



Impact Assessment Study of Focused Development Program

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ABBREVIATIONS

APC	Agriculture Production Cluster
BoD	Board of Directors
CHC	Custom Hiring Centres
CRP	Community Resource Persons
CSR	Corporate Social Responsibility
DAFE	Department of Agriculture and Farmers Empowerment
FDP	Focused Development Program
FGD	Focused Group Discussion
FPG	Farmer Producer Groups
FPO/FPC	Farmer Producer Organization/Farmer Producer Company
Ha	Hectares
HDRP	Holistic Rural Development Program
IDI	In-Depth Interview
INR	Indian Rupee
KALIA	Krushak Assistance for Livelihood and Income Augmentation
KII	Key Informant Interview
MFI	Micro Finance Institutions
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MIS	Management Information System
MoRD	Ministry of Rural Development
OLM	Odisha Livelihood Mission
PM-KISAN	Pradhan Mantri Kisan Samman Nidhi
SC	Schedule Caste
SHG	Self Help Group
ST	Schedule Tribe
w.r.t	With Respect to

Executive Summary

India being predominantly an agrarian economy largely constituted by small and marginal farmers, several interventions by government and private donors focussed on enhancing productivity and income of farmers. Reduced land holding size, lack of access to capital (s), market access, access to financial credits and farm machinery are some of the major challenges that affect agriculture productivity and the income generated through farming, making it a less sustainable livelihood option especially for small and marginal farmers.

The HDFC Bank CSR under its 'Focussed Development Projects' designed and supported projects focusing on specific focus areas of development such as Skill Development & Livelihood, Education, Health, etc. In the Focus Development Project (FDP) that was evaluated for its impact, the aim was of economic enhancement of small holder farmers through introducing systemic changes in the farming practice and enabling access to affordable farm inputs, extension services, training and demonstration, technology etc. The FDP was implemented in fifty villages of Angul and Dhenkanal districts of Odisha between March 2017 and Feb 2020. HDFC Bank CSR assigned impact assessment study on the FDP Program to NR Management Consultants (NRMC) India Pvt. Ltd. to assess the project implementation performance and pre and post impact of the project interventions.

The impact assessment study followed an experimental design using mixed methods and captured the effect of project activities on farmers by comparing the program impact indicators between two timelines i.e. status before beginning of the program and status after the project implementation. The reference year taken for before the program is 2017 and after the program is 2021.

Study findings shows 67% of the farmers targeted under the project are below 55 years of age. More than 30% women participated in survey, about 70% of total sample are from backward caste and 83% are small and marginal farmers. After the project, intervention there is 14% increase in average household income of the shareholder farmers after the project attributing an increase of 24.7% of income from vegetable cultivation promoted under the project.

The project interventions around promoting vegetable cultivation in both the districts have impacted the cropping pattern in the project villages and about 62% of the farmers are currently cultivating vegetables. This diversification from paddy to non-paddy cash crop (vegetable) is attributed to the interventions of the project around introduction of new crops, varieties and technical support and facilitation. There is 12% increase in quantity of crop sold and 8% increase in the income received from sale of crops in both the districts.

There is 30% increase in investment on fertilizer, 44% increase in pesticides and 50% increase in marketing since baseline. Shift in focus on growing vegetables as a cash crop that has impacted higher investment in these farm inputs particularly fertilizers, pesticides and marketing. The overall investment in inputs has increased by 40%. FPC has facilitated procuring seeds in convergence with the Horticulture Department for supply to farmers. In both the districts, about 74% of the respondents reported to have received at least one input – either Fertilizers, Farm Machinery on hire (Tractor, Power tiller, power prayer, weeder etc.), seeds, Pesticides, marketing support services, training, field exposure and demonstration through FPC. Farmers accessing credit from different

sources have increased by 195%. Availing loans from MFIs have significantly increased about 60 times in both the districts.

Our study indicates that, the project interventions positively positioned the concept of collective model of business operation by establishing the FPCs across four locations covering about 2919 farmers in 51 villages. These initiatives have penetrated an organised process of collectivising input supply, farm mechanisation and output sale through the FPCs. The project attributed about 24% increase in income of farmers from the vegetable cultivation that helped the farmers during the difficult times of Covid19 pandemic. The increase in income has induced through increase in production and crop diversification. About 20% additional farmers joined in cultivating vegetables and others intensified vegetable cultivation through adoption of better cultivation practices such as multi-layer farming, trellis method of farming etc. Promotion of vegetable cultivation through FPC has propelled the demand for credit that has been increased by four times during the project duration.

While the project interventions are quite impactful in terms of initiating income of farmers, the FPCs promoted are facing challenges around sustainability. The leadership of the FPCs needs more capacity development support in terms of collective marketing of produces and normalising the processes after a gap of 2 years due to pandemic. The initial farmer contact programs, mobilization, value chain interventions were well conceived, and the motivation of the farmers were raised. However, abrupt discontinuation of the project support created discontent among the farmers, and they feel they are excluded from their project benefits.

Based on our study we emphasise the need for adopting strategic and operational pathways toward enhanced and stabilized income.

- a. Strategic Pathways: Revamping the project design approach, Robust Monitoring and Information Management.
- b. Operational Pathways: consolidating the efforts and inputs given in promoting FPCs, Institutional handover of the FPCs to mainstream organisation/ departments in government or supported projects, ensuring community participation to strengthen the FPCs, Developing perspective plan, Adopting a systemic approach in project implementation, Shifting focus on outcome monitoring and the need for Setting up an appropriate exit strategy.

1.0. Introduction

1.1. Background

Agriculture in India is a critical driver of economic growth and poverty reduction and employs 42.6 % of the population contributing to 20% of the GVA (2020 -2021). Largely, the small and marginal farmers operate in 86.21% (Agriculture Census 2015 -16) of India's cultivated and uncultivated land. They are further disadvantaged by the power structures and lack of capital(s), without much say in policies that affect them or, to participate in the market effectively. The average operational land holding of less than 2 ha is a critical factor that determines productivity in agriculture.

Odisha predominantly is an agrarian state that employs about 60% of the total working population in agriculture. In terms of operational landholdings, marginal and small holdings constitute 74.74% and 18.23% of the total holdings commanding 44.53% and 30.40% of total operated area within the state. Female operational holdings constitute only 4.06% of the total holdings while women contribute towards most of the agricultural operations. From 2011 - 2016, the state witnessed a decline in operational area by 2.33 lakh ha due to urbanization and increased land use change towards non-agricultural purposes eventually reducing the average size of land holding across all social groups in the State to 0.95 ha. The decline in the size of operational holdings across generations along with lack of economies of scale, poor information flow and their inability to participate in the price discovery mechanism significantly affect the survivability of small holder farmers (Pandey, et. al., 2010).

In recent years, the government's policies have centred on increasing farmers' income through a flagship initiative called "Doubling of Farmers Income by 2022". Farmers' participation is constrained by weak vertical and horizontal connections, as well as limited access to market, training, funding, and information flow along the chain (Fernandez Stark Karina, et al, 2012; Shearer, 2011). Optimizing the benefits to farmers through effective and efficient aggregation models has become even more important due to land fragmentation, especially given the transformation of Indian agriculture towards high-value commodities as a result of agri-food market caused by liberalisation, globalisation, improved purchasing power, demand for safe and quality food, niche market expansion and so on.

As market actors are drawn to deal with the 'Organised Entity,' the Farmer Producer Company (FPC) is developing as the most effective way of catering to the demands of both farmers and market actors. FPC refers to a corporate body of farmers/ agriculturists formed by 10 individuals (or more) or 2 institutions (or more) or by a combination of both (10 individuals and 2 institutions) having their business registered under the Companies Act, 1956 (as amended in 2013). FPC's focus on Production, harvesting, procurement, grading, pooling, handling, marketing, selling, export of agricultural products and aims to mobilise small and marginal farmers to ensure forward and backward linkages. This includes the supply of quality inputs such as seeds, planting material, organic and inorganic sources of fertilisers, agricultural credit, crop insurance, technical knowhow, and other essential extension services, as well as effective forward linkages such as aggregation of the produce, collective marketing, processing, and market led agriculture production. FPCs provide a platform for members to communicate information, coordinate activities, and make collective decisions in addition to lowering transaction costs (Singh, 2013). FPCs are formed with equity contributions from member farmers.

Lack of infrastructure and poor market linkages affect the growth potential of the agricultural sector in India. Several interventions led by government and private entities aim to bridge these gaps. In this assignment, we seek to assess the impacts of the Focused Development Program by HDFC Bank over the targeted beneficiaries.

