

## **Participatory Enterprise Management for Procurement, Processing and Marketing of Fruits and Vegetables - A Case Study of Himalayan State Uttarakhand (INDIA)**

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**Abstract:** *Identification of local micro resources through involving local communities, building their capacity for better farm management practices, introducing high yielding varieties, improved farming techniques, processing and marketing of fruits and vegetables could result in mitigating poverty by getting better prices of products, and employment generation locally. An effort was done by ASEED in village Ghandalu under one umbrella of food and fruit processing unit with assured purchase of their produce locally with better price and cash payment. Average annual turn-over of processing unit is Rs. 5 – 7 lakh, benefit cost ration for different commodities like amla pickle, squashes of borans flower and malta is calculated as 2.15:1, 2.11: 1 and 2:1 respectively whereas benefit cost ratio for chilli powder, coriander, garlic paste, mango pickle, pulses, finger millets, and turmeric is promising benefit to communities. The beneficiaries are mainly the women with assured employment throughout the year within their village itself. Annually 1700 – 2300 person days are generated, directly benefiting the community with an annual income of Rs. 1.70 – 2.25 lakhs as labour work in sorting, grading, washing, peeling of fruits and vegetables for processing as well as packing etc.*

**Keywords:** 1. ASEED – Asian Society for Entrepreneurship Education and Development.  
2. FPO – Food Product Order.

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### **I. Introduction**

India with diversity of agroclimatic zones has enormous possibilities for growing varieties of fruits and vegetables. This enabled India to be the largest producer of fruits in the world and second largest producer of vegetables after China. In last 6 decades, lot of improvement has been made in vegetable production, at present vegetables are cultivated in 9.21 million ha (2.99 fold) and average per hectare productivity is 17.2 tonnes/ ha (2.96 fold). In India produces 146.55 million tonnes of 40 different kind of vegetables which is 8.88 fold improvement in production (AB Rai et. al, 2014). As vegetables being rich sources of anti-oxidants, vitamins, minerals and fibers, more vegetables are preferred by Indian communities in their diet. But against per capita availability of vegetables i.e 350g, consumption is 130g against the recommended per capita vegetables is 300g (P S Naik, et. al, 2013). Horticulture has gained its credibility for providing sustainable income, nutritional security and for providing employment opportunities to the rural as well as urban communities of nation. Horticulture is contributing about 20 per cent of the GDP in agriculture sector (Naik et. al, 2013). In India, fruit are cultivated in 6.98 million hectares, vegetables in 9.21 million hectares and produces 81.285 million metric tonnes of fruits and 146.55 million metric tonnes respectively (NHB, 2012–13). There are tremendous opportunities for exporting fruit and vegetables. India exports fruits and vegetables to UAE, Bangladesh, Malaysia, UK, Netherland, Pakistan, Saudi Arabia, Sri Lanka and Nepal. During the year 2013–14, India exported fruits of worth Rs. 3298.03 crores and vegetables worth Rs. 5462.93 crores. In fruits Mangoes, Walnuts, Grapes, Bananas, Pomegranates contributes major part whereas in vegetables Onions, Okra, Bitter Gourd, Green Chillies, Mushrooms and Potatoes and other vegetable commodities are exported (APEDA, undated). There and then India's share 1% in global market in the export business of fruits and vegetables (NHB, 2012 – 13).

In India, there are around 4533 fruits and vegetables processing units having capacity to process 2.68 million tones of fruits and vegetables (P S Naik et. al, 2013). There are facilities of 6,300 cold storage facilities with an installed capacity of 30.11 million tonnes. But there and then more than 18% fruits and vegetables produced are get wasted annually which worth Rs. 13,300 Crores (CIPHET, 2013). To prevent the post-harvest wastage of fruits and vegetables as well as to promote the Foreign Direct Investment (FDI) in the country. India

