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## **“A SOCIO-ECONOMIC STUDY OF KONDHWAL VILLAGE IN BHIMASHANKAR WILDLIFE SANCTUARY”**

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### **Abstract**

Village communities in wildlife sanctuaries are dependent on NTFP's for their survival & sustenance. Kondhwal village is situated in the interior of Bhimashankar Wildlife Sanctuary is heavily dependent on forest resources. The present study tries to evaluate the current socioeconomic status of all hamlets of Kondhwal village & compare with the previous socioeconomic assessment by Rene Borges and Ulhas Rane done in the year 1991. The study tries to assess & compare the demographic, educational, Livestock, Crop production, Basic amenities in the village, house constructional material, pattern of land ownership, biomass requirements & income of the village with the previous study.

**Keywords:** Bhimashankar Wildlife Sanctuary, Kondhwal village, Socioeconomics

### **I. Introduction**

A socio-economic study of the entire Kondhwal village which includes Kondhwal Gaathan, Gawandewadi, Dhagewadi, and Shindewadi was undertaken to estimate the overall livelihood status of villagers. Kondhwal Village and its wadis are situated in the heart of Bhimashankar wildlife sanctuary (BWS), which got established in the year 1985 (ZSI, 2009). The main reason for selection of Kondhwal as study village was that it is being situated in the interior of the sanctuary and is largely dependent on the sanctuary for their daily needs. Rural communities living adjacent to protected areas are directly dependent on the protected area for subsistence resources such as fuelwood (Byron & Arnold 1997; Bahuguna 2000). The fact that protected areas affect various groups in society needs to be recognized differently. It is essential to appreciate that the poor societies of poor countries who live within or close to protected areas (PA's) and in particular the people who derive their income from these are the ones to bare maximum cost caused by the sheer existence of PA's (Ghate R. 2002). Renee Borges and Ulhas Rane during November 1990 to October 1991 did an outstanding work on understanding and publishing socio-economic aspects of Kondhwal village. The study tries to assess & compare the demographic, educational, Livestock, Crop production, Basic amenities in the village, house constructional material, pattern of land ownership, biomass requirements & income of the village with the previous study.

### **II. Methodology**

The Socioeconomic data was collected by interviewing the head of each household as well as other members of the family. Data was collected using a specially designed survey

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sheet. (Ghate. R<sup>1</sup>; Renee Borges and Ulhas Rane<sup>2</sup>). Data collection was done by a team including three members taking the help of one local resident. On the village level information was obtained on basic village amenities such as drinking water resources, availability of school, veterinary services, primary health center, availability of electricity. In all, there are 92 households in Kondhwal village including the Gaothan and the entire Wadi's, Gawandewadi being the largest. But only 83 families were willing to give us the necessary information and hence our results are based on answers given by these 83 families.

#### **Data were collected on the following parameters in each household**

- 1.1. Basic Amenities in the Village:** Information related to basic amenities was taken by interaction with key individuals of the village.
- 1.2. Demography:** Males and females older than 15 years were considered adults, those 15 years and below were considered children. Fifteen years was adopted as cut-off age because tribals of this age marry and establish individual families.
- 1.3. Education:** Education levels were divided into six categories: a) 1st to 4th, b) 5th to 7th, c) 8th to 10th, d) 11th and 12th, e) 13th to 15th, f) 15th and above. We also estimated the number of illiterate individuals in a family.
- 1.4. Dwelling characteristics:** We noted the type of dwelling that is the type of houses in Kondhwal village. We divided dwellings into three types: - Type A: Hut with walls of Karvi sticks and the thatched roof. Type B: Bricks, Clay Plaster with wooden Roof. Type C: Bricks, Cement Plaster with Wooden Roof.
- 1.5. Agricultural output of Kondhwal village:** From interviews, we recorded a) the number of bags of rice, wheat, Finger millet etc harvested every year on an average. b) The number of farmers using cow dung and urea.
- 1.6. Livestock:** We censused cows, buffaloes, goats, and Bullocks. Cows and Bulls were taken in a single category. Within each livestock category, we estimated the proportion of productive/useful animal's i.e. milk-producing cows and buffaloes or draught bullocks.
- 1.7. Income:** The income generated by villagers through different means was documented through survey & personal interviews.
- 1.8. Biomass requirements:** Data was obtained on the number of head loads of fuelwood consumed per household per day on an average in all the three seasons.

