



## Identification of market linkages for the sale of horticulture outputs

RESORTS & HOTELS

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## Executive Summary

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Community Development Centre (CDC) is headquartered in Balaghat and works at ground level for the forest dependent tribes and the villages around the Kanha Tiger Reserve. In this project, CDC aims to achieve a source of sustainable livelihood for forest dependent communities. It aims to train them for growing cash crops like potato, ginger and turmeric and sell them in market for income generation.

The project is to establish market linkages for sale of potato, ginger and turmeric in local markets around Garhi in Baihar block of Balaghat.

The project begins by assessment of farm potential where farm visits were conducted to get an insight into the maximum quantity the farmers can produce. Interviews with farmers and community revealed that the farmers have the ability to produce 20 quintals of potato in the designated cultivation area. A survey of a sample of 46 of these farmers was conducted to get data on their inputs and farm outputs. Based on the data the farm output potential was assessed at 6063 quintals for these 150 project beneficiaries at current productivity levels.

Next the nearby resorts and hotels which are located from Mukki Gate to Baihar were surveyed for getting the rough idea of their problems of procurement of vegetables, demand of which vegetables and time of the year when they are most required. We came to know that most of the resorts procure their vegetables from Baihar market and their requirement depends upon their occupancy level at any point of time. The resorts and hotels are most occupied during the peak time from October to June. The average requirement of the potatoes would be 2 sacks per month for any resort operating at its full occupancy level.

A separate supply chain was suggested and analyzed for its profitability. There is a huge potential in delivering the vegetables and groceries to the nearby hotels and resorts in the market price. There are issues of supplying only potatoes to the customers. Thus a recommendation of supplying all the vegetables to the resorts after sourcing them from wholesalers was given.

The creation of separate supply chain catering to the hotels and resorts is highly profitable during the peak season when maximum people visit the Kanha National Park.

## Kanha Tiger Reserve: An inspiration to Great Tales

Kanha Tiger Reserve is considered to be one of the finest wildlife areas in the world. It is an invaluable treasure of wilderness and well preserve by the government of India. Situated in the Maikal Range of Satpuras, the landscape of Kanha Tiger Reserve forms a stunning combination of dense forests, open meadows, wooded mountain slopes and lakes and rivers with crystal clear water. A month spent in these reserves made me understand why it was such an inspiration to famous authors like Rudyard Kipling to write great tales like the Jungle Book.

### History

Kanha is one of the oldest wildlife sanctuaries in India. It was declared a Reserve Forest in 1879 and granted Wildlife Sanctuary status in 1933. At that time, it was divided into two parts- Hallol and Banjar. On June 1 1955, Kanha was notified as a National Park. Finally, in the year 1973, it got the status of the Tiger Reserve.

### Location

Kanha Tiger Reserve is located in a horseshoe shaped valley of the Maikal Range of Satpura Mountains. It spreads over Balaghat and Mandla districts of Madhya Pradesh. Off the 1967 square kilometers of total area, the core area extends up to 940 square kilometers and the rest is buffer area, amounting to 1027 square kilometers.



Fig.1 Map of Kanha Tiger Reserve – Core and Buffer Zone

### *Wildlife*

Famous for its rich wildlife, Kanha is a home to approximately 131 Royal Bengal Tigers, one of the highest numbers in India. It is also a refuge and a last world to the Hard Ground Deer or the Barasingha. Kana has played an instrumental role in preservation of this rare species too.

Other wildlife includes predators like leopards, wild dogs and sloth bear, herbivores like gaur and chital, scavengers such as hyena and jackal and small mammals like porcupine, wild hare and mongoose.

### *Flora*

Kanha has forests as well as grasslands. Forests are located in an undulating terrain and has continuous forest cover. The area is heavily forested and comprises of mixed forests, which are dominated by Sal and bamboo. The forests are ranging from pure sal to pure bamboo forests which are valued for their wood. Trees like Jamun and Mahua and many more are known for their medicinal value, cosmetic value and as a source of food. As it is a mixed forest, there are lots of species of Non Timber Forest Products (NTFPs). Some of the main ones are Harra, Bahera, Amla, Lac, Tendu leaves, Mohul leaves and Honey. The grasslands, on the other hand are formed after local tribes, who clear a small patches of forests for temporary settlement, move on to new clearings thereby leaving gaps in the forest cover.

## **Tribes of Kanha Tiger Reserve**

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### *BAIGAS*

The Baigas consider themselves to be servant of the earth and the king of the forests. Systematic Baiga villages came into existence much later. Earlier, they used to practice shifting cultivation without using the plough by clearing forests. After some year, they used to shift to some other nearby area. Even today, the forests are the first love and choice of the Baigas. They survive largely by hunting and gathering honey, herbs, gum, flowers and fruits from the forests. Some of the main ones are Harra, Bahera, Amla, Lac, Tendu leaves, Mohul leaves and Honey. They have remarkable knowledge of animals and plants.

### *GONDS*

Kanha was originally the “Land of Gonds” or Gondwana. Gonds are large in numbers here. They practice shifting agriculture and worship nature, village deities and ancestors. Their livelihood is dependent on rain-fed agriculture, agriculture labor and Non-Timber Forest Products (NTFP). They primarily cultivate paddy and wheat on small landholdings. They sell their yield in local markets.

## **Project Tiger**

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Launched on April 1 1973, Project Tiger was the most significant move in the history of wildlife conservation in India. The objective of Project Tiger is to revive Tiger population in India. The salient initiatives of Project Tiger include:

- Division of forests into two zones:
  - A disturbance free area called Core Zone, which is relieved from biotic disturbances and forestry operations like grazing, human disturbance, collection of minor forest produce, commercial activities etc. At the same time if there is any village lies in that area, seek for relocation of such villages to distant place
  - Adjoining areas called Buffer Zone, to provide habitat supplement to over population of wild animals, grazing to adjoining village cattle, for commercial wildlife resorts, settlement of relocated villages etc.
- Forced evictions: Conservation officials blame the villages in and surrounding the National Parks to be the chief reason for dwindling habitat condition of forests. As a result, villages in the core area are forced to evict and relocate in the buffer area
- Coordination from villagers: The project seeks help of villagers in various labor intensive activities like maintaining forest tracks, patrolling, tiger tracking, forest guarding etc
- Strict Punishment norms: Amendment of the wild Life (protection) Act, 1972 for providing enabling provisions for constitution of the National Tiger Conservation Authority and the Tiger and other Endangered Species Crime Control Bureau. The punishment in cases of offence within a tiger reserve has been enhanced. The Act also provides for forfeiture of any equipment, vehicle or weapon that has been used for committing any wild life offence.