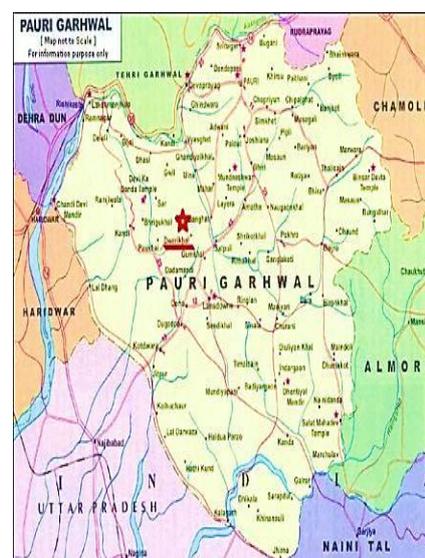
is planning to establish more than 50 food parks and 30 mega food parks in different agri zones with the facilities of cold storage, sorting, grading, processing, packaging and quality control along with R&D activities. Out of 50 food parks 22 are functional in different parts of the country (ASAA, 2013). Out of total approved 15 mega food parks 08mega food parks are made functional in different states of the country like Andhra Pradesh, Punjab, Jharkhand, Assam, West Bengal, Uttarakhand, Tamil Nadu and Karnataka. In principle remaining 07 mega food parks are also approved. On the other hand, import of capital goods for export of agricultural products and their value added products under the Export Promotion Capital Goods (EPCG) are allowed duty-free, simultaneously import on all food processing machinery is allowed freely with low levels of duties in country.

In India, there are still many untapped resources which need proper attention and technical inputs to bring them into proper utilization with efforts of mobilization of community, and improving their capacities for value addition to fruits and vegetables as a livelihoods / enterprises would help in poverty alleviation. Various efforts are being made by the GOs and NGOs to improve the livelihoods of weaker sections of the community by building their capacity for handling technologies related to applied agriculture such as apiculture and cultivation of area specific vegetables and their value addition in different parts of underdeveloped world (M. Nedunchezgiyan et. al, 2013 and S. Ramanathan et. al). In India, various efforts on similar line are made to reach out to poor from poverty by building their capacities, financially strengthen them for self-reliance with employment generation activities, strengthen to make them capable to run the micro-enterprises independently (M. Nedunchezhiyan, et. al 2013). Although, India being a resource rich country having higher population pressure for nutrient rich food which could be met with introduction of use of fruits and vegetables in their daily life and to explore the area specific fruits and vegetables their processing and marketing can directly bring unused lands under cultivation, employment generation.

### Study Area

Uttarakhand being 20th, most populous state, it has population of 101.17 lakh comprising 51.54 lakh male and 49.63 females (Census, 2011). Out of the total population 30.55 percent population is urban and 69.45 percent lives in rural areas depending on cultivation of seasonal crops at marginal hilly traces of land to sustain their livelihoods.

Actual study area, village Ghandalu comes under Dwarikhal mandal of Pauri district of Uttarakhand, is located at the distance of 70 km from district head quarter and 116 km from state capital Dehra Dun. The nearest towns to study area are Ramnagar, Jaspur , Kotdwara , Sherkot are generally located in the peripheries of 50 Km. Ghandalu is well connected with these towns by means of road. Nearest railway stations are Kotdwara, Nagina and Ramnagar.