#### **Problems with Data collection**

The data was collected by interviewing each household so as to get in-depth information and to avoid any anomalies which might occur in the village meeting.

The following parameters could not be assessed:

- a. Area of cultivable land per household:** The tribal estimate the area of cultivable land in terms of cultivable strips (Khachars) which are of ill-defined terms and it was difficult to obtain a standard measure for this parameter. Since the tribal are aware of Guntha measure; we attempted to quantify cultivable land in terms of acres and Guntha. (40 Guntha = 1Acre).
- b.** Also most of the data on demography, livestock number, Agriculture, Dwelling type, Education etc. was recorded as estimates made by the interviewed household head.

### **III. Results and Discussion**

#### **1.1 Basic Amenities in the Village**

The village has one community temple, one primary school for imparting education to the children in Kondhwal village. Medical, Post & Telegraph are accessible to them in Rajpur village (8 km) and market facilities are accessible only in Ghodegoan village situated about 45km from the village. Surprisingly there are no shops in Kondhwal village and day to day amenities are fulfilled from grocery stores and other general stores in Bhimashankar. There

is a road leading to the Kondhwal village but no public transport is available yet. Villagers have to walk a distance of 5 km till the Kondhwal crossroad to use any sort of transport means.

### 1.1.1 Water Resources

There is no tap water facility available for the villagers. There are two hand pumps providing drinking water to the villagers when groundwater is available. However, this source lasts only for 5 months of the year after retreat of monsoon and then in summer water is obtained by a potentially dangerous vertical descent of 50 m to a perennial pool in the Guhri River several times a day or some other distant sources in forests, situated very far off from the village. Water is inadequate not only for agriculture but also for drinking and household purposes. During summer, water is transported in tankers to Bhimashankar from Ghodegaon/Manchar (40-50 km away). Very few farmers have a well which can be used as the permanent source of water for agriculture. The dam construction was initiated a few years back by villagers but forest department has stopped it.

### 1.1.2 Electricity

The electricity is provided to the villagers but is not reliable and may sometimes be not available for days together.

## 1.2 Demography

In the year 1991, the village Kondhwal had 96 households. The Total population of village Kondhwal gaathan, Gawandewadi, Shindewadi, and Dhagewadi together was 559 individuals (i.e. ratio being 292 males: 267 females) (*Rene Borges and Ulhas Rane 1991*). However, our current survey shows the population of Kondhwal village as 498 individuals (i.e. ratio being 244 males: 254 females) with 83 households. Mahadev Koli tribes dominate human population in the Kondhwal village, a scheduled tribe, with Hindu as their religion.

### Village Demography

Village	Households	Females	Males	Total
Kondhwal	86	254	244	498

(Source: Primary Source – based on household survey)

**Table- 1:** Kondhwal village Demography.

### 1.2.1 Family Size

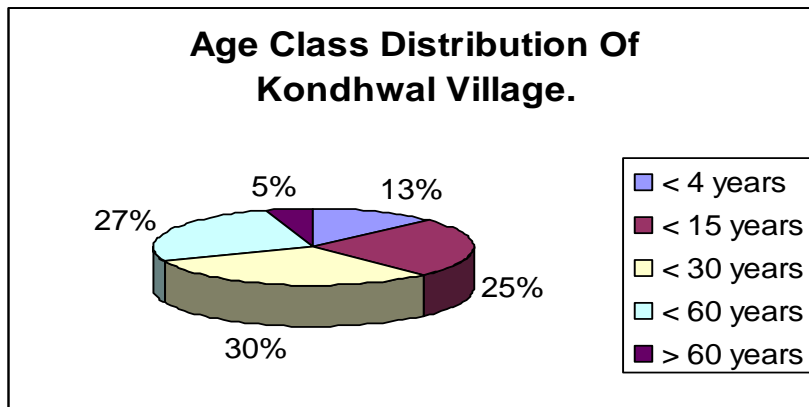
The average size of the family is estimated as 6 members per household. As per source data obtained, the highest number of families (72.28) showed 4-8 members in each household. Only two households (2.4%) have 14 family members each.