## The Cost of Wildlife Conservation

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### *Loss of Livelihood*

Since the enforcement of Forest Protection act and provisions under Project Tiger, there has been total prohibition on any kind of activity to be conducted within the core zone and many activities in the buffer zone of the forest are too prohibited. As such, the tribal villages have been struggling for survival because:

1. Gathering NTFPs for sale and subsequent livelihood generation is legally not allowed
2. Hunting of animals for food has been banned and is punishable under law
3. Cutting of trees for timber too is illegal and punishable under law
4. Their farms are constantly under attack from wild animals. Many crops get destroyed every year due to trespassing by wild animals
5. Their cattle and poultry are under constant attack by wild animals

### *Forced Evictions*

Thousands of tribal people have been forcefully evicted from the Kanha Tiger Reserve area under the Forest Protection Act. The Forest Rights Act, a law recognizing the right of indigenous tribes to inhabit the forests where their ancestors settled centuries earlier, was enacted in 2008. But some environmentalists fear it has hindered efforts to conserve wildlife and encouraged the poaching of animals such as tigers. Thus, the act was never in full vigor.

The government claims that not a single person has been evicted against their will. Till date, the official figures of consented evictions from the Kanha Tiger Reserve Area stand at 1200.

However, several agencies report the number to be at least 10 times more. For instance, in a Reuters report dated Jan 2015 it has been mentioned that around 450 families amounting to 3000 were forcefully evicted in June 2014. Threats of rampaging their settlements by releasing wild elephants on them made them surrender to the authorities and settle randomly around villages in the buffer zone.

### *No sustainable aid by government*

Help was declared by the government in the form of one time compensation to relocated families ranging from Rs. 1 lac to Rs. 10 lac under the Forest Protection Act. But that was only for 1200 people.

But, in reality, this help neither reached completely to the people nor was it a sustainable option.

Also the government has offered minimum wages to the tribal communities. But the Gonda and Baigas are free spirited souls and find it difficult to streamline their lives with the modern world.

### *The ongoing conflict*

Thus, the conservation of forests came at the cost of the human settlements in and around the forests. Not only their livelihoods but the safety of their lives was in doldrums. This has often created hostility and conflict between local/tribal communities and the PA managers. In some areas, the consequences of conflict between PA managers and the local communities lead to degradation of habitat and little or no support for conservation at the local level. The root cause of conflict is in the limited availability of viable alternatives and affordable solutions to the problems faced by the local communities.

## **Livelihood Opportunities Available**

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The tribes of jungle have options to look for a new ways of sustenance outside the jungle. These include:

### *Agriculture*

The farmers can adopt agriculture. They have experience of growing food in the jungle by smashing and burning methods. Here outside the jungle too, they can switch to grow food crops like rice and wheat in a cultivate manner as is done by other villagers in the buffer zone.

Problems in starting agriculture:

- a. Cannot practice the slash and burn methods: The tribesmen cannot practice their own ways as it is prohibited in buffer zone.
- b. No land ownership: The government has allotted no land to these tribesmen to practice any kind of agriculture. Many have however started farming by occupying land without legal formalities.
- c. Lack of technical expertise: They have little knowhow of growing other crops apart from rice and wheat and few pulses.
- d. Lack of technology: These people own bullocks and ploughs. Beyond that, they have no technological assistance. No weather forecasts by radio or Television, nor mobile internet and no government assistance centers are present to their aid.
- e. Lack of Financial aid: In absence of any prior assets and old money, the farmers have little or nothing to invest into farming

### *Working as Farm labors*

The farmers can work on daily-wage basis on farms of existing villagers. However, the existing farmers also have small scale farm and cannot employ all of them and give them sufficient wages. A few have been able to get jobs in farms by getting good quality bulls to work on the farms.

### *Practicing Handicrafts and Medicinal herbs*

The Baigas and Gonds are excellent craftsmen and use their skill to make items that can be sold in the market.

However, there is little market for such items. In addition, these people have no idea of how the markets function.

### *Migrating to cities for petty jobs*

In cities they can find jobs as carpenters, daily wage workers etc. But this option also fetches petty income and is against the dignity of these people as they have lived as men of free will, as per their whims, in the open nature.

## The NGO



# Community Development Centre (CDC)

Rights in Dignity

Community development Centre also known as CDC, is registered as a non-political and non-profit organization which operates in the districts of Balaghat, Mandla and Dinodri districts of the state of Madhya Pradesh and has been working on Women, Child and youth development since its establishment in 2003.

The core working areas are livelihood, environment and health, with priority to the rights of the children. CDC has also worked with CARE on implementation of their unique project called INHP, from which the Government of Madhya Pradesh has adopted the best practices and has replicated in the other districts.

- CDC has formed VHSC in more than 20 villages, and they are functioning well.
- CDC has also formed a Women Self Help Group which comprises more than 1500 women members who have improved their livelihood through small initiatives which have been guided by CDC.
- CDC is also working for education and eradication of HIV AIDS among the female sex workers.
- The Organization has focused on education of the global warming issue among the tribals and implementation of a project in the protected forest area with the support of WWF.
- CDC, through the PACS program has empowered women and functionally educated them to be able to access the Government development programs and plans.
- CDC is currently to improve the living conditions of the tribals around the protected forest areas who face the cost of the forest and wild life conservation by guiding them into a sustainable alternate source of income which is focus on the farming of horticulture crops. CDC is working



with these people on integration of livelihood and conservation through vegetable cultivation, NTFP processing, organic farming etc.

## The Initiative

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### *Promotion of Sustainable Livelihood in Protected Areas near Kanha National Park in Balaghat District of Madhya Pradesh*

CDC intervened in the villages in the protected area for identifying a sustainable livelihood for these tribal people. The project was supported by Department of Science and Technology and by World Wide Fund for Nature. The organization introduced sustainable agriculture through WADI, vermin compost and vegetable cultivation.

Vegetable cultivation by the community members and subsequent sale of the vegetables in the local weekly market was the most profitable and sustainable activity identified in the project. The causal factors of the success are

#### DEMAND IN THE LOCAL MARKET

Markets where vegetables can be sold and their demand in each market was crucial to plan the expected yield from the farms. All the activities need to be planned according to the market demand.

#### COMPARATIVE IMMEDIATE RETURNS ON INVESTMENT

The more profitable the crop the better the returns. Also, the farms being small in size required to grow crops with larger profit margins as economies of scale wouldn't be that effective.

### *Objective*

The objective is to provide a sustainable livelihood security to the farmers located in protected areas of forests. This is to be attained by working on three areas:

- Improvement of livelihood of farmers by guiding them into an alternate source of income that would integrate the livelihood and conservation. The farming of horticulture crops has been identified as a possible sustainable source of income.
- Development of market linkages for the sustainable source of income for the identified tribal families.
- Organization of the local communities to address the common issue of land rights under FRA.