Maps indicating study area

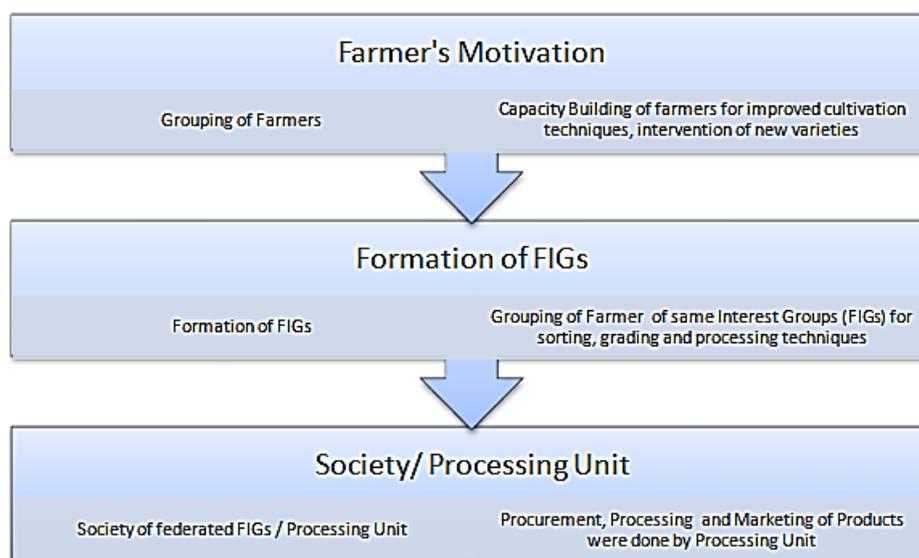
## II. Research Methodology

To undertake the study, secondary data related demography, resources, their status of utilization, livelihoods options, income generation activities were collected and reviewed thoroughly. Primary research on impact of different interventions undertaken by the ASEED has been undertaken. The study related to

livelihoods options, mechanism of benefits sharing amongst the beneficiaries through procuring, processing and marketing of commodities, interaction with the community was organized in the village level. The data related to primary research were collected in the pre tested questioner later it was compiled, analyzed to assess the overall impact of interventions and to calculate the benefit cost ratio for one year.

### III. Results And Discussion

In Uttarakhand, a pentagonal structure of natural resource management in the Garhwal hills for poverty alleviation by strengthening the livelihoods of peoples has been implemented. This is the case study of village Ghandalu of Pauri district which is one of the under-developed villages selected by the Partner Non Govt. Organization (PNGO) of directorate Uttarakhand Decentralized Watershed Development Project (UDWDP). The name of PNGO is Asian Society for Entrepreneurship Education and Development (ASEED) which has done various need based activities of watershed management mainly in respect of poverty alleviation through management of plants, procurement, processing and marketing of fruits has shown great impact on the living standard of the local populace. The village is having very less acreage of agricultural land, most of the fields are terraced generally suitable for horticulture of citrus fruits, zinger, garlic, onion, potato and tomato. The farmers of Ghandalu and neighboring 07 villages like Bargadi, Seeladanda, Pulyansu, Barsuri, Bakhrodi, Guinbada and Utinda were trained for rejuvenating their old fruit plants by adding calcium in the root zone, grafting, layering, top working etc. Later they were grouped in 08 different Interested Farmers Groups (FIGs) which were federated into society named “Gramya Kissan Bahudeshiya Sawayat Sahakari Samiti”. These FIGs were further trained for timely harvesting, storage, marketing with better prices along with saving the wastage of fruits and vegetables.



Each member of the FIGs were provided with 10 – 15 hybrid citrus fruit plants and high yielding varieties of vegetables like Chilli (*Capsicum annuum*), Capsicum (*Capsicum sp.*), Okra (*Abelmoschus esculentus*), Onion (*Allium cepa*), Potato (*Solanum tuberosum*), Tomato (*Lycopersicon esculentum*), Tamarind (*Tamarindus indica*) and Zinger (*Zingiber officinale*) were also introduced at their farm lands with improved technology of cultivation like polyhouse, vermicomposting. In the village Ghandalu, more than 02 ha. area were developed with amla plantation and to improve the yield of the wheat, hybrid seeds were distributed to farmers along with organizing the training programmes for line sowing and post-harvest management. The society has also established a “Food and Fruit Processing Unit” in the village Ghandalu to help local farmers in selling their produce at better price, generating employment for 25 – 30 person/day for 180 – 250 days in a year for different processing activities.



There is high demand of products from the processing unit because of its Food Product Order (FPO) No. A1351, This makes it convenient for processing and marketing of various fruits and vegetables. During the year, out of total employment generated, 31% are men contributing to buying, loading / unloading of fruits and vegetables whereas 69 % are women participating in processing of commodities into various products like jam, pickle, squash, tomato sauce, chilli & turmeric powder, pastes of zinger their packing, labeling and marketing etc. (figure 1).