### 1.2.2 Age Class and Sex Composition

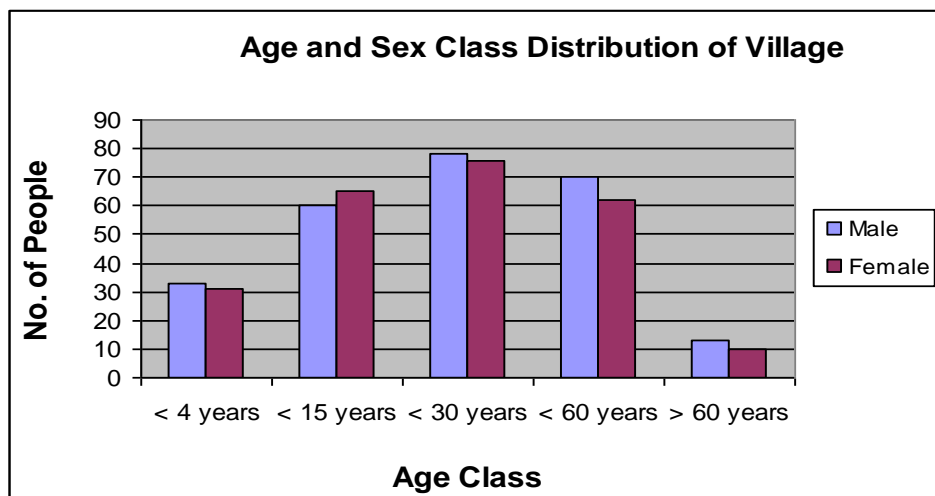
The age class distribution of the population in Kondhwal village shows 61 family members in the age group of 0-4 years, 125 in the age group 5-14 years, 154 of 15-30 years, 132 in 31-60 and 23 above 60 years of age. There seems to be no increase in population with the present population just replacing themselves with the new generation. Villagers have seen to be aware and practicing family planning.

Age Class	Male	Female	Total	Percentage
< 4 years	33	31	61	12.85
< 15 years	60	65	125	25.1
< 30 years	78	76	154	30.92
< 60 years	70	62	132	26.51
> 60 years	13	10	23	4.618
<b>Total</b>	<b>254</b>	<b>244</b>	<b>498</b>	
<b>Percentage</b>	<b>51.0042</b>	<b>48.996</b>		

**Table-2:** Age composition of Kondhwal village according to sex



**Graph No. 1: Age Class Distribution of the Village**



**Graph No. 2: Graph between Age class and No. of People in either sex class**

### 1.2.3 Sex Ratio

Sex ratio calculated as per our household survey is 960.62 females per 1000 males.

### 1.3 Educational Status

This data was collected in terms of age, sex, and education of family members. Each household may consist of one or more than one families. A total of 284 people (56.82%) are literate. However, the previous data in 1991 showed 42.21% (236) of the total population was literate so this shows 14.6% increase in literacy rate in past 16 years. The main reason for this increase is that the villagers are getting aware of the importance of education, hence they are educating their children and they are showing no educational discrimination in either girls or boys. A total of 42.36 percent of the villagers are illiterate comprising 167 males and 117 females are literate. However, 16.86% of the population has the level of education up to primary, 199 above standard 7 (39.95%) and 36.27% of the households have the level of education up to middle school and high school.

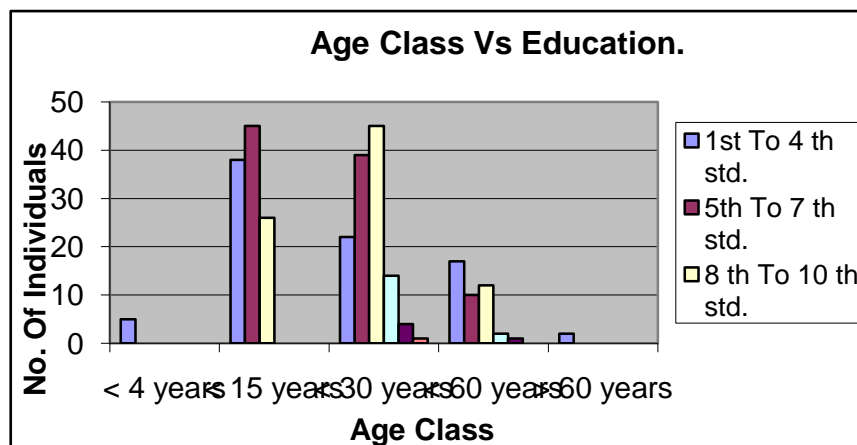
#### Literacy Figures:

Village	Females	Females >Std 7	Males	males >Std 7	Total
Kondhwal	78	7	158	61	236

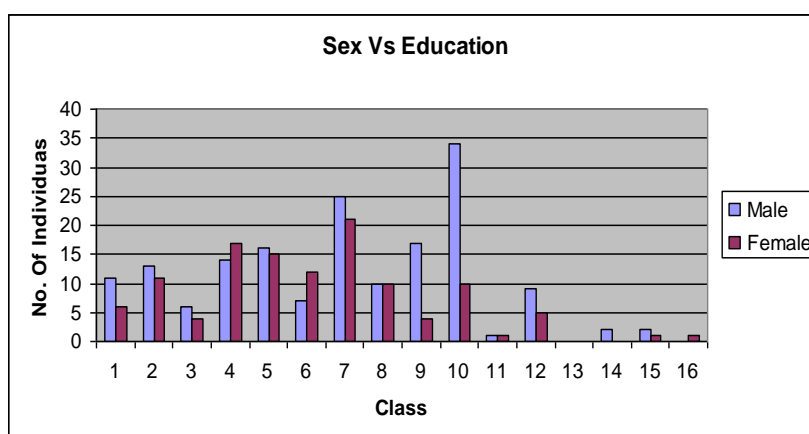
(Rene Borges and Ulhas Rane 1991)

Age Class	Primary	Middle School	High school	Higher Secondary	Graduation	Post Graduation	Illiterate
< 4 years	2	0	0	0	0	0	46
< 15 years	38	46	26	0	0	0	32
< 30 years	22	39	45	14	4	1	40
< 60 years	17	10	12	2	1	0	82
> 60 years	5	1	2	0	0	0	15
<b>Total</b>	<b>86</b>	<b>96</b>	<b>85</b>	<b>16</b>	<b>5</b>	<b>1</b>	<b>215</b>
<b>%</b>	<b>16.86</b>	<b>18.87</b>	<b>16.66</b>	<b>3.21</b>	<b>1</b>	<b>0.20</b>	<b>43.77</b>

Table- 3: Age Class and Educational Distribution of Kondhwal village



Graph No. 3: Age Class Vs No. of individuals in the different educational class



Graph No.4: Sex Class Vs No. of individuals in different educational class/Standard 1.4 Dwelling characteristics/ House Constructional Material

Use of timber, clay, and bricks in the construction of the house in Kondhwal village is seen as a natural choice. The wooden material used is in the form Karvi (*Carvia callosa*) to construct walls, which are then covered with thick clay layer whereas in brick houses clay

used as cementing material and the roof was made with wooden beams. Few houses are constructed using cement, bricks and wooden roof.

Construction Material	No. of Houses
Bricks, Cement Plaster with Wooden Roof	9
Bricks, Clay Plaster with Wooden Roof	64
Karvi, Clay Plaster with Wooden Roof	3

**Table- 4: Material used in the construction of Houses**

### 1.5 The Agricultural output of Kondhwal:

Agriculture forms the major occupation of the people in Kondhwal village. Rice is the most important crop harvested by villagers since the topology, soil type, rainfall; the climate is well suited for the crop. A Majority of rice is grown in terraces or valleys, though the output of paddy depended on rain and depredation by wild animals like Sambar, Hanuman Langur, Porcupine, and Black napped hare, Wild boar etc. Rice is sown in June and harvested in October. Cow dung manure is used as main fertilizer. In addition to this 50 kg of urea is used on an average per household per year. Out of the 76 agricultural families, 7 families get income from agriculture whereas the remaining 69 families get agricultural produce only for self-consumption. Also out of the 76 agricultural families, 32 families are urea users and 51 families' are non-users. However, all 76 families use compost manure in the field. Interestingly, pesticides are never applied to any crop. Fields are prepared for paddy cultivation using considerable effort since flatlands in many areas are either uncommon or covered with a thick layer of soil over basaltic rock. In many areas, rock is excavated and a suitable layer of soil is laboriously carried in from other places. Villagers practice "Raab" where the leaves and branches of trees are burnt all over the agricultural field so as to enrich it with essential minerals. Finger millet (*Eleusine coracana*) and Sava (*Panicum miliare*) are grown on slopes (Varkha areas) by "Jhoom cultivation". The rotation period is reportedly ten to twelve years. Slopes are burned prior to the monsoon. The Sava is a minor crop and is not cultivated by every household while Finger millet is cultivated on a regular basis. Wheat is cultivated immediately after Rice by few villagers having their own water source in form of well. Such villagers also cultivate other minor crops such as Chick peas (*Cicer arietinum*). Wheat is a recently introduced crop in this region. In addition, Sesamum (*Sesamum indicum*) and Niger seed are minor crops grown during the monsoon in the varkha land. (Rene Borges and Ulhas Rane 1991)