### *Scope*

Project Area: List of Gram Panchayat and Villages

The project is being implemented in 28 villages of 10 Gram Panchayats in the Baihar Block of Kanha Tiger Reserve. These are as follows:

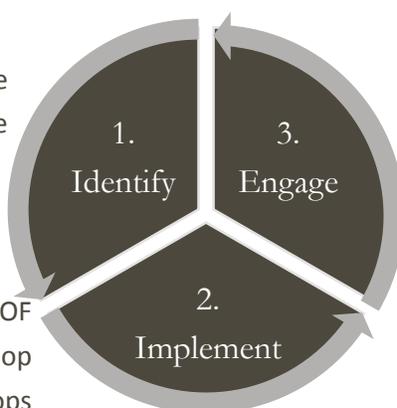
| S. No. | Panchayat | Villages  |
|--------|-----------|---|
| 1      | Sijora    | Khursipar, Komo, Baijalpur, Farmtola, Nunkatola, Kaliyatola |
| 2      | Jaitpuri  | Jaitpuri, Juaditola   |
| 3      | Kugaon    | Dhaniyajor, Arandi, Kugaon                                  |
| 4      | Ramhepur  | Ramhepur  |
| 5      | Pondi     | Pondi, Agantara   |
| 6      | Khajra    | Chhinditola, Saraitola, Khajri                              |
| 7      | Mana      | Narghutola, Lapti, Mana                                     |
| 8      | Bhalapuri | Bhalapuri, Balgaon, Parsatola                               |
| 9      | Kadla     | Kadla, Hirapur  |
| 10     | Samariya  | Bilaikhar, Samariya, Dungariya,                             |

## ***STRATEGY***

The process of making livelihood sustainable is one of continuous improvement. It can be achieved by three major steps, which can form a self-sustaining chain.

IDENTIFY FARMERS with the adequate resources to make the cycle sustainable

Promote FARMING OF HORTICULTURE CROPS, develop market linkages so that the crops can be sold so as to create an earning source for farmers.



TRAIN AND ENGAGE FARMERS to run the cycle and include more members into the chain to attain economies of scale

### ***Identify***

The project would identify and target 300 families in 28 villages in the Baihar district. The families have been identified based on the following criteria

- Appropriate land holding
- Accessibility to livelihood assets.
- Migration status
- Willingness & interest
- Geographical location

## *Implement*

### PROMOTION OF HORTICULTURE CROPS

The project should select the horticulture crops with the following criteria:

- higher shelf life
- Suitability of micro climatic, soil, water availability with the willingness and the interest of the farmers.
- Subject to the value chain analysis so as to add value and accessibility to wider market and possibility to attain economies of scale.

### DEVELOPMENT OF MARKET LINKAGES

The linkages to the local markets, markets of the nearby locations should also be verified and developed so that the farmers get the best price for their produce. Appropriate markets should be identified as per the quantity of the produce so as the farmers get the best price for their produce. The market linkages to the institutional buyers as also to be identified so that the farmers could sell the produce to the resorts and the hotels in the Kanha National park area.

### CONVERGENCE WITH MGNREGS

MGNREGS allows investment on individual farmer's land for promotion of agriculture. The project will develop proposals for compost pits and individual/community water harvesting storage structures so that the selected farmers are able to maximize production from horticulture crops.

## *Engage*

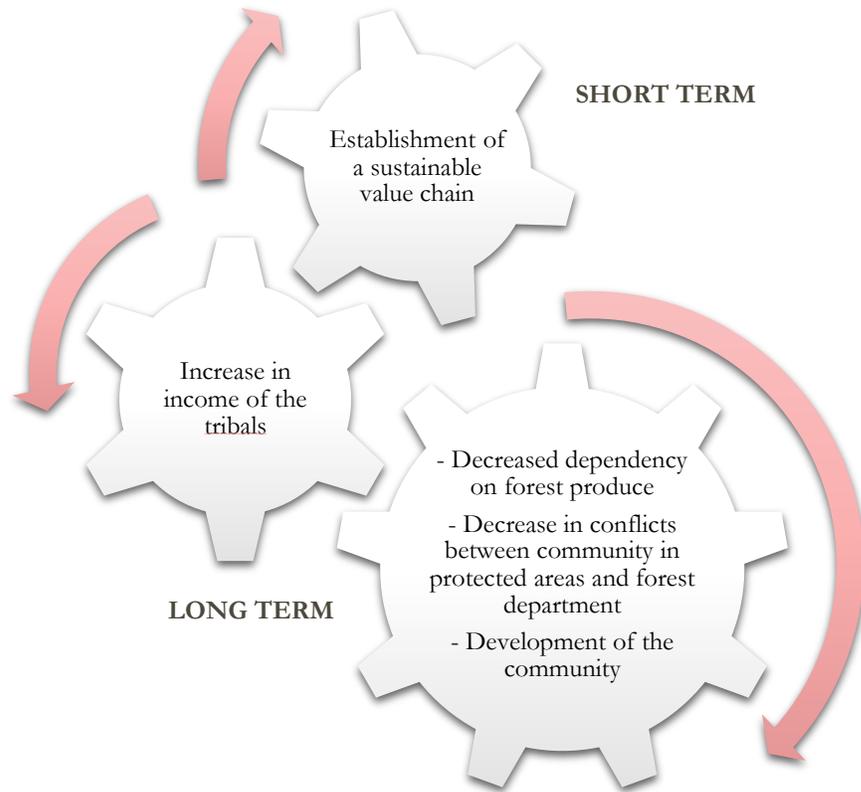
### TRAINING AND ENGAGEMENT

Train the farmers in the intricacies of the value chain so that they can help to run the chain in a better way. The farmers help in including the other non-members be the part of the value chain so that they can attain the economies of the scale. The training shall also focus on the education about the baseline survey, schemes of the horticulture department, market assessment and surveys.