1.2. About HDFC Bank CSR Program

HDFC Bank CSR works towards transforming the lives of millions of Indians through its social initiatives under the umbrella of 'Parivartan' that aims to contribute towards the economic and social development of the country by sustainably empowering communities. The HDFC Bank CSR flagship Program "Holistic Rural Development Program (HRDP)" on Rural Development caters to the needs of the rural communities in multiple focus areas. While the "Focused Development Projects (FDP)" includes projects where partners are supported to work on a singular focus area in a cluster of villages or in a large geographical area where development is lagging. FDP was implemented to improve the lives of targeted beneficiaries in selected areas. On understanding the scope of improvement in the production of vegetable crops and thereby the conditions of smallholder farmers in Odisha, through strong extension services, training and demonstration, the FDP was implemented in fifty villages of Angul and Dhenkanal districts of Odisha between March 2017 and Feb 2021. The project targeted to enhance the livelihoods of 5000 farmers through sustainable and inclusive Farmer Producer Companies (FPCs) that was expected to provide affordable, accessible, and quality technical services/ support and access to markets and financial services to its members. It also aimed to promote integrated value chain to promote sustainable processes resulting in an increase in the income level of farmers and integrated development of the project villages in both the districts. The project was implemented by the partner organisation Access Development Services, is a national livelihood support organization, with focus on incubating innovations for sustainable livelihoods of the poor.

1.3. About the Program and Intervention Areas

Odisha has a geographical area of 155,707 sq. Kms and is divided into ten Agroclimatic zones. The total cultivated land of the State is 61.80 lakh ha out of which 29.14 lakh ha (47%) is High land, 17.55 lakh ha (28%) Medium land and 15.11 lakh ha (25%) low land and about 65% of cultivated land in Kharif season is irrigated. According to the Agricultural Census (2015-16), the number of operational holdings of the State is 48.66 lakh with an operational area of 46.19 lakh ha. The marginal and small holdings constituted 74.74% and 18.23% of the total holdings commanding 44.53% and 30.40 % of total operated area in the state. The State witnessed a decline in operational area (from 48.52 lakh ha in 2011- 12 to 46.19 lakh ha in 2015-16) due to urbanization and more of land diverted to non-agricultural use. Accordingly, the average size of land holding for all



Figure 1 Location of Angul and Dhenkanal

social groups in the State too has declined to 0.95 ha. Rice is the major crop in Kharif season, so are pulses & oilseeds in Rabi season. The net area sown and gross cropped area during the year 2017-18 were 53.56 lakh ha and 83.61 lakh ha respectively. The vegetable production system in the state is multi-cropped with diversified systems of both agricultural and Horticultural crops separately and together. The soil and climatic conditions of the State is favorable for growing a variety of vegetables throughout the year. Major vegetables cultivated in the state are brinjal, tomato, onion, okra and gourds. The average productivity of vegetables in Odisha is 13.8 tons/ha against rational average of 13.92 tons per ha. Angul & Dhenkanal of Odisha are known as a horticulture district and are famous for vegetable production and falls under the Mid Central Table Land Agroclimatic zones.

Angul District: spreads over an area of 6,375 Sq. Km with a population of 12, 73,821 (Male: 655,718 and Female: 618,103). There are 1930 villages in the district. Agriculture occupies a vital place in the economy of Angul District, as it provides direct and indirect employment to around 70% of its total work force, as per the 2001 census. The total cultivable area of this District is 2, 16,403 hectares, covering 32.7% of its total geographical area. The major crops of the Kharif season are paddy, maize, ragi, oilseeds, pulses, small millets and vegetables etc. Paddy, wheat, maize, field pea, sunflower, garlic, ginger, potato, onion, tobacco, sugarcane and coriander etc. are the major Rabi crops. However, Angul has witnessed a drop in vegetable production in the wake of massive industrialization. The poor rainfall has further accentuated the situation as production of vegetable has further dropped and prices have gone up. The FDP intervention areas included selected villages in the Angul Sadar and Banarpal blocks. (Census 2011, district report, Angul, Odisha)

Dhenkanal District: spreads over an area of 4,452 Sq. Km with a population of 11,92,811 (Male: 6,12,593, Female: 5,80,218). There are 1208 villages in the district. The district produces a substantial agricultural yield and paddy, ground nut, cashew nut, potato, mango, jackfruit, sugarcane and vegetables like cauliflowers, tomatoes, cucumber, tomato, green chili, sweet potato, cabbage, pointed gourd, cowpea and ladies finger as its primary agricultural products. The FDP intervention areas included selected villages in Dhenkanal and Odapoda blocks.

1.4 Purpose and objectives of the impact assessment

Post completion of the implementation of the HDFC Bank CSR supported “Focused Development Program (FDP)” in Angul and Dhenkanal districts of Odisha, NRMC was assigned to undertake an impact assessment study to assess the impact of the program over beneficiary farmers targeted in fifty villages of twenty Gram Panchayats (GP) of four blocks. The assessment primarily focused in the areas of

- a) Changes in gross income of farmers over the program duration.
- b) Changes in input/ investment cost of farmers
- c) Processes followed for establishment of Farmers Producer Companies (FPC) and its sustainability
- d) Stabilisation of farmer income attributing to the project’s interventions.

In addition, this impact assessment tried to understand the overall processes undertaken by HDFC bank and partner organization in implementing the project activities, key milestones achieved, impact created by these activities, challenges faced, and the way such challenges were handled. It includes assessment of the efficacy and effectiveness of the project interventions, and sustainability

of the project's outcomes/ results. The guiding philosophy behind this study is to add value by highlighting successful initiatives and recommending possible ways to address challenges that exists.

1.5. Limitations of the Study (Caveats)

The impact assessment of the Focused Development Program (FDP) of HDFC Bank CSR implemented in Dhenkanal and Angul districts was conducted after one year of completion of the project implementation as per the prevailing CSR Policy in India. Following are the limitations of the impact assessment:

- a. The baseline data was not available with the project. To establish the baseline of the project to compare with the end line for tracking the change, recall method was used.
- b. Due to covid19 pandemic induced mobility restrictions, continuity of project interventions in the villages were affected and remained sporadic.
- c. Due to discontinuation of the implementation partner, periodic data on project interventions, inputs, outputs etc. could not be obtained to validate the primary data collected from the household survey and qualitative interviews.
- d. The impacts presented in this report are estimated by comparing the recalled baseline value (2017) with the current value (2021). In absence of the control households datasets (not included in the design), the project attribution does not exclude external factors that might have influenced the impact.

2.0. Study Methodology

2.1. Design and Methodology

The impact assessment study followed an experimental design using mixed methods and captured the effect of project activities on farmers by comparing the program impact indicators between two timelines i.e. status before beginning of the program (baseline) and status after the project implementation. The reference year taken for baseline is 2017 and end line is 2021. In absence of baseline data for this project, recall method was used in the household survey to assess the change that has happened over time. The respondents were asked to recall the value of critical indicators at the start of the program, not directly connecting them with the program per se. However, wherever recall was not possible particularly the perception-based questions, changes in the value of the indicators were asked when the respondent were not able to quantify the value.

The primary research included a quantitative household survey using a structured questionnaire schedule administered to the farmers using Computer Assisted Personal Interviews (CAPI) tool to collect information on program outcome & impact indicators as per program goal, objectives, and interventions. A comparative appreciation of the outcome and impact indicators around key domains of assessment was conducted based on the base line and current (post project) situation to explore and establish net changes that could be attributed to the program. The Qualitative data collection was conducted using In depth Interviews (IDI), Focused Group Discussions (FGD), Key Informant Interviews (KII) with relevant stakeholders (the HDFC project team, the partner NGO, key government staff, local leadership, PRI and beneficiaries etc.). Policy implications of the program interventions and impacts were recorded and relevant indicators including income/ composition of resources, employment and vulnerability, trade and financial flows, inequality, poverty, gender, socio economic sustainability etc. were mapped. In addition to primary data collection, various project documents including HDFC's CSR Policy, Project design document, Project implementation reports, Communication and Documentation Products and other relevant reports/ literature related to the projects were studied.

2.2 Sampling

A two-stage sampling method was adopted for the impact assessment study. The first stage was selection of village which was done primarily based on the secondary data organized from Census 2011, SECC 2011 and other state government sources like district statistical handbook against specific parameters. Following are the key areas and data indicators that were used for the selection of the villages.

1. **Remoteness:** The distance of nearest town (either block/ district headquarter) – three with relatively remote in terms of access to roads and market and two relatively less remote.
2. **Availability of physical Infrastructure/ facilities:** Storage Structure, Road Connectivity, Transport Facility, processing units etc.

Data on the above indicators were collected for the list of villages shared by HDFC Bank CSR Team and the implementation partner (Access Development Services). The villages were ranked against each of these parameters and sample villages were selected by ensuring representation of various categories of villages to bring variability. The details of the ranking parameters used for the selection of sample villages are given in Annexure II. Based on the ranking for all the villages, 22 sample villages were selected across two districts with an average selection of 4-5 villages per block in both

the districts. In the blocks where there was only one Gram Panchayat where the project was implemented to ensure adequate number of samples or beneficiary, villages under that GPs were selected by default viz. Kalanga GP of Odapada Block, Dhenkanal District. For the GPs, where adequate number of beneficiaries was not available in village then 2-3 villages were be clubbed for beneficiaries' viz. GPs in Dhenkanal Sadar Block under Saptasajya FPC. These variations were made to ensure that the selection villages are robust with representation of different categories of villages and beneficiary farmers.