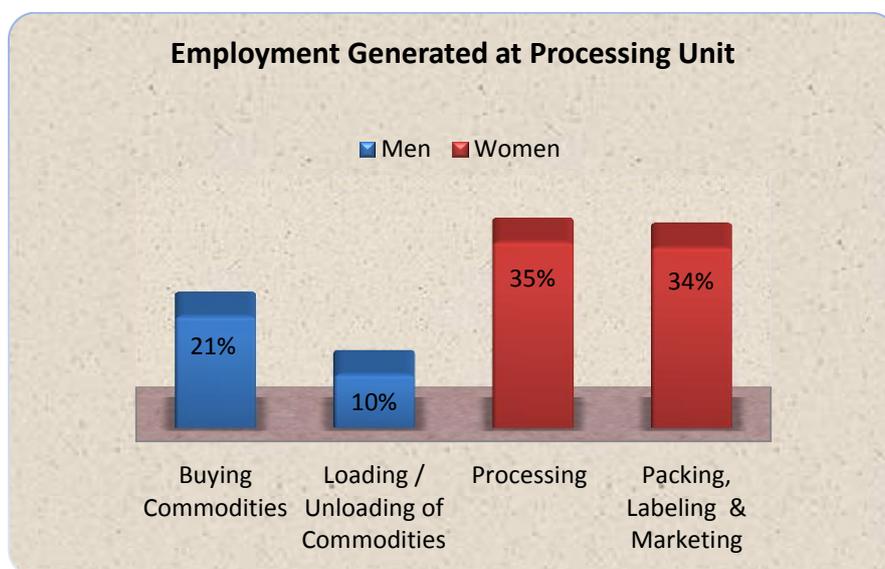


Figure 1. Graph showing Employment Generation at Processing Unit

It also plays vital role in supporting the villagers for buying local produce such as cereals, pulses, fruits with better prices. After processing and value addition the local produce is sold for getting better prices in the towns like Pauri, Lansdown, Kotdware and Dehra Dun. Even the processing unit actively participated in the SARAS fair and other fairs organized at the Pragarti Maidan, New Delhi. Processing unit is doing a business of 5 – 7 Lakhs in a year. The benefit cost ratio for different commodities like amla, orange / malta, mango and borans flower is calculated for one year as 2.11:1, whereas chilli, coriander, pulses, finger millets, garlic, turmeric has been benefiting the processing unit 1.5:1

The formulae used for calculation of benefit cost ratio:-

$$BCR = \text{Net Benefits} / \text{Net Cost}$$

**Table 1. Benefit Cost Ratio of different commodities after processing:**

S. No.	Commodities		Products	Total Cost (Rs. / Kg)	Net Benefits (Rs/ Kg.)	Benefit Cost Ratio
1	Amla	<i>Emblica officinalis</i>	Pickle	13.00	28.00	2.15
2	Borans Flowers	<i>Rhododendron arboreum</i>	Squash	19.00	40.00	2.11
3	Chilli	<i>Capsicum annuum</i>	Powder	25.00	35.00	1.40
4	Coriander	<i>Coriandrum sativum</i>	Powder	35.00	35.00	1.00
5	Garlic	<i>Allium sativum</i>	Paste	36.80	40.30	1.10
6	Lemon	<i>Citrus limonum</i>	Pickle	12.50	8.80	0.70
7	Orange / Malta	<i>Citrus sinensis</i>	Squash	10.00	20.00	2.00
8	Mango	<i>Mangifera indica</i>	Pickle	17.00	30.00	1.76
9	Rajmah	<i>Phaseolus vulgaris</i>	Pulse	70.70	19.00	0.27
10	Turmeric	<i>Curcuma longa</i>	Powder	50.00	30.00	0.60
11	Ginger	<i>Zingiber officinale</i>	Pickle	31.80	38.50	1.21

The benefits are shared between processing unit and the stakeholders, with one third of total benefits going to processing unit, and the remaining equally shared by the stakeholders.

### Summary

Identification of surplus fruits and vegetables, their participatory management in procurement, processing and marketing with intervention of technology could be proved as better source of employment for local communities. The populace of the neighboring town can get value added products

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