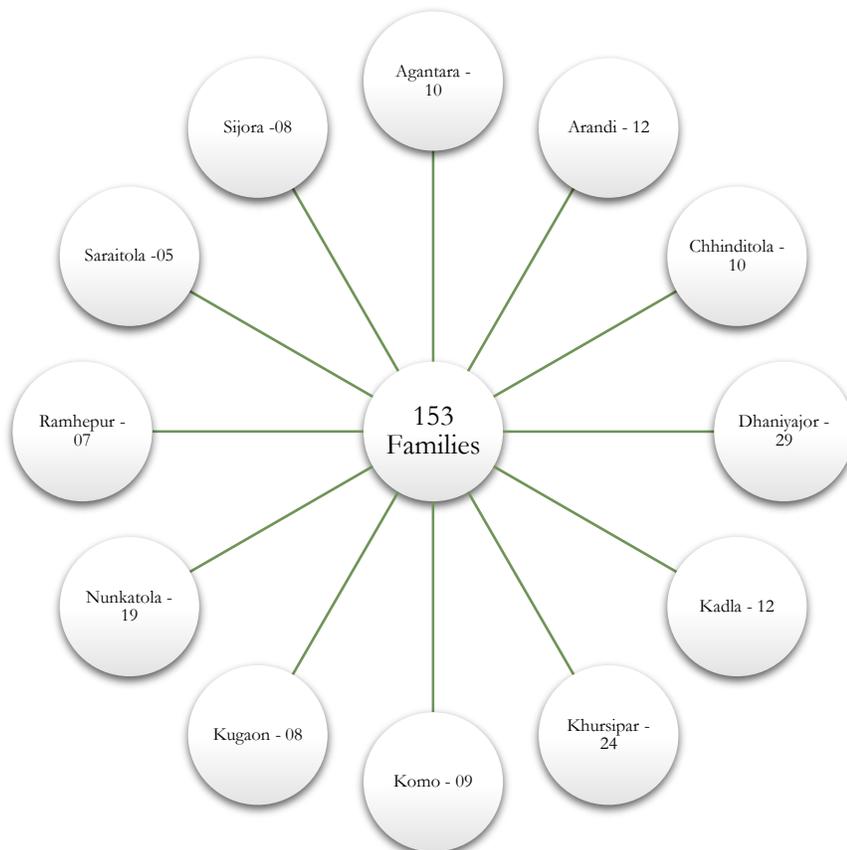
## *OUTPUT*

- 1 Baseline Survey that provides information and parameters for selection of families
- 3 Value Chain studies on identified horticulture crops
- Micro plans for 300 families
- 300 families trained in vegetable cultivation
- 300 families trained in composting, its management and use
- 300 families adopting at least one of the horticulture crops
- Linkages with retail and institutional buyers established
- Follow up on FRA claims in all the Gram Panchayats

Further, the short term and long-term outputs from the established value chain can be stated as mentioned below.



## Current Status



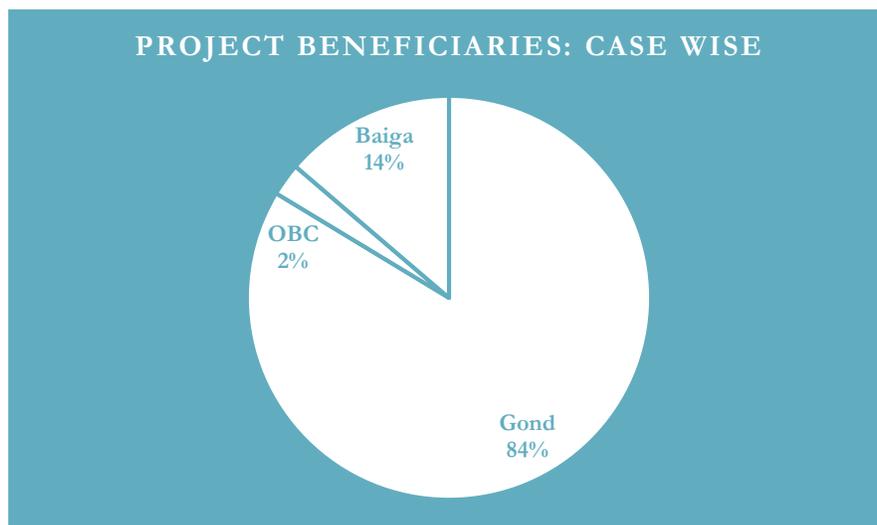
### *Number of Families:*

The project aims to include 300 families over the span of two years. Currently, 150 families are selected and trained for cultivating Potato, Ginger and Turmeric. After technology transfer and value chain is established, 150 families more shall be added to it.

**Number of Beneficiary Families currently under the project**

### ***Selection of Families***

The project aimed to help farmers who were not as better off as the others. The criteria for this was: size of land holding; availability/accessibility to livelihood assets (e.g. water, credit etc); migration status, willingness and interest in undertaking horticulture activities. The first 150 families identified have small land holdings, migrated from the jungles and were equally interested to take the risk of sowing vegetables. A break up of these families is given below:



**Demography of Project Beneficiaries**

### ***Training***

Training programs on seed treatment, cultivation, processing and marketing were conducted. The agriculture and horticulture department's field staff have imparted the training. Coordinated efforts of the CDC staff and the community members have made vegetable cultivation an important income generation activity. In one year this activity generated on an average 20 man days of work thus contributing to employment generation.

CDC has also been intervening in the villages for the implementation of FRA. Claims have been registered though they are at different stages of processing, especially claims over community forest land.

### ***Results***

At present, 150 families have been taught farming of potato, arbi, ginger and turmeric. Seeds have been given to farmers at half their cost and their supervision surveys are being conducted.

A survey of 46 families was conducted to assess the output of first year.

The average farm holding has been around 4-5 acres. Currently, the entire farm is not utilized for sowing. 80% farmers are using less than 10% of their farms for sowing these horticulture crops. Most of the farmers produced potato – the pink variety. A handful of them produced ginger and turmeric.

Overall the project generated an average of 2.5 quintal of potato, 10 kgs of ginger and 15 kgs of turmeric per family in its first year.

### *Need for Market Linkages*

Currently, the farmers are reluctant to increasing sowing area because:

1. They produce mainly for self-consumption
2. They have no knowledge of how markets function and how to take their produce to the market.
3. They are clueless about how much seed they should sow.
4. They don't have sufficient money to invest in large quantities of seed.

Therefore, until the farmers sell their produce, no sustainable livelihood can be generated. Therefore, for the project to be successful, it is an imperative to establish market linkages in all possible markets for the following reasons:

- I. To avoid self-consumption:
- II. To determine the quantity of seed that can be sowed
- III. To generated revenues and thus cash flows for increasing crop yields
- IV. To become self-sustainable in the long run

## Project Mission

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To identify necessary market linkages in order to enable farmers to sell their horticulture output in local markets

### *Location*

Village: 19 villages around Gadi

Tehsil: Baihar

Distict: Balaghat

### *Crops*

Potato, Ginger and Turmeric

## Approach to the Project

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- A. Assessment of Farm potential
- B. Assessment of resorts as a market linkage (SURVEY) [Linkages other than LOCAL VEGETABLE MARKETS]
- C. Analysis and Profitability of the Chain
- D. Recommendations

### A) Assessment of Farm Potential

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#### *NEED*

Vegetable markets around Gadi village were of various sizes. Each vegetable market had a different demand for Potato, Ginger and Turmeric. Hence, to decide upon the number and size of markets that needed to be tapped for selling the farm produce, it was necessary to understand 'How much' the farmers can produce.

#### *METHODOLOGY*

##### 1. Farm Visits

To assess the farm potential of the beneficiary families, it was necessary to understand how the farm proceedings go on. The kind of farming practiced here would determine whether increasing the yield is technically feasible.