In the second stage of sampling, individual respondents were selected randomly from the list of beneficiaries shared by HDFC Bank CSR and the Implementation Partner (Access Development Services). The number of households interviewed in each of the selected villages was based on the membership in FPC of village/ hamlet. About 18-25 number of respondents was selected using systematic random sampling from each village based on representative sampling. Efforts were taken to interview at least 50% women shareholders of FPC subject to availability in the sample villages. Accordingly, **a sample size of 432 farmers** was covered including the replacements as against the targeted sample size of 416. The sample distribution is in accordance with the population covered in the project as summarised in Annexure III. In addition, to the farmer's interview primary data were collected through qualitative means, which includes Key Informant Interview (KII), In-depth Interviews (IDI) and Focused Group Discussion (FGD). The purpose of these qualitative data collection was to validate the findings of the farmer's interviews and to get a holistic sense of the program implementation and processes adopted. For identifying respondents at the village level for farmer's interviews, KIIs, IDIs and FGDs, we sought the support of the Community Resource Persons (CRP) promoted under the projects who are currently supporting the FPCs in their day-to-day operations. In addition, we were also supported by the implementing partner's local staff to validate the selection of key stakeholders. Field Supervisors hired for the impact assessment study identified and scheduled interviews with selected respondents at the district and block-levels in consultation with the implementation partner. The details of the number of qualitative data collection events conducted are given in the adjoining table.

Data Collection Tools	Sample Size	
	Angul	Dhenkanal
Farmer's Interview	199	233
Key Informant Interviews	3	3
In-Depth Interviews	3	3
Focused Group Discussions	1	1

2.3 Data Collection

The study used a mix method with prudent use of qualitative and quantitative data collection tools. The tools included both direct quantitative and perception-based questions. The qualitative field team tried to scout and document relevant case studies to present a rich description of the context and the reasons behind success & learning. After designing of the data collection tools, pretesting of was done in the last week of March 2022 in one project village in Dhenkanal district. Based on the field observations report from the pretesting of tool, the tool was updated.

Training of the field team including Field Supervisors, Field Enumerators, and Qualitative Researchers was conducted on 28-29 March 2022, where the members from the HDFC CSR Team and Implementation Partner Teams also participated. Following the training, fieldwork was conducted during 30th March to 9th April. The Household data collection was conducted using CAPI (Computer Assisted Personal Interviewing) tool with handheld tablets (android devices) with desired programming for data quality control and validation rules. The field team was divided into two sub

teams - each for one district. Each district field team included one supervisor and four enumerators. Qualitative Researchers visited selected FPCs to have detailed discussions with Farmer Groups who are shareholders of the FPC. The field plan included interaction with the Block Level Agriculture/ Horticulture Official and District Level Officials, in each of the program districts. The details of the individuals interviewed are given in Annexure IV.

2.4 Data Analysis

The collected data through the CAPI device was synced to the data server on a daily basis to ensure timely submission of data of desired quality. The downloaded data from the data server was cleaned and data tables are generated by mapping each data point to the agreed indicators using the SPSS software application. The data tables are prepared at the block level to assess the variability across all data points and to ensure that there is no outlier data included in the database for analysis. The data tables were prepared separately for 2017 and 2021 to compare the before and after changes on the indicators.



Figure 2 Household Data Collection

3.0 Review of Program Design and Implementation Model

This project was implemented under the HDFC Bank's CSR strategic support Focused Development Program (FDP) in Dhenkanal and Angul district of Odisha. The project targeted 5000 small and marginal farmers in four blocks in 50 villages across these two districts for a duration of four years¹. The project primarily supported these farmers by organizing them to form Farmers Producers Company (FPC) at the block level with an aim to provide affordable, accessible and quality technical services and support and enable market & financial access to its members. The project design envisaged to adopt an integrated value chain support approach to promote processes that are sustainable and enable farmers to increase their income through an integrated development approach.

The project was implemented in a partnership mode by associating Access Development Services (ADS), as implementing partner. The scope of work for the implementing partner was primarily three categories covering the domains of

- a. Community development & institution building
- b. Value chain support interventions for agriculture production and;
- c. Post Production Value Addition and Market linkage

3.1. Community development and Institution Building

Key activities undertaken by the program under community development and institution building initiatives by the implementing partner organizations are as follows:

- a. Farmer Contact Programs: The implementing partner, initiated farmers contact programs in the village through organising farmers meeting at the selected program villages. The implementing partner identified Community Resource Persons (CRP) from the program villages to cover a cluster of 4 to 5 villages and oriented them on the project objectives and implementation arrangements. These CRPs were primarily assigned to engage with the farmers from the targeted villages and mobilize them to organise into small groups of 20 farmers.
- b. Enrolling farmers as shareholders of FPC: The CRP later mobilized the farmers to join the FPC by paying a notional membership fee of INR 250 and purchasing share of worth INR 1000 to become a shareholder of the FPC. This process was initially estimated to be completed within six months which eventually took more than one and half year to mobilize farmer to become shareholders of the FPC.
- c. Formation and Registration of Farmer Producer Company (FPC): Delay in mobilizing the farmers to join the FPC, the implementing partner initiated the formation and registration of the FPC taking 7 – 10 lead farmers as promotor shareholders of the FPC. However, mobilizing farmers to become shareholders remained as a challenge for the implementing partner and CRPs.
- d. Incentivising Farmers to join FPC: For expediting the formation of the FPC and mobilizing farmers to join the FPC as shareholders, the implementing partner distributed vegetable seed kits to the farmers as an incentive to initiate vegetable farming in their village and for motivating the farmers to join the FPC.

¹The project started during March 2017 and completed in February 2021.

3.2. Value chain support interventions for agriculture production

The farmers in both the districts are conventional vegetable cultivators and being close to the district headquarter have a better access to market. In the project initiation stage, the farmers were informed about the value chain services of the FPC that they will get by becoming a shareholder of the FPC. Those services included as follows:

- a. Farm input supply: The project facilitated supply of quality seeds to the farmers who are the members of the FPC. These seeds include vegetable seeds that are procured with due quality check by the implementation partner and FPC. Through the FPC, the implementation partner mobilized seeds from the State Horticulture Department and supplied to the farmers in the project villages. Similarly, under the project the FPCs were facilitated to obtain licenses from Agrinet² promoted by Government of Odisha. The FPCs as authorised dealer of Agrinet managed the sale of seeds, fertilisers and pesticides to the farmers. This has increased improved and timely availability of quality fertilizers for the farmers.
- b. Farm Mechanisation: The project supported the FPCs to procure farm machinery under the state government subsidy schemes, where each FPC procured one Power Tiller, three Paddy/ Grass cutter, two Power Weeder, three Power Sprayers and one Weighing Scale. These machineries are being managed by the FPC by setting up of custom hiring centres from where the shareholder farmers can hire these farm machineries.
- c. Crop Diversification and change in cropping pattern: The project supported the farmers to diversify from cereal-based crops to cash crops i.e. promoting more vegetables crops. In addition, the project also introduced new cropping patterns that include trellis method of cropping and multi-layer farming. The project conducted training and exposure visit programs for the farmers from all the four FPCs to various locations within and outside the state to understand these new cropping systems and adopt it with local customization.

3.4. Post Production Value Addition and Market linkage

Keeping the importance of post-production value addition and market linkage the program supported the farmers in adapting better harvest, storage and transport practices. Such services provided to the farmers through FPC are as follow:

- a. Sustainable Harvest Practice: The project supported the farmers of the FPC in terms of improved and sustainable harvest practices through training and field demonstration support. These practices have resulted in the reduction of pre matured harvest³ and promoted timely harvest of crops ensuring better value at the market.
- b. Basic Value Addition: In addition to the sustainable harvest practice, the project promoted basic value addition at the post production stage that includes, cleaning, grading and sorting of vegetable crops that fetch better and differential prices at the market place. These practices are promoted through awareness generation and demonstration by the CRPs at the village level.
- c. Improved packaging: The project supported the farmers in adopting improved packaging of the vegetables by shifting from the sack packaging to crate packaging. This has improved

² <https://agrisnetodisha.ori.nic.in/>

³ Either due to demand in market or when the local trader visits to the village, farmers used to harvest their produces before its maturity, that fetches less price from the market.

shelf-life of the vegetables and reduced breakage during transport to market. Some of the lead farmers used pack houses⁴ supported under the National Horticulture Mission (NHM) for making basic value addition and improved packaging of the vegetable crops.

- d. Improved storage: The project supported the farmers in hiring cold storage space to keep their produces for future sale with better price. This was facilitated by the implementation partner through private cold storage facilities available in the districts.
- e. Market Linkage: The FPC was supported by the project to initiate collective marketing of the vegetable crops. This initiative was promoted to ensure reduction in transport cost through bulk sale of vegetables at a better price in the terminal market instead of selling it in local market.