#### 1.5.1 Crop production

The average annual production of rice per household was 10.2 bags. 1 bag of unhusked rice is equal to approx. 50 kg of unhusked rice and 25 kg of rice grain. Rice production is therefore equivalent to 255.0 kg per household. Mean production of Finger millet per year per household was 5.0 bags. (Rene Borges and Ulhas Rane 1991). As per our data average annual production of rice per household was 6.7 +/- 3.2 bags. Rice production is therefore equivalent to 255.0 kg per household. Also, mean production of the second major crop i.e. Finger millet per year per household was 2.55 bags.

#### Average annual crop production per household (in bags):

Village	Rice	Nagali	Wheat
Kondhwal	11.8	6.9	0.5

(Rene Borges and Ulhas Rane 1991)

Crop Name	Avg. Production (in sacks/Family)	Highest (in sacks/Family)	Lowest (in sacks/Family)
Rice	6.8	28	2
Nachni	2.55	0.5	0
Finger millet	3.48	1	9
Sava (Little millet)	1.78	0.5	3
Warai	0.83	0.5	3
Sesamum	1.75	0.5	12
Chick Pea	0.5	0.5	0
Wheat	2.4	3	2

**Table- 5: Crops and their average production per family**

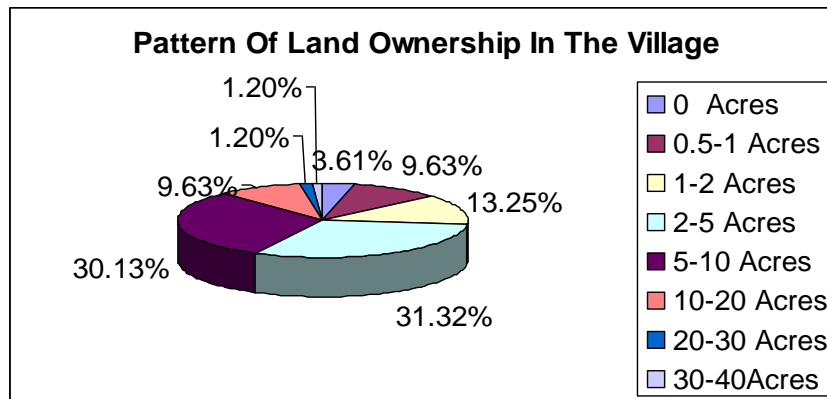
### 1.5.2 Pattern of Land Ownership in Kondhwal

The total area under land ownership in Kondhwal is 518 Acres. Almost all families have their own cultivable land; out of 83 families, 76 families have their owned cultivable land. The average cultivable land holding per family is 6.24 Acres. The distribution of landholdings among the households is highly skewed with the maximum size of landholding at 37 Acres and minimum 0.5 Acres per family showing the range of 29.5 Acres.

Land Holding (Acres)	Number of Households	% of Total
0	3	3.61
0.5-1	8	9.63
1-2	11	13.25
2-5	26	31.32
5-10	25	30.13
10-20	8	9.63
20-30	1	1.20
30-40	1	1.20
<b>Total</b>	<b>83</b>	

**Table-6: Pattern of Land Ownership in Kondhwal Village**

The above table shows that 3.61% of the households do not own any land, whereas 9.63 percent of the households own 12.0% of the land. Almost 54.2% of the households own land between 0.5 to 5 Acres. Thus, most of the cultivators in the village Kondhwal are small and marginal farmers with the uneconomic size of landholding.



**Graph No.5: Pattern of Land Ownership in Kondhwal Village**

### 1.6 Livestock population of Village Kondhwal

The total livestock population of village Kondhwal (based on household survey) is 490. The composition of livestock population is given in the **Table-9**. The previous work by Rene Borges and Ulhas Rane in 1991 showed the livestock population to be 1131. So in the last 16 years, there has occurred a drastic decrease in livestock population i.e. it has reduced almost to half the previous number. The milching cattle populations also reduced by many folds so the current situation is that, only 3 households are selling milk.