Farm visits were carried out to understand the status of farming practices and the scope of improvement.

Under these visits, following activities were carried out:

#### *Interaction with farmers*

The farmers in different villages were interviewed to understand their experiences and constraints. The number of farmers visited in each village are tabulated below:

The interviews were conducted to understand the mind set of farmers and also listen to their concerns towards increasing produce:

#### *Visiting the farms*

The farms were visited to see the on-field conditions and see the quality of vegetables that are being grown. It also helped to understand the techniques that were used in farming and ask questions about areas where improved technology can be utilized to increase productivity

## **2. Calculation from survey results**

A survey was conducted to know the yield vs seed sown, land area underutilization and total expenditure. The list of villages is given below:

| <b>Village/Panchayat</b> | <b>Number of Beneficiaries</b> | <b>Beneficiaries Surveyed</b> |
|--------------------------|--------------------------------|-------------------------------|
| Kadla,Hirapur/Kadla      | 12                             | 7                             |
| Khurshipar/Sijora        | 23                             | 13                            |
| Farmtola/ Sijora         | 8                              | 8                             |
| Kugaon/Kugaon            | 8                              | 4                             |
| Ramhepur/Ramhepur        | 7                              | 7                             |
| Saraitola/Saraitola      | 5                              | 5                             |
| Nunkatola/ Sijora        | 19                             | 2                             |

To calculate the farm potential, the farm output at current productivity with 100% utilization was calculated. The total yield thus calculated was taken to be the potential yield. This involve assumptions that the productivity of the famers will be only as good as the farmer with highest productivity.

#### **TOOLS USED**

1. Farm Visits: Interviews
2. Calculation from Survey Data: Survey of a sample and Statistical Analysis

#### **RESULTS AND FINDINGS**

##### *Farm Visits*

To demonstrate how interactions at the Farm went on, we describe a few sample interviews a. Interview with Sheher Singh Merawi of Kadla Village.

Q. What crops are they sowing?

A. I sow Paddy, Wheat, in the main farm and Potato, Arbi in the backyard of my house.

Q. Do you sow Ginger or Turmeric?

A. I don't have knowledge of Ginger but I have tried Turmeric once

Q. How much of each did you produce?

A. I produced around 8 quintals Potato last year but this year my crop got damaged due to rains. Turmeric produce was about 25-30 kgs and Arbi was 2 quintal.

Q. Did you sell in market? If yes, at what price?

A. I grew vegetables only for self-consumption. Farms



Fig. View of Sheher Singh's Farms

In market, they would fetch me around 15-20 Rs/kg for potato, 60 Rs/kg for Ginger. I have no idea of Turmeric.

Q. What is the time of sowing and harvesting?

A. Potato is sown in October-November and by January we can harvest them. Ginger also around the same time.

Q. Why is the land utilization low?

A. I don't know how to sell that much produce. Also, wild animals continuously attack our farms and destroy our crop.

Q. What wild animals attack your farms? How frequently do they attack your crops? And how much crop do they destroy?

A. A lot of them. Wild Boars, Fox, Bisons. The most fearful is Porcupine. Animals come almost every night. And in some farms they have destroyed more than 90% crop.

Q. What action do you take against their attack?

A. We can't kill them. Just have to chase them away.

Q. Ok. So, what is the maximum you can produce on this land?

A. With complete land, I can produce around 25 quintals.

Q. What are the problems in doing that?

A. Also, I will have to hire manpower and buy fertilizers, which will cost me. Right now I do it myself. Also, irrigation means are not available on that big scale. Wild animals to destroy our crops.

Q. If there is sale, how is the transport arranged?

A. Just like we do for paddy and wheat. We rent a 2-tonne Tata Ace and send it to society. The society takes care of further sale. We know nothing beyond that.

b. Interview with Mother of Nainsahi Pattawi of Kadla Village. (only important questions)

Q. Why don't you sow more potato?

A. If we get more seeds, we will. Right now we were given only 20kgs.

Q. Where did you learn farming?

A. We were sent to Mandla by government to learn farming. In Mandla, there are farms, as big as 80 acres and they use drip irrigation. They use lot of fertilizers. Their production is very high

Q. Since you have learnt their farming, how much can you produce?

A. There in Mandla, farmers earn revenue of 22 lakh from 1 acre. We cannot do that much. We don't use fertilizers because it will render our soil sterile. Also, our crops get damaged by weed. We cannot afford weedicides.

Q. So what are the treatments you do to soil?

A. Only manure and little urea.

*Calculation from Survey Data (REFER APPENDIX A for Excel Sheet)*

A survey of a sample of 46 farmers revealed the total produce for the year and the land utilization of farms. The survey data is attached in the Appendix.

The results from the survey reveal that:

- i. Number of Farmers: 46
- ii. Total Land Available: 176.53 acre or 17653 decimal (1 acre = 100 decimal)
- iii. Total Land under cultivation: 7.24 acre or 724 decimal
- iv. Total Quantity of Crops produced:

| Crop     | Grown by # of Farmers | Total Quantity | Average per Farmer |
|----------|-----------------------|----------------|--------------------|
| Potato   | 40                    | 9770 kg        | 244 kg             |
| Arbi     | 43                    | 3437 kg        | 80 kg              |
| Ginger   | 11                    | 94 kg          | 11 kg              |
| Turmeric | 12                    | 162 kg         | 12 kg              |

- v. Total Farm Output: 13463 kgs
- vi. Average Productivity per decimal Land (e/c) : 20 kg/decimal
- vii. Standard Deviation of Productivity: 13 kg/decimal
- viii. Maximum Productivity: 300 kg/decimal (Dulan Singh Taram of Balgaon)
- ix. Land Utilization (c/b): 4% (approx.)

Assumptions:

1. With experience in growing vegetables, productivity of farmers will rise upto 2 standard deviations from current average (up to 95% confidence levels)
2. Land utilization will increase to 25% of total land used
3. The production of Arbi shall be stopped and that land be used for potato.
4. Ginger and turmeric's percentage share in total output to remain same.

