminated group, in the study village, with respect to their socio economic conditions and also points out the scope for improving their lot.

#### **Tasks Performed by the Women**

Women in all villages are mainly responsible for all the household work like cooking, washing clothes, collection of fuel wood, fetching water, fodder collection, milking cattle etc. They go to markets and also help men in harvesting the fields. During crisis period women take up some additional work to make both ends meet. In Bhodusol village women engage themselves in collection of sal leaf, making and selling of the leaf cups and plates in addition to this during the crisis period they work as casual labourers. In Khardapada they are engaged in construction work.

#### **Women in Decision Making**

All households are male headed. The male members are the decision makers in all major issues such as land use, livestock, buying or selling of household items etc. Decision making of the women is confined to the daily routine household affairs like the daily purchases, preparation of food etc. Only in Khardapada village they reported cases of men involving women in decisions regarding land use that too only in the use of backyard and to some extent in aspects regarding children's education, health etc.

Women do not have any role in the community level decision-making process. She is allowed to work in activities carried out under village development but her opinion is not sought regarding wage fixation, work to be under taken etc.

### **Women's Role in Income and Expenditure Pattern**

Women's income is always treated as secondary sources of income. In Khardapada village major income source of the women is construction work. In Bhodusol large area is under forest so here women are mainly engaged themselves in collection of sal leaf, firewood and making of plates and cups out of that leaf. Major source of income of women is sale of leaf plate and firewood. In Cherkaput women engage themselves in deseeding of tamarind and sale of deseeded tamarind is the major source of income for them. In Gunduri also large area is under forest, so collection of firewood and sale of firewood is the major source of income for women in this area.

Though women are income earners its the men who decide and control the family budgets. The women are expected to hand over their entire income to the head of the family who is always a male. Women are given the allowance to purchase some ornaments cosmetics and clothes during some festivals, but that too only after reporting to their husband. At the household level women are the most vulnerable group, they do not have control over the resources, even resources she herself produces.

### **Obstacles to Improve Income of the Women**

There is high discrimination in literacy between men and women. Literacy level is very low among the women. There is also lack of facility of adult education and training programmes for income generating activities. These are all hindrance for the improvement of income of women. Added to this they do not enjoy any rights over the income they earn, it all falls in the hands of the men folk.

### **Women's Access and Control over Resources**

The men own all the valuable and fixed assets of household. Agricultural land, house, livestock and other valuable things belong to the men. Women own only their own clothes and some of their ornaments. However sometimes they have to sell those ornaments for food or other needs. The resources owned by the women fall more into the liquid assets category.

### **Intra Household Distribution of Food**

Food is distributed on the basis of intake capability of the individuals. However, it is only applicable only for the men and the elderly people in all villages of the study area. Men consume mostly good quality and large quantity of food including dairy products, meat etc. Elderly people take pulses in large quantity. Women take vegetables and tubers. Sometimes they also collect food from the forest especially in Bhodusol. There is no discrimination between boys and girls in distribution of food though in crisis period emphasis is given to the children. However, Vitamin A deficiency is reported only among the girl children.

### **Women need Assessment**

In all the villages of the study area all women need more employment facilities, adult education system. Beside these they need also improved health care system and facility of ICDS.

## **Chapter V**

### **Coping Mechanisms, Institutional Support and the Desired Programme Interventions**

Coping mechanisms consists of the institutional help available as well as the behaviour of the households to reduce the damage. Both these aspects have been discussed in this chapter. First we study the responses at community level to crisis situations such as drought and lean periods. Secondly we look at the existing institutional arrangements to help people tide over crisis periods.

Both short and long-term coping strategies linked to consumption, labour assets, migration were adopted by the village communities. The common strategies at the community level are discussed below.

#### **Consumption Response:**

Consumption of the people varied significantly between normal year and crisis year. People of all income groups, especially the most vulnerable, reported long-term trends towards eating foods that are less preferred as a means of adapting to lower income levels. The sources of food in these villages are own production, purchase, nature (forest), help from individuals and organizations. For example in Cherkaput village during the crisis period they depend on wild tubers, wild leafy vegetables and poor quality of rice. In Bhodusol, villagers collect mahua flower and tubers for their own consumption. In Khardapada and Gunduri they get food aid from Government during the crisis period. PDS supply is decreasing during the crisis period in Khardapada and Gunduri.

Limiting the frequency & quantity: The villagers usually reduce frequency and quantity of meals during the crisis period. There are even instances when they skip the meal.