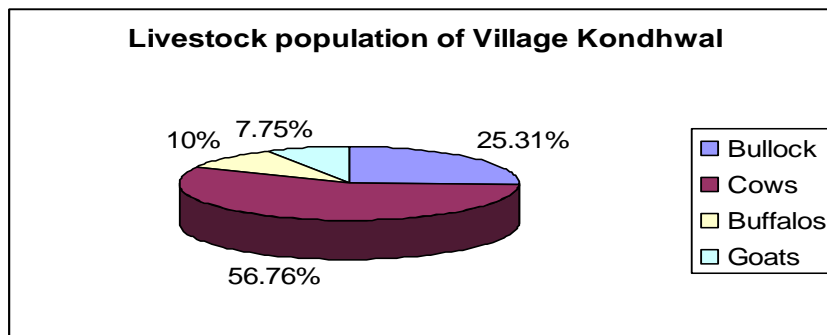
Village	Cows	Bullocks	Calves	Buffaloes	Goats	Total
Kondhwal	412	198	271	112	138	1131
Percentage	36.42	17.50	23.96	9.9	12.20	

(Rene Borges and Ulhas Rane 1991)

Village	Cows	Bullocks	Buffaloes	Goats	Total
Kondhwal	279	124	49	38	490
Percentage	56.93	25.31	10	7.75	

(Source: Primary Source – based on household survey)

**Table –7: Livestock Population of Kondhwal Village.**



**Graph No.6: Livestock Population of Kondhwal Village**

#### 1.6.1 Livestock Grazing Pattern

Results of the door-to-door survey revealed that the entire cattle population of village Kondhwal is being illegally grazed on the fringe of the village. Villagers send their cattle to the forest from morning till evening (Based on the interview of villagers and monitoring the cattle movement). Normally in the morning, the livestock population is taken for grazing inside the forest of BWS up to 2 to 3 km. Stall-feeding is done only for milking animals and for others in monsoon. The livestock population of the village has shown a fall in the current year as compared to 1991 livestock population.

#### 1.7 Income

Average annual income per household from cow's milk was INR.634.6, from buffalo milk was INR.685.0, and from cow and buffalo combined was INR.1342.30 (N = 456). Kondhwal had the highest income from buffalo milk and also had the highest number of buffaloes. (Rene Borges and Ulhas Rane 1991). As per our study, the cattle population is reduced to almost half the population to what it was in the year 1991, therefore, the milk production has reduced drastically. Now only 2 households sell milk otherwise all others have milk only for domestic purposes, therefore, income from milk production is not quantified. Goat milk is also consumed however milk production was not quantified and goat milk is not sold.

Village	Cow milk	Buffalo milk	Combined
Kondhwal	767.00	995.30	1759.00

(Rene Borges and Ulhas Rane 1991)

**Table –7: Average annual income per household from milk in rupees**



### 1.7.1 Minor forest products

The main MFP's are Hirda (*Terminalia chebula*) fruits, Shikakai (*Acacia concinna*) and Honey. We collected information from villager's regarding the Hirda only.

**Hirda:** The mean annual income from Hirda was INR. 1642.60 (N = 471). Most households collect Hirda. Kondhwal had the highest income from Hirda while Bhimashankar had the lowest (*Rene Borges and Ulhas Rane 1991*). As per our study, Average Balhirda collection/Family per season is 2.02 sacks. The mean annual income from Hirda is Rs. 2172.22(N = 83).

Hirda collected prior to the monsoon is known as Baal Hirda (immature hirda). It sells for INR. 30-60 per Kg depending on the quality. Hirda collected after the monsoon is known as motha hirda (mature hirda). There are three classes of motha hirda depending on quality – **Class 1:**INR. 5/kg; **Class-2:**INR. 4/kg and **Class-3:** INR. 1.75-2.00/kg. Immature hirda is more expensive than the mature fruits because of its higher percent tannin content. Hirda is collected, sun-dried and sold to a middleman at the above-mentioned rates.