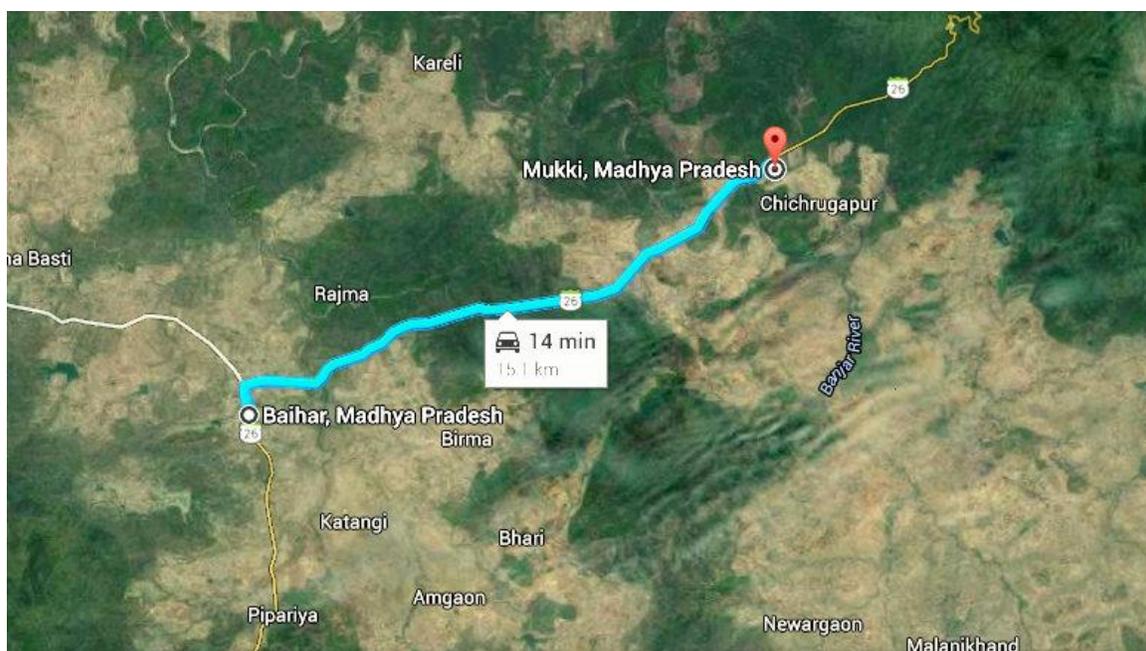
Estimation of Potential Farm output:

- i. Total land area under cultivation of vegetables (25% of total land) : 44.13 acre or 4413 decimal
- ii. Average Productivity/decimal (average+2\*std.dev) : 4600 kg/acre or 46 kg/decimal
- iii. Farm output for 46 farmers (i\*ii) : 203516 kg or 2035.16 quintal
- iv. Total Farm Potential (150 farmers) : 663639 kg or 6636.39 quintal

## B) Assessment of resorts as a market linkage (SURVEY)

The presence of numerous resorts and hotels in the Kanha National Park area and the buffer zone signals towards a presence of market for the farms produce like potatoes, onions, ginger, and other fruits and vegetables. The resorts and the hotels should have the daily requirement of the vegetables for their incoming guests which come in huge numbers during the season when the park is declared open for the visitors, i.e. from October to June of every year. The hotels and resorts would also require the produce for their staff which they have to maintain throughout the year. The resorts and the hotels in the buffer zone and the Kanha National park area are a good market for the farm produce by the tribals because of the following reasons:

- Very limited presence of vegetable markets in the nearby area. The nearest market is at Baihar.



- Daily requirement of fresh vegetables during the peak season and occasional demand for the staff during off season.
- The foreign guests ask for the local tribal products which they can take home. Example: honey and other herbs.
- Resorts and hotels might include the procurement of the vegetables from the tribals for their empowerment as a part of their CSR activity.

So a survey was initiated for the same to create awareness of the project undertaken by CDC and to get an idea of the demand of the vegetables by the resorts and hotels located between Baihar and Mukki Gate.

The brochure prepared was distributed to each resort and the answers from the managers to a questionnaire were evaluated to envision the demand and their interest to the initiative

## Questions

- Q1 What is the peak season?
- Q2 Kind of tourists that visit the resort?
- Q3 What is the mix of international and national tourists?
- Q4 How much vegetable is consumed?
- Q5 Where are the vegetables sourced from?
- Q6 What is the procurement procedure?
- Q7 What is the cost?
- Q8 Do tourists buy locally grown products?
- Q9 Do you sell any of the local products to the tourists?
- Q10 Would you be interested in tribal grown products to help the community?

All the resorts and the hotels surveyed were asked about the option of procurement of potatoes, turmeric, ginger and honey from the tribals. The gist of the discussion with each of the hotel manager of the resorts and the hotels are as follows:

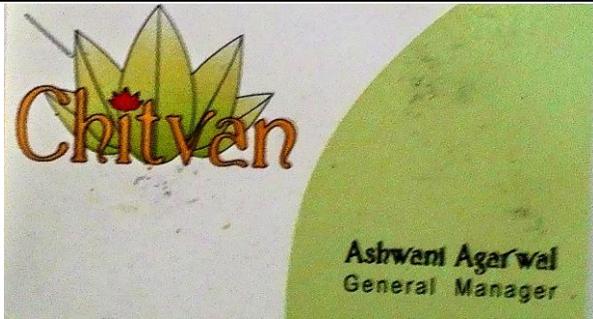
### KANHA SAFARI LODGE



**Mr. M. L Sharnagat, Manager**

- ❖ Will procure around 50% of the total demand of potatoes from the tribals.
- ❖ Preference will be given to white potatoes
- ❖ Will sell/consume honey collected by the tribals

## CHITAVAN RESORT



Mr. Ashwani Agarwal, General Manager

- ❖ The resort can procure all the potatoes from the tribals. The resort has a requirement of 1 quintal per month.
- ❖ This resort is already involved in CSR activities in and around the buffer zone of the Kanha National park
- ❖ Will sell/consume honey collected by the tribals. The resort already has a souvenir shop for their guests.

## ROYAL BAMHNI RESORT



Mr. Ramendra/ Mr. Samiran Majhi, Managers

- ❖ Can sell/consume Palash honey
- ❖ Might procure vegetables from the tribals. The requirement will be dependent upon the number of guests.



## INFINITY RESORT



**Mr. Naresh Suyal, Assistant Resort Manager**

- ❖ The resort will only procure white potatoes
- ❖ The resort is already involved in lot of CSR activities through its NGO the Corbett foundation.
- ❖ The resort wants all the requirement of the vegetables and fruits to be fulfilled.
- ❖ Quality is imperative and wants authenticity of the honey supplied.
- ❖ Local herbs and other tribal products can be sold to the tourists as well.

## THE HORNBILL

**Mr. Vijayendra Lal, Manager**

- ❖ This resort can procure vegetables during the off season as well.
- ❖ Requirement will be for white potatoes
- ❖ During the peak season, the resort will procure from the sources which are cost effective.
- ❖ The resort is interested to sell handicrafts manufactured by the tribals as well.



## KANHA JUNGLE LODGE

**Mr. Tarun Bhati, Manager**

- ❖ The resort was not interested with this initiative





## PEEPAL RESORT

**Mr. Anurag Pandalwar, Resort Owner**

- ❖ The resort is ready to procure vegetables from the tribals but in small quantities. The delivery should be in every 15 days.
- ❖ Can use White and Red potatoes in 1:1: ratio
- ❖ The resort wants to sell/ consume pure honey collected by the tribals.