3.5. Key Implementation Challenges

Given the geographic spread of the villages within these blocks and district, both the FPC and implementation partner had to cope with several operational challenges in implementing the project interventions. Some of those challenges as observed are as presented below:

- a. Concentration of FPC services at central villages: The support services provided by the FPC remained concentrated around the villages where the FPC office is located. Shareholders who are located at distant villages expressed their inability in accessing these services due to higher transport and operational cost.
- b. Quality of farm inputs: Some of the farmers expressed their concerns over quality of seeds supplied through the FPC, where the seeds did not germinate and the FPC could not manage to replace those unlike the local traders does.
- c. Limited and timely information dissemination: Some farmers expressed their concerns over limited information dissemination by implementing partner regarding supply of seeds and fertilizer. This has resulted in elite capture of these resources in some locations.
- d. Difference in input prices offered by FPC: FPCs offered farm inputs at a little higher price as compared to the local traders. This is mostly due to the lower volume of transaction by the FPC and keeping margins at the FPC level as management expenses.
- e. Lack of availability of credit from FPC for farm inputs: Farmers raised their concern over FPC not supplying fertilizer on credit unlike the local traders. However, the stage where the FPC is operating currently would be challenging for them to offer input support in credit.
- f. Covid19 induced mobility restriction: The Covid19 pandemic induced mobility restrictions affected the project implementation at the performing stage of the project. Due to limited support by the implementing partner and discontinued support of the CRPs to ascertain the project implementation practices, the planned interventions could not be implemented as scheduled.

⁴ Pack houses are supported under Horticulture Mission which is used as a temporary storage cum packing centre at the village level.

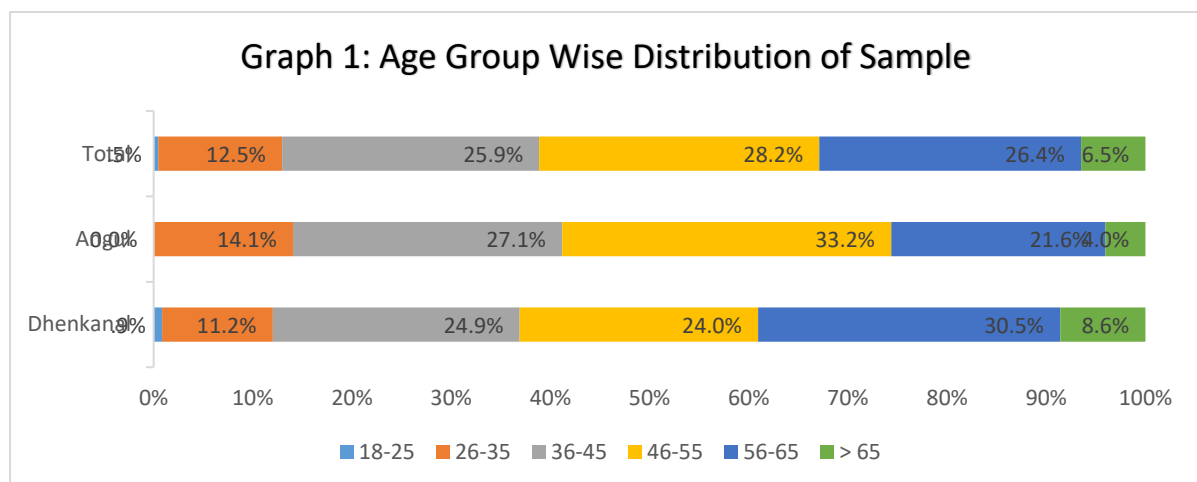
4.0. Impact of Focused Development Program

4.1. Targeting and Farmers Inclusion

Age Group

The project is quite successful in targeting some of the youth and middle-aged farmers in the program villages, which is the most productive age group and have positively impacted in addressing the migration from the project village. Although some of the families reported outmigration from the village those are mostly opportunistic migrations – not stressed migration. The **Graph 1** presents the categorization of age group of shareholder farmers in the FPC. It is observed that major shareholders in the FPC belongs to the age group of 46-55 (28%) years followed by age group of 56-65 (26%) years and 36-45 (15.9%) years respectively. In general, it was observed that age group of shareholders within the FPC is evenly distributed except the 18-25 age group and farmers who are more than 65 years of age. Representation of youth farmers between age group 18-25 and 26-35 was relatively low as most of them are primarily engaged with other occupation and the elder members from the family have joined as shareholders in the FPC.

The representation of youth farmers is comparatively more in Angul (60%) as compared to Dhenkanal (50%)

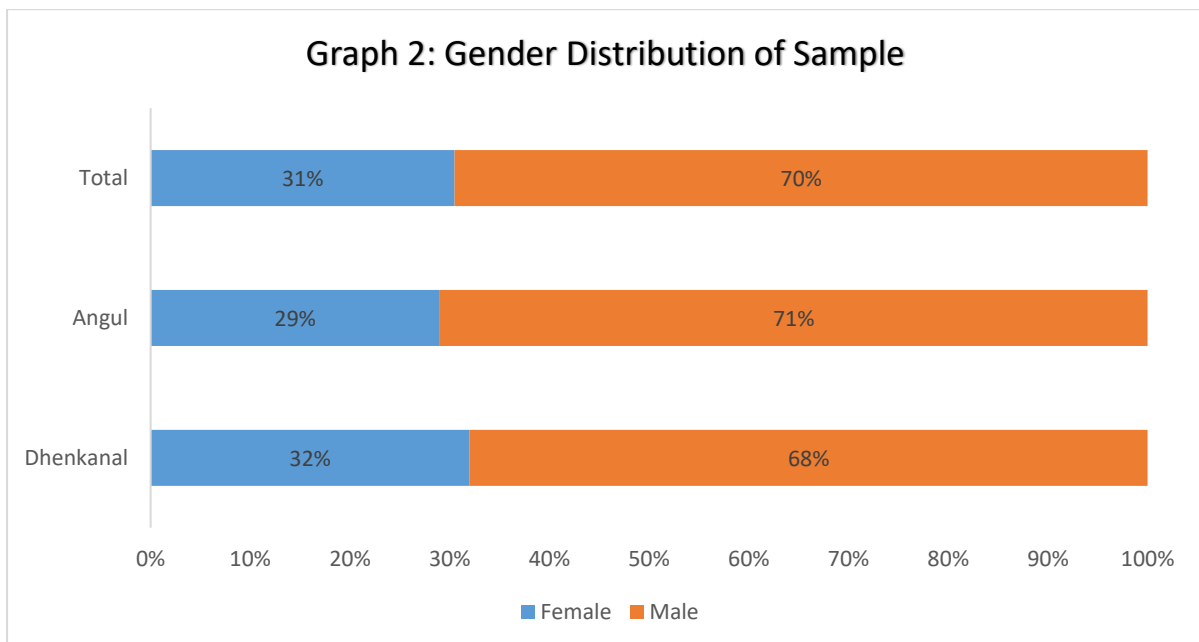


Gender

Although, women’s representation in the FPCs are around 30% for both the districts, and the shareholding pattern in FPC is predominantly male oriented. According to women respondents, their role in agriculture is quite significant and representation in FPC from their households is made through male members. Women representation is slightly more in Dhenkanal (32%) as compared to Angul (29%). Due to limited FPC activities engaging with women farmers, some of them are unaware of the membership norms in the FPC. The district wise distribution of female and male shareholders in the FPC is illustrated in graph 2.