Village	Hirda	Shikekai	Honey
Kondhwal	2843.00	203.10	225.20

(*Rene Borges and Ulhas Rane 1991*)

**Table –8: Average annual income per household (From MFP'S in INR)**

### 1.7.2 Employment, Business, and Casual Labor

- Business:** Only 5 households obtained income from Business. One villager has Prasad shop from which he earns on an average INR. 10000 Per month; whereas others sell medicinal plant products mainly in the festive seasons like “Mahashivratri” and “Shravan.
- Casual labor:** Most of the villagers are involved in this occupation. Casual labor wages are derived from activities such as road repairs, Social forestry and well digging. The overall average annual income per household from casual labor (n=459) was INR. 1791.20.
- Crops:** Although crops are not sold and therefore there is no actual cash inflow from crop production and also crop production is not sufficient to meet the annual household needs, yet crops may be considered as a source of self-generated income. If the annual average per household production of rice, Indian goose grass and wheat is multiplied by the cost per Kg of these grains in Kondhwal (INR.16 For rice, INR. 10 for nagali and INR.15 For wheat), the average annual income per village per household from these grains was INR. 1275 the average annual income per village per household from these grains was INR. 1275 from rice, INR.825 from nagali and from wheat.

#### Potential income from crops per household per annum:

Village	Rice	Nagali	Wheat
Kondhwal	1475	924	94.40

(*Rene Borges and Ulhas Rane 1991*)

**Table –9: Potential income from crops per household per annum**

### 1.7.3 Financial loans and subsidies

Villagers are availing of the benefits of loans and subsidies. Loans are obtained from Banks, Panchayat Samiti, Tribal society, social welfare scheme etc.

**1.7.4 Other sources of income:** The sale of bullocks, goat kids and poultry also generates income. However, we did not quantify these sources as they occur sporadically and probably do not contribute significantly to the annual income.

### 1.8 Daily Fuelwood Requirements

Fuelwood is the major energy source. All household use fuelwood for their daily requirements since other sources like kerosene, LPG gas is not available. Even if made available the villagers are economically not that sound to afford it. During household

interviews, most villagers reported a consumption of 1 head load per day in summer, winter, and Monsoon. However, it was expected a consistently greater consumption of fuelwood in winter and monsoon as villagers usually tend to use the wood which they have stocked during the dry season. But however, we found there answers inconsistent and vague. Few reported it as 2 head loads per day whereas others reported 1 head load per day. We found that new head loads are being collected every day even before the head load collected the previous day is not fully utilized. The firewood collection has become an incidental daily occupation while tending grazing cattle. We are therefore unable to calculate exact values of daily fuelwood consumption and can only conclude that on an average 1 head load is consumed in summer and 2 head loads are consumed per day in winter and monsoon.

#### **IV. Conclusions**

Kondhwal village has a population of about 498 persons with approximately 490 cattle heads. Mahadev Koli tribes, who mainly survive on products derived from the forests, dominate the area. The villagers are very poor with the income sources available to sustain their livelihood. The main source of livelihood is agriculture followed by the collection of minor forest produce/ non-timber forest produce, occasional labor work provided by the forest department, selling of Prashad (Holy food) and other articles needed for rituals at Bhimashankar temple. The road leading to the village is metalled but not well-maintained and direct transportation is available to the village, with the nearest bus stop being 5 km away at Kondhwal crossroad. The Kondhwal village has a Primary school but secondary education is available nearest at Taleghar (14 km) and for higher education, they have to travel till Ghodegoan town (45 km). The primary medical facilities are available 8 km away near Bhimashankar temple area. The educational survey of the village has revealed a 14.6% increase in literacy rate. The female literacy rate has been increased with the nearly equal proportion of male and females up to middle school education. The average size of the family is estimated as 6 members per household. The sex ratio have been improved (i.e. 960 females per 1000 males). Bricks, Clay Plaster with wooden Roof are the material of choice for house construction. Age class distribution showed about 30% population between age class 15 to 30 years and about 47% population in age class 15 to 60 years. There is the almost equal proportion of males and females in each of the age class. Major crop production has been reduced drastically. About 50% of the farmers are marginal landholders having land holding between 1 to 5 acres. There has occurred a drastic decrease in livestock population i.e. it has reduced almost to half the previous number, thereby reducing the grazing pressure on the sanctuary. Income from milk selling has gone down drastically with only 3 families selling some quantity of milk whereas the rest of the households keeping milk only for self-consumption. There are no new income sources generated. There is an increase of only INR 500 rupees in the mean annual income from *Terminalia chebula* fruit selling in past 16 years. Most of the households generating agricultural produce not even sufficient for household needs, very few families reported the income from this source but that also so to very minimal extent. The village population has been deprived of any national Government scheme of village development.

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