## KANHA MEADOWS RETREAT

**Mr. Bhagwat Garhewal, Manager**

- ❖ The resort will procure the vegetables if delivered.
- ❖ The resort can procure Red potatoes but the quality is important.
- ❖ The resort wants to sell/ consume pure honey collected by the tribals.



## ROYAL TIGER RESORT

**Mr. Salikram Chauhan, caretaker**

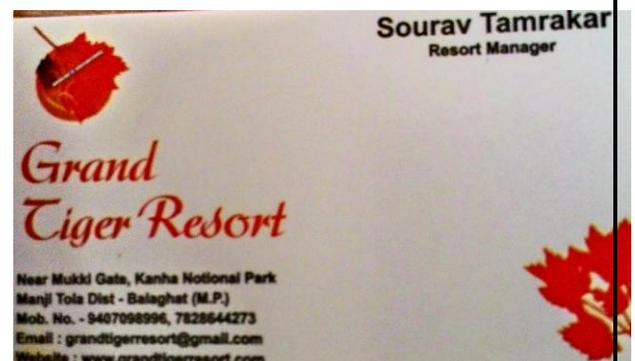
- ❖ The resort is ready for procurement from the tribals.
- ❖ The resort can use red potatoes if the quality is good.
- ❖ The resort has recommended that the supply should be for all required vegetables.



## GRAND TIGER RESORT

**Sourav Tamrakar, Resort Manager**

- ❖ The resort is ready for procurement from tribals.
- ❖ The demand is mostly during the festivals.
- ❖ The procurement can be done twice a month.
- ❖ The tribal products like honey and chips can be sold to the tourists.





## SINGHINAWA RESORT

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**Mr Mulayam Chand, Manager**

- ❖ The resort uses the vegetables from their own farm house.
- ❖ The resort seemed hesitant to procure the vegetables from the tribals.

## BANJARA TOLA

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**Mr. N. S. Hada, General Manager**

- ❖ The resort can procure the vegetables but on a credit period of 20 days
- ❖ The resort can use/sell Palash honey.
- ❖ The resort has zero compromise on quality on every product it buys.

## KANHA PRIDE RESORT

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**Mr. Prakash Singh Chauhan, Manager**

- ❖ The resort might not require vegetables on big lots.
- ❖ The resort can only sell/consume Palash honey.

## HOTEL KANHA

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**Mr. Ashish Mishra, Hotel Manager**

- ❖ The resort maintains a constant stock of vegetables for guests which is replenished as soon as the stock depletes.
- ❖ The resort can use red potatoes and Palash honey
- ❖ 20-30 Kg would be the starting order of the potatoes.

## C) Analysis and Profitability of the Chain

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Based on the survey and evaluating the responses, growing red potatoes and ginger and delivering the same to the resorts and the hotels in the buffer zone will not be a sustainable idea due to the following reasons:

- 1) Unpredictable visits by the hotel guests due to limitation in the number of gate passes to the Kanha National park. The demand of the vegetables will depend upon the number of guests in each resort. Therefore the demand of the vegetables cannot be narrowed down to any particular number.
- 2) The hotels and resorts expect the delivery of the vegetables within 2 days from the day they ordered. The transportation costs for 3 ton from Garhi to Baihar, as per the enquiry, would come up to Rs 1000. So the sales from the vegetables should at least cover up the cost of Rs 1000 which has a higher probability of occurrence if the total order of all the resorts are consolidated.
- 3) It is highly unlikely that the hotels and the resorts would just order the potatoes and ginger from one source and all other required vegetables from Baihar. The resorts will always see where they can get a better price for the total basket of vegetables rather than looking into individual line items in the list of requirements. As the tribals have just started with the red potatoes and ginger, it is difficult to include the resorts and the hotels as potential customers.
- 4) The harvesting month for potatoes and ginger is January. As per our calculations, the maximum potential of all the farms is up to 6000 tons. 6000 tons is too big a quantity for all the resorts to consume in a matter of 1 month. As there is less probability of storage areas in the villages. The total quantity produced is to be sold off within that month itself. The resorts have the requirement of vegetables from October to June and they hope to see the vegetables ready as per their immediate requirement. So it does not provide them with an incentive to shift to an alternate source for just one month and just for potatoes and ginger.
- 5) The high demand of red potatoes in the Baihar and the nearby regions does not indicate that the shift from red potatoes to white potatoes is attractive. Most of the resorts prefer white potatoes to red potatoes.

### *Creation of a separate value chain for the resorts and the hotels at the Kanha Tiger Reserve buffer zone.*

There are around 20-25 resorts and hotels between Baihar and Mukki gate. These resorts procure their vegetables and other requirements as per their occupancy, from Baihar and Manji Tola village. Creation of a separate value chain for catering the requirements of all the resorts and the hotels during the peak season can be deliberated on.

Assumptions made:

- 1) All the resorts will accept red potatoes
- 2) The transport vehicle is readily available for meeting the demands.
- 3) The demand is as per the survey taken so as to cover up the fixed costs.

#### Demand calculations

|   |      |
|---|------|
| No of hotels in the Kanha Tiger Reserve Buffer Zone                                 | 25   |
| %age of hotels enjoying high visits during peak season                              | 60%  |
| No of hotels from where the order of vegetables are expected                        | 15   |
| No of sacks of potatoes expected from each resort per month                         | 2    |
| Kgs per sack  | 50   |
| Kgs per resort per month  | 100  |
| No of months in peak period October to June   | 9    |
| Requirement per resort for a total year   | 900  |
| Total requirement of potatoes for the region in tons                                | 13.5 |
| Total number of trips required for catering to the requirement<br>(3 Tons per trip) | 5    |

#### Variable costs

|   |        |
|---|--------|
| Average cost of production of red potatoes per ton (Worst case) | 9000   |
| Total cost of production  | 121500 |
| Loading-unloading per sack                                      | 3      |
| Price of sack   | 8      |
| Total number of sacks   | 270    |
| Miscellaneous expenses  | 2970   |
| Total variable costs  | 124470 |

#### Fixed costs

|  |       |
|--|-------|
| Total transportation costs (Rs 1000 for a 3 Tonne vehicle) | 5000  |
| Other miscellaneous expenses for 9 months                  | 70000 |
| Total fixed cost   | 75000 |

#### Contribution & Margin

|   |        |
|---|--------|
| Average selling price of the red potatoes per Ton | 15000  |
| Total selling price                               | 202500 |
| Contribution of the sales                         | 78030  |
| Total margin                                      | 3030   |
| Total margin in %age                              | 2%     |

The above mentioned calculations are the worst case scenario. We have assumed that the total cost of the red potatoes per ton would be around Rs 9000. On achieving the economies of scale and the maximum productivity each farmer can reduce the total cost of production down to Rs 4000. In the best case scenario the total margin can exceed 50% in total.