Borrowing either food or money to buy food: Borrowing either food or money to buy food is a common practice not only crisis year but also normal period. Usually people heavily depend on the moneylenders and the traders to tide over this adverse period. However, borrowing money for the food or directly borrowing the food generally leads to

the permanent indebtedness and is an example how a short-term coping strategy can put a household in a more vulnerable position with regard to long-term livelihood options.

Change in consumption pattern: The consumption pattern of the people also changed in a crisis with regard to expenditure on food and non-food items. It was reported that the expenditure on the food items out of the total consumption increased during the crisis period compared to a normal year. As such these people spend a higher proportion of their income on the food items.

Maternal buffering: Maternal buffering is common across all the regions. This is the practice of a mother deliberately limiting her own intake in order to ensure children get enough to eat. Sometimes women reduce or skip their meal so that the adult members get sufficient food. This practice is common across all the social and economic groups in the study areas.

### **Labour Response**

Due to reduction in the productivity people were compelled to migrate to different places and also to different activities. In Khardapada village people generally migrate temporarily to Paradip port as labourers, to Kendrapada for construction work. Sometimes they migrate to Gujarat and work under more hazardous conditions even at a nominal wage rate.

In Bhodusol people become more dependent on forest. They engage in collection and selling of Non Timber Forest Produce. They also migrate to even unfamiliar areas in search of livelihood.

In Cherkkaput and Gunduri villagers engage themselves in collection of fuel wood and charcoal. They also look for some other alternative employment locally. They also migrate to familiar and unfamiliar areas. Villagers of Gunduri village engage themselves in petty trading locally.

They send their children to work under strenuous conditions for a paltry payment. School dropout rate increases during crisis period.

### **Cropping Response**

There is no significant change in cropping pattern. People try to adopt multiple cropping instead of mono cropping. They borrow seeds from individuals as well as from different organization.



### **Livestock Response**

Distress sale of livestock during the crisis period is the common phenomenon. They sell the livestock during crisis period as they are unable to feed them and also as a source of money to meet their food needs. They mainly sell their goat and poultry animals.

### **Community Response**

Many organisations come forward to help the villagers during the crisis period. The Government offers 10% food aid in Khardapada village. NGOs also play a major role in periods of crisis. Some of the organizations are CASA, OSWAL Agro Ltd. etc.

In Bhodusol the most important community coping mechanism is Grain Banks, which help villagers during crisis period by giving loan against grains. They also get help from LAMP (Large Adivasi Multipurpose Society).

Non Government Organizations are not so active in Cherkaput village. They mainly depend on Block Office for wage work. Gunduri is under drought-affected area. So they get 30% food aid from Government. They mainly depend on Government relief during the crisis period.

### **Family Response**

Migration is very common in all the villages of the study area during crisis period.

In all villages of the study area people migrate to nearby areas and also far off places in seek of employment during the crisis period. They borrow to tide over the crisis period, but in the subsequent years they find themselves caught in the the debt trap.

### **Other Asset Response**

During the crisis period selling of assets is a common practice everywhere.

In Khardapada they sell land, ornaments and utensils for money to get food.

But sale of land and other assets are very rare in tribal village of Bhodusol. May be because they manage to meet their food requirement from forests.

In the other two villages sale of ornaments are common. But they do not sell their land. They attach a high value to their landed assets

In addition to all the above coping mechanism at individual and community level, assistance in the form of schemes and development work are provided by the Government as well as the Non- Governmental organization.

### **Public Infrastructure and Development Schemes**

Nearly all villages covered under the study have access to facilities such as local birth attendant, primary schools, Bank Services, Fair Price Shops of the Public Distribution System, Institution like LAMP, Mahila Mandals. Beside these they have access to veterinary service, ICDS service.

### **Public Distribution System (PDS)**

The villagers mainly receive rice, sugar and kerosene oil from the PDS. PDS is identified as an important source for purchasing grains at subsidized rate. Rice is the major food grain, which is supplied through PDS. But the common problems of all villages are travel cost due to distance, bad quality of supply and inadequate supply. The quantity, the villagers receive is not sufficient for them. They have to go to village shop or weekly markets for other things. In Khardapada during crisis period the supply from PDS has decreased because allotted quantity gets diverted to the open market.