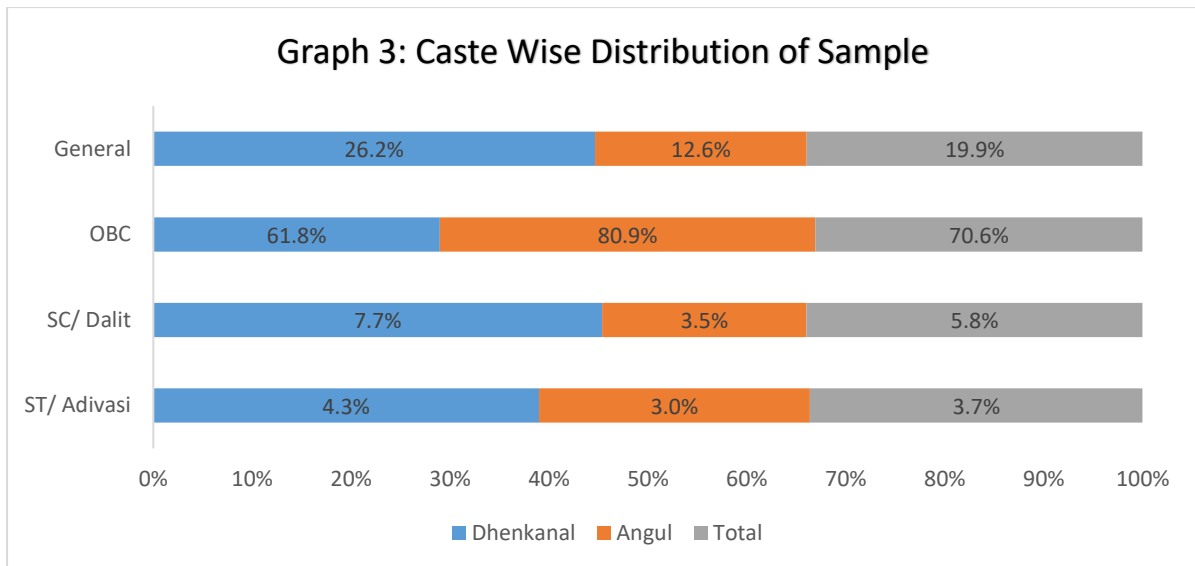


Figure 3 Women Shareholders in FPC



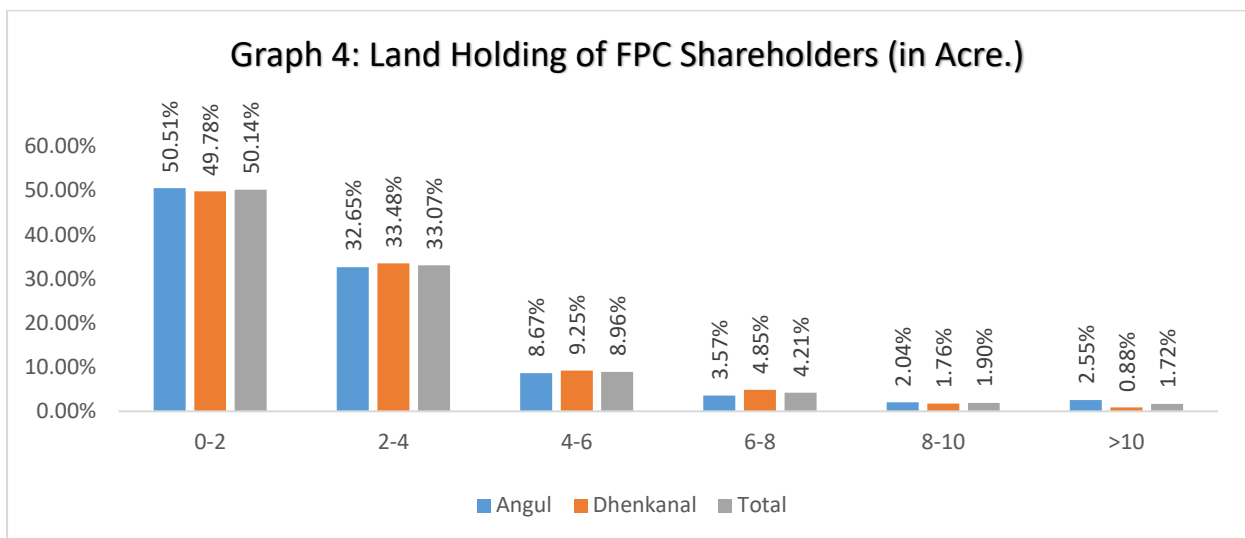
Caste

Out of the total respondents 70.6% (combined for both the districts) reported as Other Backward Class (OBC) followed by general category, Schedule tribe (ST) and Schedule Caste (SC). The SC and ST populations combined constitute less than 10% of the shareholders in both Dhenkanal and Angul district. Through FGDs with farmer groups and KIIs with CRP and other FPC staff, it was confirmed that, the FPC, focused on the farmers who were involved in the vegetable cultivation and marketing in addition to other agriculture and horticulture crops, irrespective of the caste and landholding patterns. Graph 3 depicts the distribution of shareholder farmers across different caste categories.

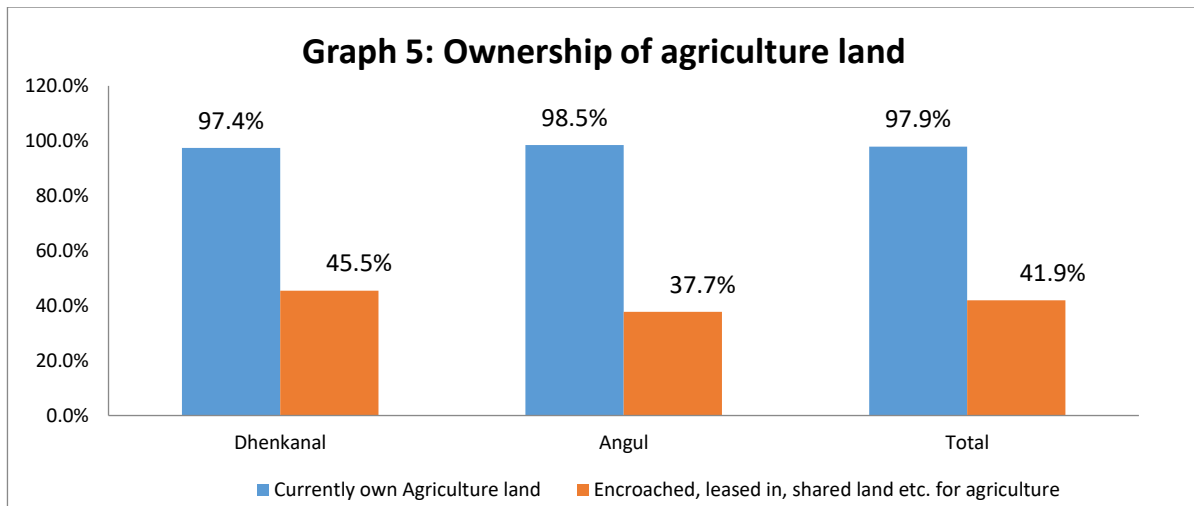


Land Holding Pattern

Land is the most important and essential economic factor for agricultural development. **The project has been quite successful in targeting small and marginal farmers with land holding less than 4 acres which constitutes 83% of the total shareholders.** Although ownership of agricultural land is high 98% in both the districts, the size of land holding acted as a success factor in targeting the befitting beneficiaries under the project. Women’s land holding is lower and that is one of the factors resulting in lower representation of women in the FPCs.



Ownership over homestead land under various tenure rights are 100% out of which 58.3 % of the homestead land are recorded in the name of male members in the household and women ownership of homestead is only 2.3%. Remaining 39.4 % of homestead land is owned jointly and recorded with ancestors.(Graph 5)

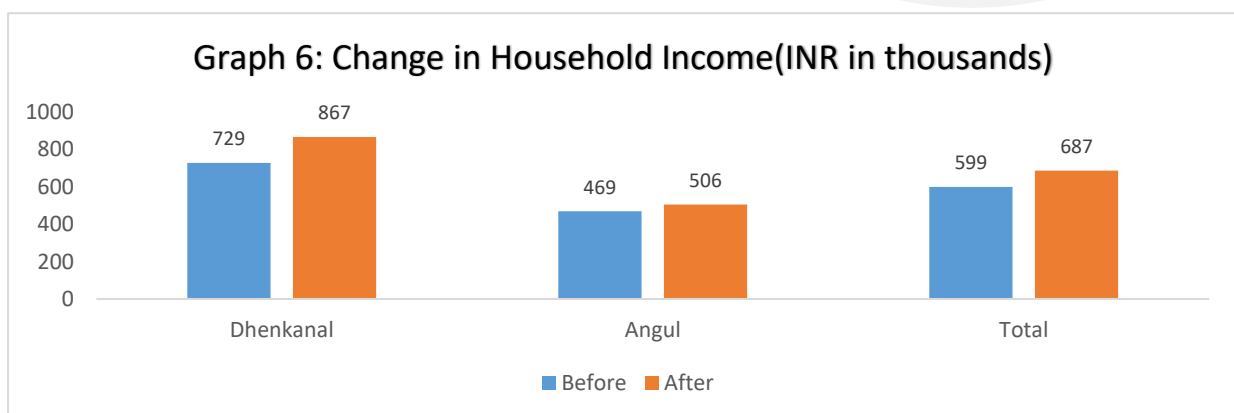


Nearly half of the respondents reported that they had taken land on lease for agricultural purposes. The agriculture leasing practice is governed informally in the villages and both fixed price and share of produce arrangement of income are practiced. The average land leased in for agriculture purpose is less than 1.5 acres. Households that have less than 1 acre of land holding or are landless, mostly leased in land for cultivation.