If the breakeven is to be calculated even for one individual trip, (without considering an established business of supplying the resort), any particular tribal can break even by just supplying 5 sacks (5\*50 kgs = 250 kgs) of potatoes, in even a 3 Ton vehicle.

#### Break even per trip calculations (Low demand conditions)

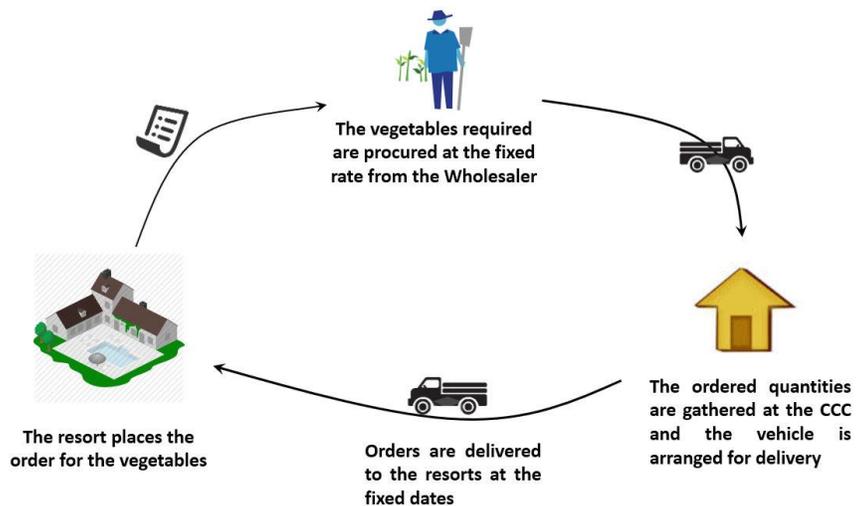
|  |          |
|--|----------|
| (i) Total fixed cost per trip (to be max)                      | 1500     |
| (ii) Contribution Margin per ton                               | 5780     |
| Proportion (i)/(ii) (No of tons to be supplied for break even) | 0.259516 |

So one can just cater to 3-4 resorts (small order quantity – order quantity less than 3 tons) and still enjoy margins. If we consolidate the orders of most of the resorts and arrange for 2-3 trips catering to all the resorts, the margins would be higher.

## D) Recommendations

The resorts are likely to source the potatoes and ginger from one point. As per survey they would like to get all the vegetables at one point of time from one source to save time and to keep the transactions smooth.

The constant demand of groceries and vegetables by the resorts and the unavailability of appropriate means to meet them, paves a way towards a necessity of designing a separate supply chain which would help in delivering the required vegetables and the groceries at the door step to the resorts. The vegetables when procured by the wholesalers can help to procure the vegetables at 20-40% less price than of the market price. The cost of transport being from a price of 1000-15000 per trip, is easy to break even, considering the less price of procurement.



The idea can be broken up in the following way.

- The resorts and hotels place the order for their requirement a day or 2 days before the fixed delivery. The delivery shall take 2 days in a week.
- As per the orders, the fresh vegetables shall be bought from the tied up wholesalers. The same vegetables shall be consolidated at the common place in Garhi. The procurement can all be done from Baihar side. If the delivery is done from Baihar, The cost of transportation would be lesser. If the vegetables are produced, they should be produced as per the demand (Eg. The tribals should shift to white potatoes from red potatoes)
- Depending upon the order size, the vehicles shall be booked as a whole or on part load basis. All the resorts lie on the same road, from Mukki to Baihar.

The delivery is to be done at the fixed dates (2-3 days a week).

## Appendix A

### INTERVIEWS OF FARMERS TO ASSESS THEIR VIEWS ON INCREASING FARM OUTPUT

#### a. Interview with **Sheher Singh Merawi of Kadla Village.**

R. What crops are they sowing?

B. I sow Paddy, Wheat, in the main farm and Potato, Arbi in the backyard of my house.

Q. Do you sow Ginger or Turmeric?

A. I do not have knowledge of Ginger but I have tried Turmeric once

Q. How much of each did you produce?

A. I produced around 8 quintals Potato last year but this year my crop got damaged due to rains. Turmeric produce was about 25-30 kgs and Arbi was 2 quintal.

Q. Did you sell in market? If yes, at what price?

A. I grew vegetables only for self-consumption.  
*Farms*



*Fig 12. View of Sheher Singh's*

In market, they would fetch me around 15-20 Rs/kg for potato, 60 Rs/kg for Ginger. I have no idea of Turmeric.

Q. What is the time of sowing and harvesting?

A. Potato is sown in October-November and by January, we can harvest them. Ginger also around the same time.

Q. Why is the land utilisation low?

A. I don't know how to sell that much produce. Also, wild animals continuously attack our farms and destroy our crop.

Q. What wild animals attack your farms? How frequently do they attack your crops? And how much crop do they destroy?

A. A lot of them. Wild Boars, Fox, Baisons. The most fearful is Porcupine. Animals come almost every night. And in some farms they have destroyed more than 90% crop.

Q. What action do you take against their attack?

A. We can't kill them. Just have to chase them away.

Q. Ok. So, what is the maximum you can produce on this land?

A. With complete land, I can produce around 25 quintals.

Q. What are the problems in doing that?

A. Also, I will have to hire manpower and buy fertilizers, which will cost me. Right now, I do it myself. Also, irrigation means are not available on that big scale. Wild animals to destroy our crops.

Q. If there is sale, how is the transport arranged?

A. Just as we do for paddy and wheat. We rent a 2-tonne Tata Ace and send it to society. The society takes care of further sale. We know nothing beyond that.

c. Interview with **Mother of Nainsahi Pattawi of Kadla Village.** (only important questions)

Q. Why don't you sow more potato?

A. If we get more seeds, we will. Right now, we were given only 20kgs.

Q. Where did you learn farming?

A. We were sent to Mandla by government to learn farming. In Mandla, there are farms, as big as 80 acres and they use drip irrigation. They use lot of fertilizers. Their production is very high

Q. Since you have learnt their farming, how much can you produce?

A. There in Mandla, farmers earn revenue of 22 lakh from 1 acre. We cannot do that much. We do not use fertilizers because it will render our soil sterile. Also, our crops get damaged by weed. We cannot afford weedicides.

Q. So, how much maximum output can your farm produce?

A. Maybe around 2-30 quintals.

Q. So what are the treatments you do to soil?

A. Only manure and little urea.

## SURVEY RESULTS FOR POTENTIAL FARM OUTPUT



Crops & Demand -  
Final.xlsx

Double click – Final.xlsx