Villages	Khardapada	Bhodusol	Cherkaput	Gunduri
Percentage from PDS purchase (normal period)	15	10	9	16
Percentage from PDS purchase (crisis period)	10	10	10	5

### **Integrated Child Development Service (ICDS)**

As the term suggests, it is an integrated nutrition project for mother and child, promoted by the Government of India. At the village level, the project is implemented through Anganwadi Centres and run by Anganwadi Workers.

There are no Anganwadi Centres in Khardapada village. Though Anganwadi Centre was inaugurated in June 2000 in Khardapada it became defunct due to lack of staff.

There is one Anganwadi Centre in Bhodusol village. Anganwadi workers are very active in this village. They are mainly responsible for the village health facilities than their food requirement. The Anganwadi Workers immunize all children in this village. They also give advises to the pregnant women and organize meetings on women's health issues. There is an Anganwadi Centre in Cherkaput village. They mainly advise pregnant women and create awareness among people about immunization.

Gunduri village has one Anganwadi Centre. This centre is housed in a Government building constructed by the Block Administration. This Centre distributes cooked corn powder to the village children.

### **The Mid-Day meal Scheme**

The scheme was started by the Government of India to increase enrolment of children in Government schools however it has an ingrained component of providing nutrition to children. The concept behind the scheme is that children will remain in class and not go home for food as ready to eat food is provided within the school premise. However, over time its form has changed due to logistic and practical problems in providing cooked food, which take considerable time of both teachers and other staff.

Among these four villages only in Gunduri Mid-Day Meal Programme has exists. Mid-Day Meal Programme was started in schools in 1996. There has been a tremendous improvement in the attendance in the schools after the implementation of the programme. It increased from 80 to 120-130. Under this scheme they distribute 100 gms of rice and 50 gms of dal to each child and the quality of the distributed food is good.

### **Adult Literacy Program**

The study shows low literacy among women in all the villages. In Gunduri village the Development Agency for Poor and Tribal Awakening (DAPTA), a NGO from Laxmipur, is working towards improving female literacy rate in these villages. Mahila Development Committee also exists in this village.

In Khardapada Integrated Development Society (IDS) runs a non-formal education centre. Adult education was active on 1985-88 but the activity decreased after this period due to some reasons.

### **Women's Training**

In Gunduri village women's training facility is being undertaken by some NGO. The Development Agency for Poor and Tribal Awakening (DAPTA), a NGO from Laxmipur is working in Gunduri village and organising Self Help Groups (SHG). There is a Mahila Development Committee with 12 members. Each member makes a monthly contribution of Rs. 8 and DAPTA has given a revolving fund assistance of Rs. 2000 at 3% rate of interest. The Mahila Development Committee has also a corpus fund and they had Rs 2000 in their fund in September 2000.

There is no grain bank in the Gunduri village. But MDC has developed a system of grain distribution, which helps to overcome the crisis period. In this system each member keeps aside a handful of rice each day. At the end of the month this is collected and stored in a common place for the lean season.

### **Non-Governmental Organisation**

Non-Governmental Organisations are also active in some villages both during normal and crisis period.

In Gunduri village active NGOs are:

<u>Name of NGO</u>	<u>Area of Operation</u>
FARR	Health and Nutrition, Education and Women Development
CHARM	Child Health, Education
DAPTA	Education, Health, Drinking water, Child labour
VRO	Forestry and Education.

In Khardapada village important NGO are:

<u>Name of NGO</u>	<u>Area of Operation</u>
Integrated Development Society	Run a Non-Formal Education Centre
ABLE	Look after of poultry and distribution of seed

Two other NGOs works in Khardapada during the crisis period. They provide different relief materials during flood and cyclone in Khardapada region. Those NGOs are Oswal Agro Ltd. And CASA.

### **Government Programmes**

Some Government Programmes are also implemented in some villages. IRDP, Indira Awas Yojana, Integrated Tribal Development Agency, Kutia Kandha development Agency, DRDA are the important programmes, which have been implemented in these villages. These mainly provide shelter, tube wells, wells, and help in the improvement of village roads .Khardapada village has a village panchayat.. Panchayat helps to improve village infrastructure by constructing and improving village road. Banking services are also present in the village Nationalised Bank service is also available in Khardapada and Bhodusol village.