4.2. Impact on Household Income

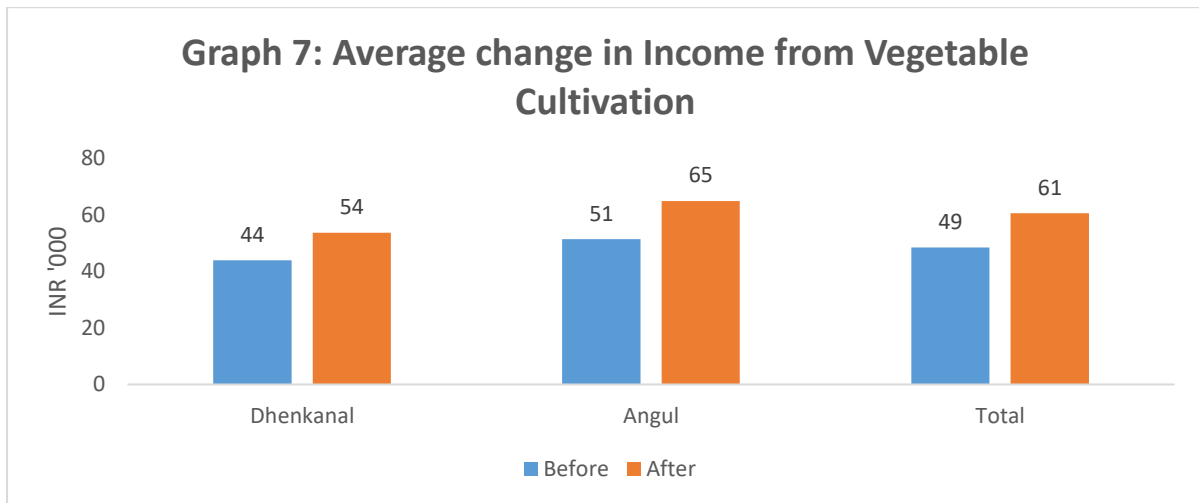
There has been an incremental household annual income of INR 88,000 during the post project period. Prior to the project, the household income was INR 599,000 that increased to INR 687,000 post intervention. The income from cereals and pulses increased by 16.5%. Further, the income from vegetable cultivation increased by 25%. This positive change is attributed to the project where the support to the FPCs with reference to input and marketing related value chain interventions have resulted in improved vegetable crop production and income at the household level. (Graph 6)

14% increase in average household income of the shareholder farmers after the project attributing an increase of 24.7% of income from vegetable cultivation promoted under the project.



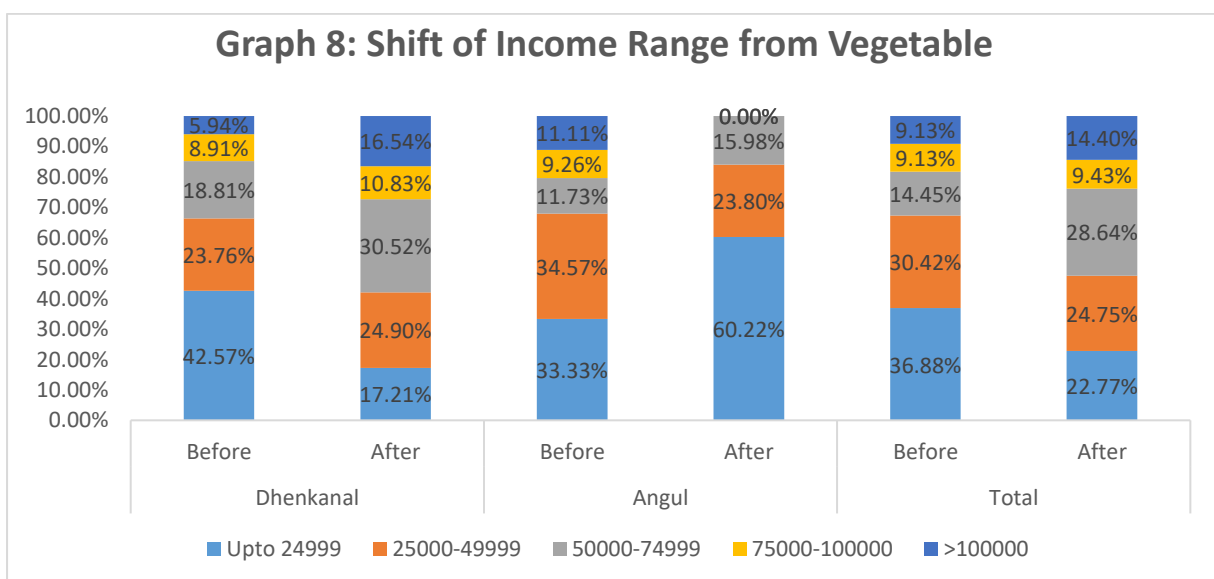
**Description is mentioned in percent change*

The overall income at the household level has increased significantly through the implementation. However, the income is higher in Dhenkanal (19%) as compared to Angul (2.5%) district. The increase in income from vegetable cultivation in Angul has increased by 26% as compared to Dhenkanal which has increased by 22%.(Graph 7)



*Description is mentioned in percent change.

While analysing the range of income that has been generated from vegetable cultivation at the household level, it is encouraging to note that the farmers who adopted vegetable cultivation, have increased their income over the project duration. In Dhenkanal 33% of the farmers were earning up to INR 25,000/- from vegetable cultivation before the project. After the project, the earnings of 60% of the farmers are now in the range of INR 25,000/-. It is observed that in Angul districts farmers have shifted from lower strata of income to a higher stratum of income from vegetable cultivation. Before the project interventions, 42% of the farmers were within the income range of up to INR 25,000/- in Angul has moved down to 17% and the farmers with an income of range between INR 50000 to INR 100000 from vegetable cultivation have moved up from 19% to 30%. This signifies the project interventions have led to a positive shift of income from vegetable cultivation to the farmers.



In addition to agriculture, income from other sources such as livestock, wage employment under MGNREGA and construction, Government remittance under social security schemes like KALIA, PM-KISAN etc., and income from public & private jobs contributed to the income at the household level.

The current Zilla Parishad Member and former FPC Staff of Banarapal Agro Producer Company Ltd. informed that many farmers interrupted vegetable cultivation after their land acquired by Jindal for setting up of their thermal power unit and other industrial expansions. The affected families left with less or no land to cultivate. Although the households received compensation for their loss of land and got employment in the factory, it is adversely affected the agriculture resulting stunted growth of plant and low agriculture produce. Over last 2 years, the factory has started operating in the area that causes emissions fly ash, coal dust and effluents that are affecting the soil quality, water and environment. Traces of coal dust are seen on the roof of the houses and agricultural land. This coal dust has impacted adversely.

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4.2.1. Shift in sources of Household Income

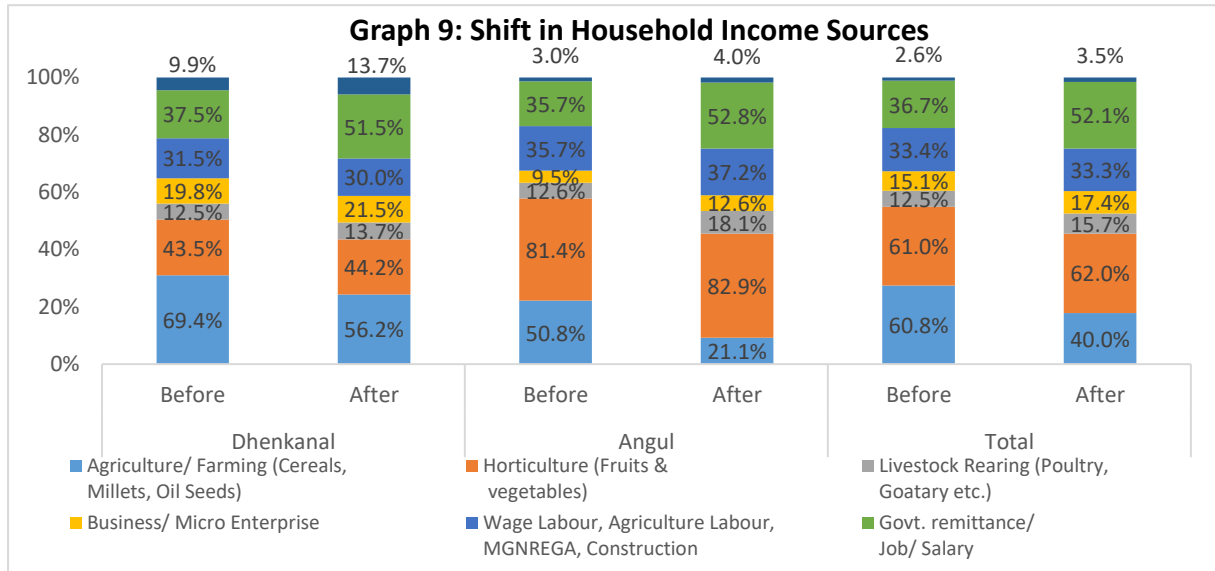
Small land holding, fragile incomes from agriculture, price variability of agricultural products are some of the key factors that compelled the farming households in shifting sources of their income. In addition to Agriculture, over past five years, the shift has been more towards non-farm employment particularly dependency on wages, salaries and remittances. In spite of such stress and continued challenges during Covid19 pandemic for over 2 years, about 51% of households continue to depend on agriculture⁵ in the post project scenario which was 60% prior to the project implementation. While there has been 20% decrease of households cultivating paddy and pulses, there is a positive shift in farmers cultivating vegetables. Although this marginal shift ranges between 1 to 2 percent of the households comparing the pre and post project scenario, it is important to note that due to the continued project support, there has been no negative shift of households cultivating vegetables. The farmers acknowledged that vegetable cultivation provided a steady and increased source of income to them after the project implementation. The increase in income from vegetable cultivation is 24.7% higher as compared to pre-project scenario due to project interventions. The farmers reported that 2021 has been a drought year and despite of this stress, they could sustain their household income from vegetable cultivation. (Graph 9)

From the income shift, it can be noted that there has been a significant change in Government Remittances that has contributed to household income. This is due to the introduction of Direct Benefit Transfer (DBT) from State and Central Government viz. PMKISAN and KALIA. In addition,

⁵ Includes cereals, pulses, vegetables and horticulture products.

supplementary food ration support received by these households during Covid19 pandemic contributed to the significant shift of 15%. (Graph 9)

The proportion of farmers depending upon income from wage employment remains unchanged in spite of reverse migration during Covid19 pandemic. Livestock rearing as a source of income has been practiced by 15.7% households in post project scenario with a marginal increase of 3% households as compared to pre-project scenario. (Graph 9)



Comparing Dhenkanal and Angul districts, the proportion of households cultivating vegetable crops are more in Angul. Similarly, over the project duration there is a sharp decrease (50.8% to 21.1%) in households that are cultivating cereals & pulses in Angul. This indicates that the support of the project in promoting vegetable cultivation has impacted this shift in cropping pattern over the years where households are reducing their cereals and pulses, and shifting towards vegetables which is a cash crop that has potential market to sell as compared to cereals.