## **Program Interventions needed**

The village studied and the vulnerable groups studied show that these villagers require help in lean seasons. Improving the productivity of the soil alone to produce more would not help them. The approach should be multi pronged and integrated. First there is a short-term need to improve the food availability and affordability in the lean seasons. Though the presence of Public distribution system, food for work programme and ICDS are present, for name's sake they are not functional. Hence they should be made functional. Secondly, they need in the long term, sustainable livelihoods. Environmental restoration is important to provide employment as well as to restore the environmental health so that fuel wood, forest foods, forest produce for sale are available to them. Secondly better forest health, better soil fertility helps them to increase the crop productivity on the forest lands as well as crop lands on in the plains. The third important approach is to provide non-farm employment and opportunities of self-employment through proper market linkages. The last but not the least important is the provision of basic amenities such as drinking water, primary health facilities and effective ICDS services. The women, children the old and infirm need special attention through food distribution. It is advisable to have an integrated approach to all the needs through food Banks. Food banks organized by self help groups can lead to over all food security. The advised structure is as follows.

The framework for achieving over all food security has been outlined below. This envisages adoption of a life cycle approach to nutrition security, development of a holistic action plan at the field level and organization of Community Food Banks. The excess food grains with the Food Corporation of India can be utilized to initially establish these Grain Banks or Food Banks.

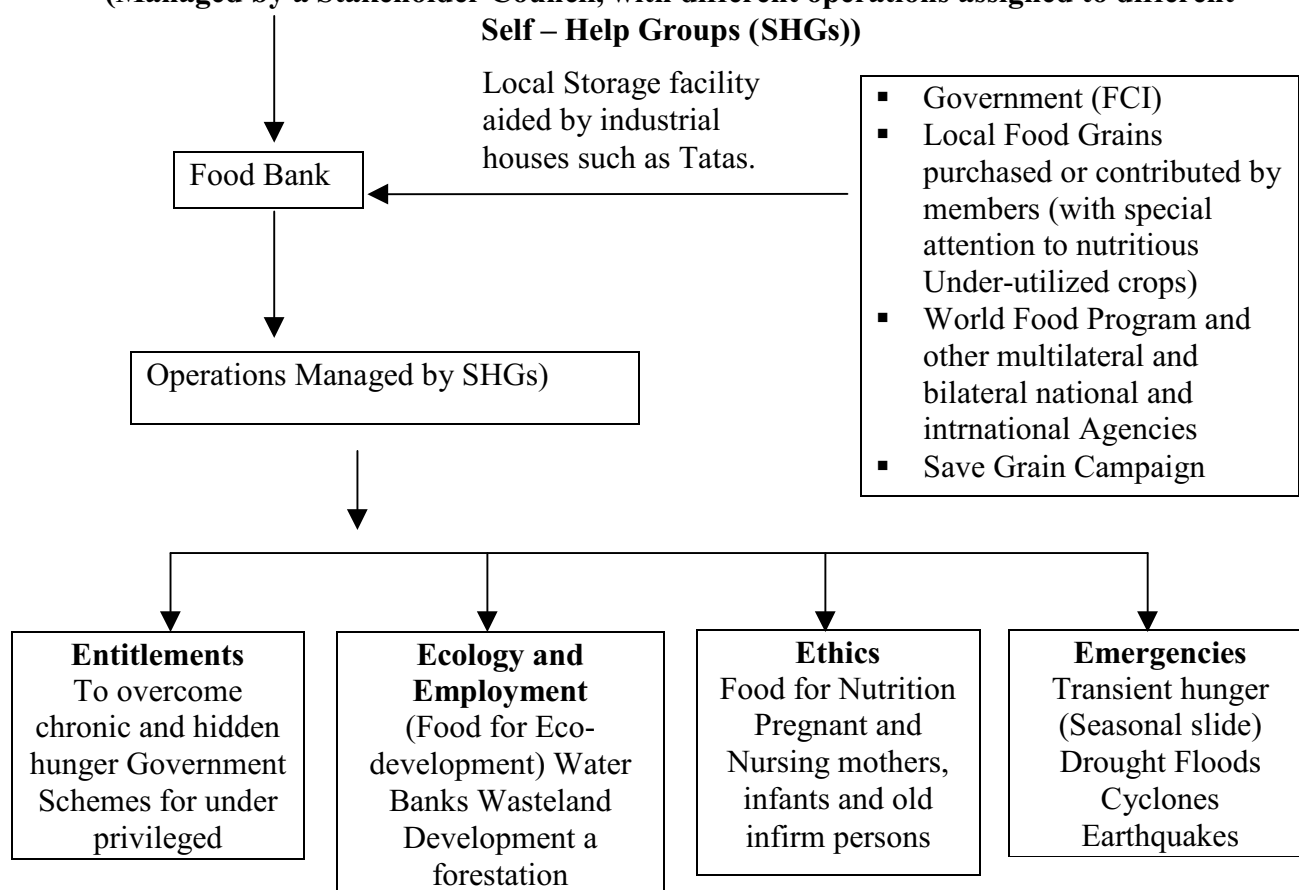
These food banks are expected to achieve better distribution of food grains to the vulnerable sections on credit during lean seasons. Madhya Pradesh Government already has a Plan of Action for implementation. We suggest a variation of the programme to make it more comprehensive, viable and one stop solution to rural malnutrition, food insecurity, employment and ecological restoration (Figure 2). Adopt a whole life cycle approach to food and nutrition security and plan programmes for all vulnerable persons

of all age groups and integrate it into the economic activity and employment plan of the people in the region.

The Food for Eco-Development programme can promote the use of food grains as wages for the purpose of establishing water harvesting structures (Water Banks) and for the rehabilitation of degraded lands and ecosystems. Thus, many downstream benefits and livelihood opportunities will be created.

**Figure: 2** Community Food Bank

(Managed by a Stakeholder Council, with different operations assigned to different Self – Help Groups (SHGs))



The problems of surplus Stocks on one side and non affordability and starvation and malnourishment on the other can be solved, by integrating a number of food based programmes in to the Grain Bank activity. Grain banks can also effectively serve as ready market for grain of all varieties produced by local farmers. After the first contribution to

the corpus, the grain Banks gets the grain as repayment of loans. It can also purchase the grain from the local farmers for the operation of PDS and Food for work program and so on. This helps decentralization of procurement and distribution.

The main grain Bank activity consists of first setting up a stock and then lending the grain to the needy. Unless the livelihood opportunities are provided, it is not possible for the poor to repay the loans. With out the repayment the grain bank concept does not work. Hence food for work programme can provide employment opportunities. Other nutritional programmes that involve free distribution of food for the needy can also be integrated into the Grain bank activity. Purchase of local varieties and more nutritious grain for this purpose is advisable. Participation by the land less in ecological restoration, infrastructure development etc., will become part of the food for work programme.

### **Programmes of Nutrition for all groups**

Pregnant Women	Prevent LBW children	ICDS type of Program
Nursing Mothers	Achieve WHO goals	ICDS type of Program
Infants (0-2 years)	Reach through mothers	ICDS type of Program
Preschool Children (1-6 years)	Achieve nutritional security	Special play school program with meals served
Youth and school going children (6 to 18 years)	Food for Eco-development	Noon meal Program in Schools
Adolescent girls	Food for nutrition	Self-employment training and noon meal program
Adults (18 to 60 years)	Food for Nutrition	Food for work program Eco-friendly Self-employment training in poultry, livestock, mushroom etc., Public distribution System and

		Anna Koshas to give grain on credit to the needy as well as at subsidised level.
Old and infirm persons		Antyodaya and Anna Poorna and free distribution of food



## Appendix 1

Cluster analysis is a multivariate procedure for detecting groupings in the data. In cluster analysis, neither the number nor the members of the groups are known. That is, we begin with no knowledge of group membership and often do not know just how many clusters there are. Clustering is a good technique to use in exploratory data analysis when we suspect the sample is not homogeneous.

**Hierarchical Clustering:** In the hierarchical method, clustering begins by finding the closet pair of objects (cases or variables) according to a distance measure and combines them to form a cluster. The algorithm continues one step at a time, joining pairs of objects, pairs of clusters, or an object with a cluster, until all the data are in one cluster. The clustering steps are displayed in a dendrogram (see Figure 1). The dendrogram shows the scale. The scaling is from zero to 25. At the level, zero there is no clustering, at the level 25 all the items are grouped and regrouped to finally form one cluster.

In cluster analysis it is important that variables are measured on comparable scales. If the variables are measured on different scales, convert them to similar scales by standardizing them. The Hierarchical cluster analysis procedure provides a means to automatically standardize the variables in our analysis.

**Agglomeration schedule:** From the agglomeration schedule, we can identify which cases or clusters are combined at each step. The distance (in this case, the squared Eculidean distance) is displayed in the column labeled Coefficients. It is easy to follow the joining of clusters in a tree diagram, or dendrogram. This graphical display does not print this joining distance, which gives you an indicator of whether homogeneous or non-homogeneous clusters are joined. Smaller coefficients indicate that fairly homogeneous clusters are joined.