20% farmers moved out from paddy cultivation and over 60% farmers are continuing with vegetable cultivation for sustainable income. As observed 12% increase in households adopting vegetable.

4.2.2. Factors attributing to increase in household income

4.2.2.1 Crops Diversification

As discussed in the previous section, farmer’s dependency on paddy cultivation is reducing, whereas farmers are continuing to cultivate vegetables as they experienced that it provides a sustainable income. Paddy being the staple crop in the region, in both the districts, about 60% of the farmers were cultivating paddy before the project interventions which has been reduced to 40% after the project interventions. The interventions around promoting vegetable cultivation in both the districts have impacted the cropping pattern in the project villages and about 62% of the farmers are currently cultivating vegetables. This diversification from paddy to vegetable crop is attributed to the interventions of the project around introduction of new crops, varieties, technical support and facilitation. As reported in the previous section, the rate of increase in income from cereals and Pulses is relatively lower than income from vegetable cultivation.

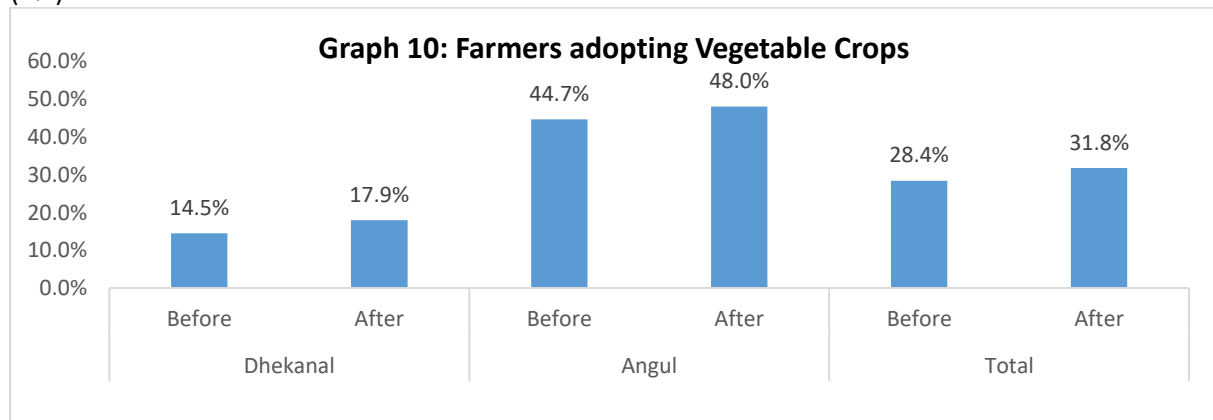
Multilayer Farming – a change maker in increasing income from vegetable

The project had organized field exposure visit for selected shareholder farmers from Dhenkanal and Angul districts to West Bengal to learn new techniques of multi-layer farming. Rasanada Sahu, 46-year-old farmer in Angul informed how adopting multi-layer farming has benefited him in increasing vegetable production from his small piece of land and income. Many farmers like Rasananda were able to maximize their vegetable production sustainably. This method also minimized the risk of farmers as he/she grows different varieties of vegetables in the same land. While potatoes are grown underneath, tomatoes, pointed gourd, bitter gourd etc. are grown simultaneously on trellis method. The farmer also gets distributed and staggered income from different crops as the harvest time for each crop is different.



This also reduces the risk of market price fluctuation of vegetables. For example, if the market prices of tomatoes fall, the farmer can compensate that from other vegetables from the same time without any time lapse. This method has also saved farmers time and resources in preparing the land for vegetable cultivation, reduced cost on irrigation, fertilizer application etc. due to use of drip irrigation method.

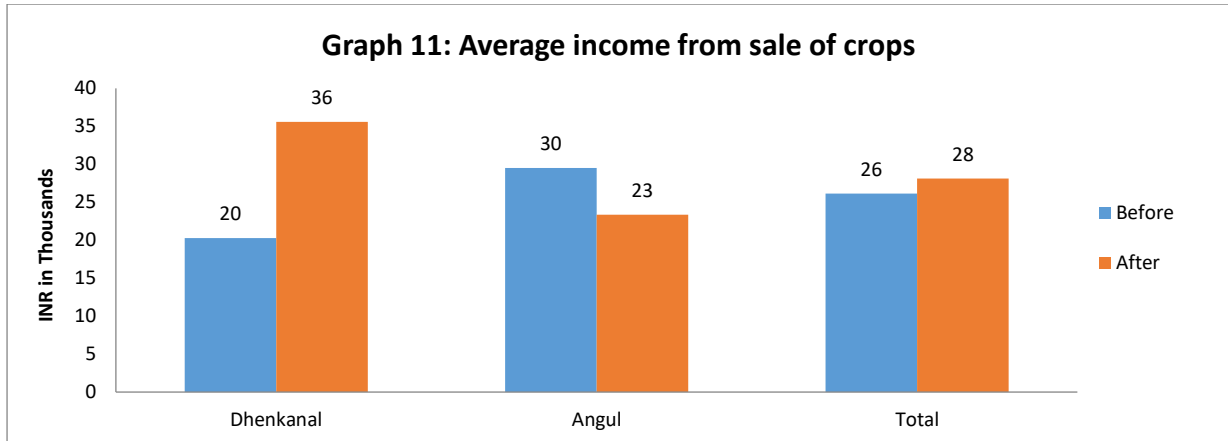
During the project duration, there has been 12% increase in farmers adopting vegetable cultivation. This rate of adoption of vegetable cultivation is 24% in Dhenkanal district as compared to Angul (7%).



*Description is mentioned in percent change

4.2.2.2. Income generated from the sale of crops

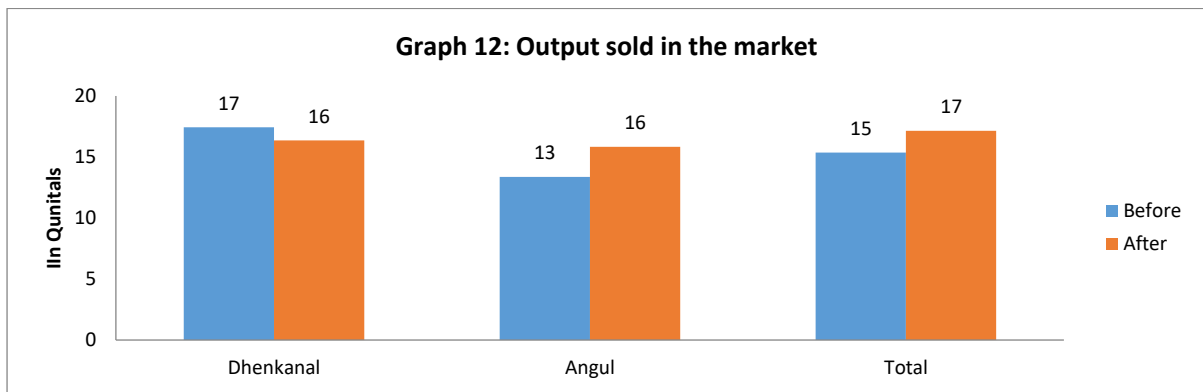
There is 8% increase in the income received from sale of crops in both the districts. There is significant increase of 80% in Dhenkanal whereas there is remarkable 23% decrease in income from sale of crops in Angul district. Sample villages where survey was done were impacted by industrial activity. Villages under Banarapal block underwent land acquisition by the industries. It also reflected from FGDs and IDIs that many of the youth are engaged in nearby industries like Jindal for primary occupation. Industrial waste like fly ash and coal dust has degraded the soil fertility and thus quality produce is not harvested. Villages of Dhenkanal have geographical advantage of being located close to the bigger cities viz. Cuttack and Bhubaneswar that has boosted farmers with higher income from sale of crops. (Graph 11)



*Description is mentioned in percent change.