Since the indicators are of different scales, standardized values have been used. The formula used for standardization is as follows:

$$Z_i = (X_i - \text{mean}) / \text{S.D.}$$

Where  $X_i$  is the value of the  $i$ th item for  $X$  district

The characteristics included for analysis are the following:

We have chosen a level, 8 on the scale ranging from zero to 25, which is at the level of 33%.

At this level, there are about ten clusters of which four are singleton clusters.

Cluster 1 – **Koraput**, Rayagada, Phulbani, Nabarangpur

Cluster 2 – Jajapur, **Kendrapara**, Cuttack, Jagatsinghapur, Balasore, Bhadrak,

Cluster 3 – **Mayurbhanj**, Keonjhar, Sundargarh, Cuttack

Cluster 4 – Sambalpur, Baragarh, Sonapur, Dhenkanal, Anugul, **Bolangir**

Cluster 5 – **Kalahandhi**, Nauaparah

Cluster 6 – Khordha, Nayagarh

Cluster 7 – Malkangiri

Cluster 8 – Puri

Cluster 9 – Ganjam

Cluster 10 – Gajapathi

Out of the 18 indicators considered for analysis only 14 were selected, based on the correlations between the indicators, for Cluster analysis. The correlations of the four indicators are as follows

Per capita fish production with per capita milk production = 0.621\*\*

ST population with Female literacy = -0.739\*\*

ST population with child labour = 0.730\*\*

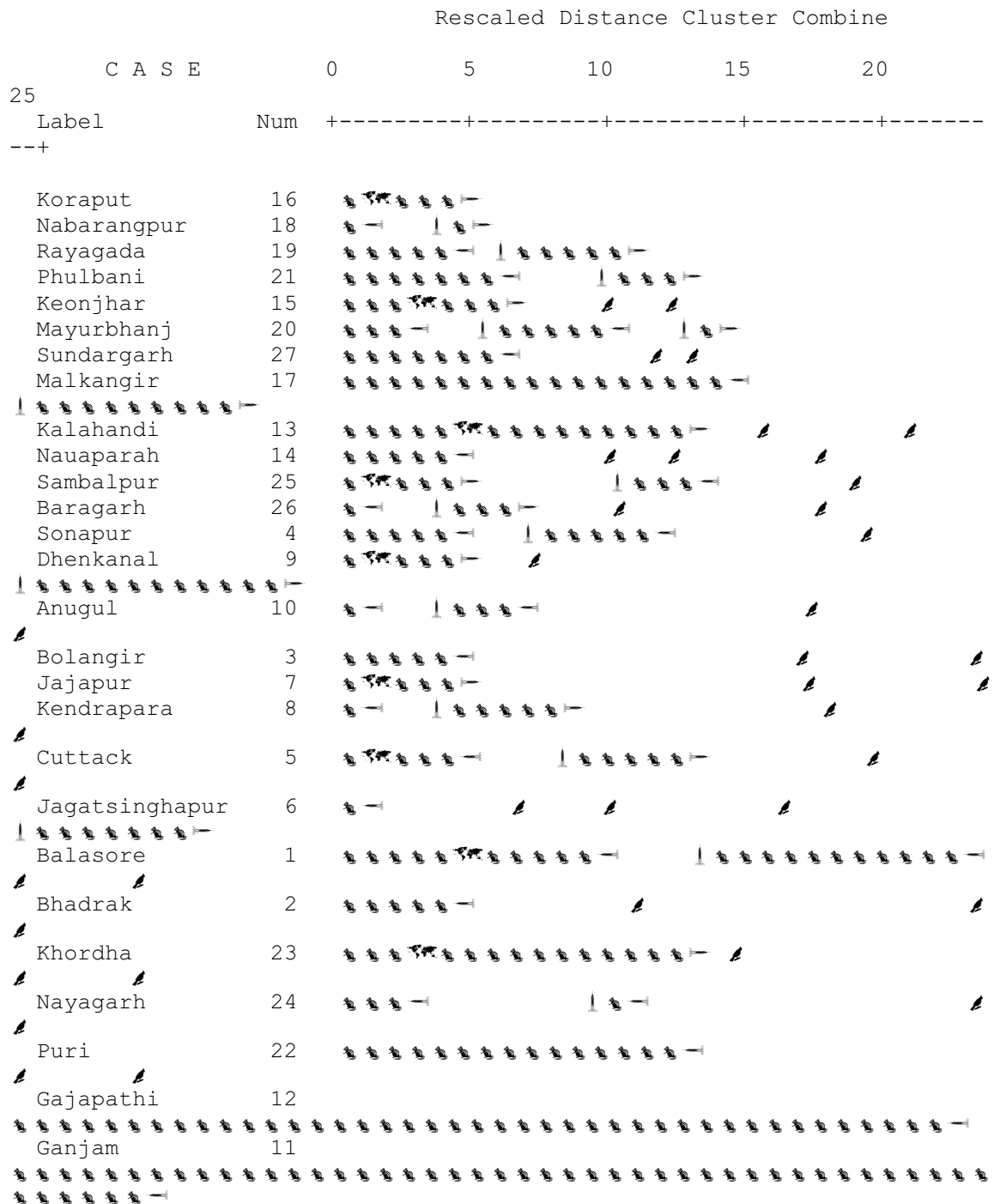
ST population with village with electricity = -0.662\*\*

The indicators selected for analysis is in Table 1.

From each major cluster, one district was selected for in-depth study.

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# Dendrogram using Average Linkage (Between Groups)



## Appendix 2

### Household Characteristics

Household Characteristics	V:Khardapada	V: Bhodusol	V:Cherekaput	<i>V: Gunduri</i>
	D: Kendrapara	D:Mayurbhanj	D: Koraput	D: Kalahandi
<b>Total Household</b>	64	71	97	89
<b>ST Population</b>	0	66 (93%)	39 (40.2%)	47 (52.8%)
<b>SC Population</b>	40 (62.5%)	0	9 (9.3%)	10 (11.2%)
<b>OBC</b>	0	5 (7%)	0	
<b>General</b>	24 (37.5%)	0	49 (50.5%)	32 (36%)
<b>Vulnerable Gr.</b>	50 (78.1%)	60 (84.5%)	90 (92.7%)	79 (89.8%)
<b>Dependency Ratio(Dependence for one earning member</b>	108 (2.3)	203 (0.84)	261 (0.70)	173 (1.14)
<b>Avg. Household size</b>	6	6	5	4
<b>Female headed household</b>	0	5 (7%)	3 (3%)	4 (5%)
<b>Average no. of able bodied worker</b>	2	3	2	2

Dependency Ratio = [(Total Population – Total Able bodied Worker)/ Total Able bodied workers]

## Infrastructure of the Villages

<b>Infrastructure</b>	<b>V:Khardapada</b>	<b>V: Bhodusol</b>	<b>V:Cherekaput</b>	<b>V: Gunduri</b>
	<b>D: Kendrapara</b>	<b>D:Mayurbhanj</b>	<b>D: Koraput</b>	<b>D: Kalahandi</b>
<b>Electricity</b>	Electricity is therein this village.	No electricity	No electricity	No electricity
<b>Water</b>	3 Tubewells 2 Ponds 2 Chuas	4 Tubewells 4 Dugwells 1 Pond (no water from Feb to June)		6 Tubewells (Govt.) 5 Wells 2 Ponds
<b>Road Condition</b>	Good all weathered road		Bad condition of the road.	
<b>Sanitation</b>	Poor sanitation, only one septic latrine and one barapali latrine	Poor sanitation, no latrine	Poor sanitation, no latrine	Poor sanitation, no latrine
<b>Garbage Disposal</b>	Dispose garbage in backyard	Dispose garbage in backyard	Dispose garbage in backyard	Dispose garbage in backyard
<b>Houses</b>	Thatched mud house, only 5 houses with RCC roof	Thatched mud house, only one house with tile roof	Thatched mud house, only 5 houses with RCC roof	Thatched mud house, only 5 houses with RCC roof
<b>ICDS service</b>	No	Yes	No	No
<b>Grain Bank</b>	No	Yes	No	No

## Educational Status

	V:Khardapada	V: Bhodusol	V:Cherekaput	V: <i>Gunduri</i>
	D: Kendrapara	D:Mayurbhanj	D: Koraput	D: Kalahandi
<b>Literacy Rate (Men)</b>	100	50	13%	25%
<b>Literacy Rate (Women)</b>	75	38	nil	nil
<b>Maximum year of education</b>	Graduation	12 <sup>th</sup> Standard	3 <sup>rd</sup> Standard	9 <sup>th</sup> Standard
	No School	One Primary School	No School (Traditional System)	One Ashram School

## Land Use Classification

Landuse Types In percentage	V:Khardapada	V: Bhodusol	V:Cherekaput	V: Gunduri
	D: Kendrapara	D:Mayurbhanj	D: Koraput	D: Kalahandi
<b>Upland</b>	0	50	60	55
<b>Medium Land</b>	80	35	30	35
<b>Low Land</b>	20	15	10	10

	V:Khardapada	V: Bhodusol	V:Chereka put	V: Gunduri
	D: Kendrapara	D:Mayurbhanj	D: Koraput	D: Kalahandi
<b>Avg. land holdings(acres)</b>	0.3	1.3	0.6	1.1
<b>Landless HH</b>	33 (51%)	6 (8%)	24 (25%)	20 (23%)
<b>Total cultivable land (acres)</b>	43.04	151.5	179.3	150.2
<b>Irrigated Land to total cultivable land</b>	nil	10.2 acres (8%)	25.5 acres (14%)	nil

### Occupational Structure

Occupational Structure	V:Khardapada	V: Bhodusol	V:Cherekaput	V: Gunduri
	D: Kendrapara	D:Mayurbhanj	D: Koraput	D: Kalahandi
<b>Agricultural Household (including service, CL,Others)</b>	35 (54%)	61 (85%)	74 (76%)	16 (18%)
<b>Casual labour Household</b>	13 (20%)	1(1%)	17 (17%)	55 (62%)
<b>Service (HH)</b>	8 (12%)	4 (6%)	nil	4 (5%)
<b>Others</b>	6 (9%)	2 (3%)	nil	2 (2%)

Others – Fishing, Blacksmith, Pension, Masonry Work, Rickshaw Puller

### Major Farm and Non farm Activities

Income Sources	V:Khardapada	V: Bhodusol	V:Cherekaput	V: Gunduri
	D: Kendrapara	D:Mayurbhanj	D: Koraput	D: Kalahandi
<b>Major Income source from farm activity</b>	Own Cultivation Agricultural Labour	Own Cultivation Agricultural Labour	Own Cultivation Agricultural Labour	Own Cultivation Agricultural Labour
<b>Non Farm Activities</b>	Service Rickshawpuller Fishing Casual Labour	Casual labour Service Blacksmith Masonry Work	Casual Work Blacksmith Service	Casual Work Blacksmith Service Pension

Casual Labour includes fire wood selling, Non Timber Forest Product selling, livestock selling, making leaf cup, plates.

### Major Sources of Food during Normal and Crisis Period:

Major Sources of food in normal period	Khardapada	Bhodusol	Cherkaput	Gunduri
PDS	15%	10%	9%	16%
Weekly market	55%	30%	37%	55%
Village Shop	18%		8%	10%
Food as Income	9%	10%	38%	11%
Grain Bank		18%		
Major Sources of food in crisis period				
Local market	80%	35%	40%	55%
PDS	10%	10%	10%	9%
Food Aid (from Govt.)	10%			30%
Grain Bank		15%		

Villages	Migrants	Period of Migration	Place of Migration	Employment Opportunities
Khardapada	Migration is Both during normal period. & in crisis period Only male migration.	September & October	Within the state like Paradip Port, Kendrapada. Outside the state like Gujarat	Construction Work Casual Labour in Port.
Bhodusol	Migration is very common throughout the year in normal and crisis period. Only male members migrate.	Migration is almost throughout the year. It is high during January to March and rest of the month it is moderate.	Migration is nearby areas within the state.	Mainly labour work



Cherkaput	Very low migration during normal period as well as crisis period. Male members are only migrating.	Migration mainly in February to April.	During normal period migration is in nearby areas but in crisis period it is in unfamiliar areas.	Mainly working as casual labour.
Gunduri	No migration	both during	normal and	crisis period.

Villages	Type of Hazards	Year	Most Severe crisis
Khardapada	Flood Drought Cyclone	1933, 1955, 1981,1982,1983 1955,1956, 1957, 1996,1997 1967, 1972, 1982,1983, 1999	1999 - Cyclone
Bhodusol	Flood Drought Cyclone	1993,1999 1986, 1987, 1989,1991, 1998, 1999 1993,1999	1999 – Cyclone and drought
Cherkaput	Flood Flush Flood Drought	1985, 1986, 1993 1998,1999 1995, 1996, 1997	1999-2000 - Drought
Gunduri	Drought	1996,1998,2000	Drought for last four years