4.2.2.3. Increase in proportion of output sold

Overall, there is 12% increase in quantity of crop sold. However, there is slight decrease in Dhenkanal by 6%. Significant change in quantity of crop sold is not observed as the reference year i.e. 2021 as mentioned earlier was affected by delayed rainfall resulting in crop loss of major crops. (Graph 12)



*Description is mentioned in percentage

Industrialization – A Potential threat to farming

Angul and Dhenkanal are districts in Odisha that are focused upon for industrial development because of their proximity to mining areas with connectivity to different transport options. Over past two decades, several industries have been setup in both the districts that provides opportunities for local employment. Youth, particularly from both the districts are getting employment options in these industries that fetch a better income as compared to income from agriculture. This has marginalised farming in the villages and pushed agriculture as a secondary option leaving to the elderly persons in the family. This has been the major reason for reduction of dependency over agriculture in the project locations. In addition, due to industrial gas emissions, fly ash is accumulating in crop land due to which farmers experience crop damages and loss in production.



Figure 7 Threat from Industrialization

Photo: Women farmer showing damaged cucumber crop.

Intensification of Vegetable Cultivation increased farmers confidence in Satkosia and Saptasajya FPC

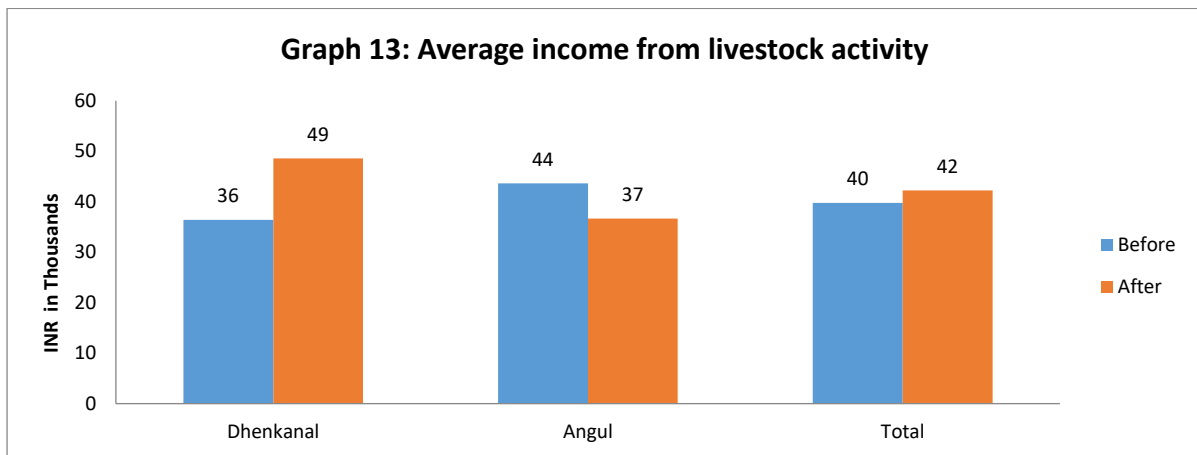
Vegetables are usually grown in Rabi season which starts from November and ends in June-July. It was reported by the farmers from the Satkosia FPC of Angul and Saptasajya FPC of Dhenkanal that post implementation of the project, they have started cultivating vegetables throughout the year and earmarked lands specifically for vegetable cultivation. Through training and exposure visits organised by FPCs, many of them have adopted multi-layer farming of vegetable.

Cash crops like Brinjal, Cabbage, Cauliflower, Beans (Long/ Cluster), cucumber, tomato, pointed gourd and bitter gourd are major vegetables grown by the farmers. While the shift from paddy to non-paddy accounted for 20% of farmers, the increase in farmers adopting vegetable cultivation is about 15% at post project scenario.



4.2.2.4. Supplementing Income from Livestock

While livestock promotion was not a focused intervention under the project, in both the districts, it is observed that there is marginal increase in livestock rearing. Overall, there is 3% increase in farmers engaged in livestock activity and generated supplementary income that has been emerging as a potential source of income for the farmers. Average annual income of families rearing livestock is INR 42,000 that includes, bee keeping, Goat rearing, Poultry and Cow (ghee making⁶). (Graph 13)

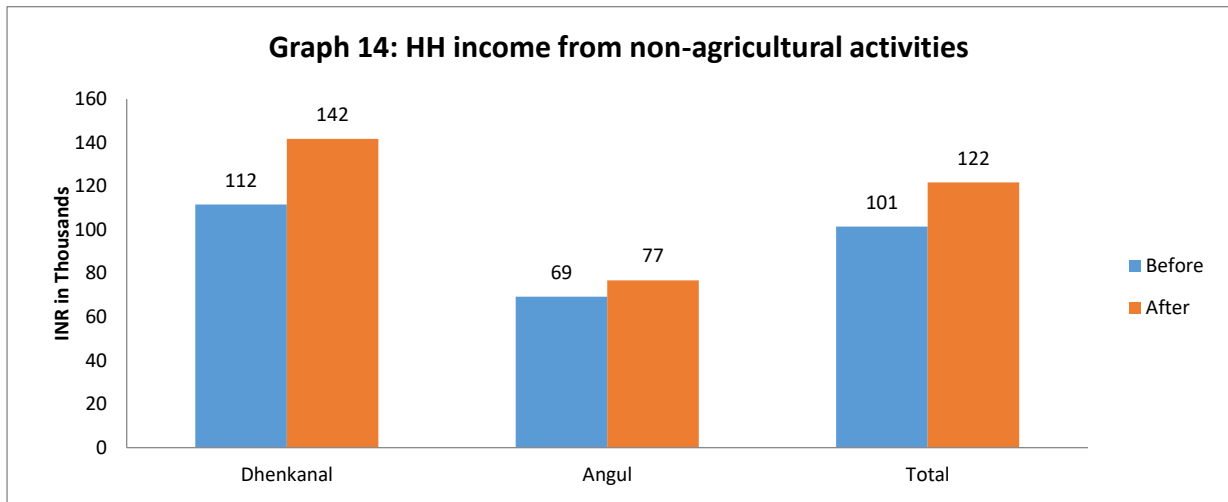


**Description is mentioned in percent change.*

4.2.2.5. Change in net HH income from non-agricultural activities

Income from non-agriculture activities is seen to have increased in both the districts. Average income from non-agriculture activities after the project is INR 1,21,733 which is 20% increase in average income after the project. Business and Microenterprise activity in Dhenkanal contributes to major source of non-agricultural income as a result of which there is 27% increase in HH income as compared to 11% increase in Angul. (Graph 14)

⁶ Ghee is a class of clarified butter from India. It is commonly used in cuisine of the Indian subcontinent



**Description is mentioned in percent change.*

4.3. Change in Input/ Investment cost of Farmers

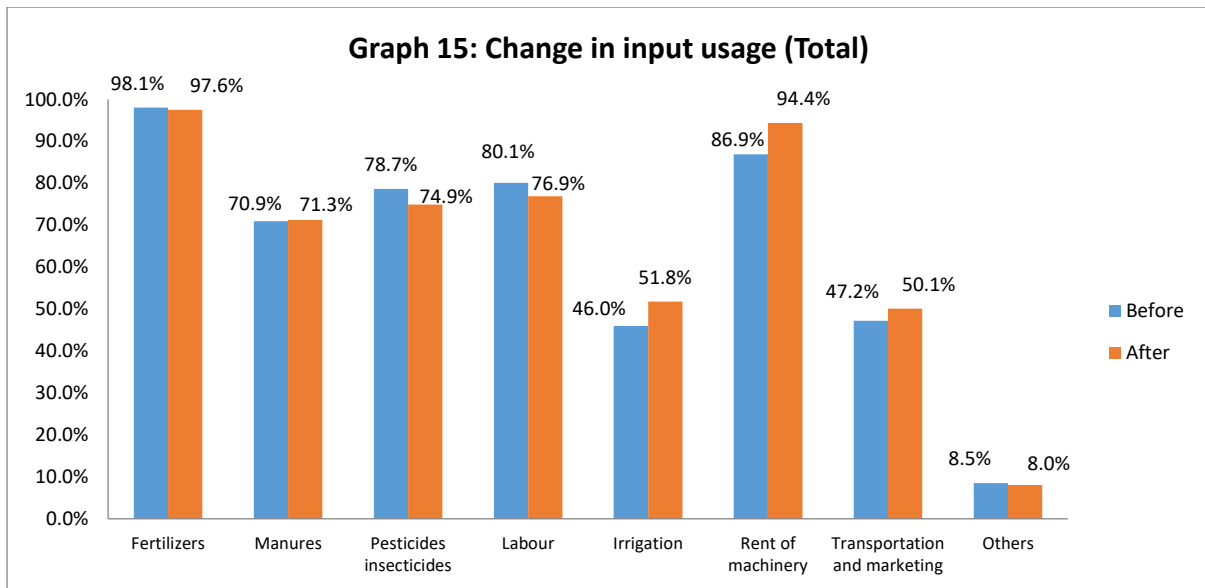
4.3.1 Trend of farm Input Usage

Use of inputs for agriculture is abundant in both the districts with 95% of farmers reporting use of farm inputs. These inputs include fertilizers, manures, pesticides insecticides, labour, irrigation, and rent of machinery, transportation and marketing, storage and others. While there is a marginal decrease in expenditure towards fertilisers and pesticides as compared to baseline, there is 8% increase in expenditure towards hiring charges for farm machineries, irrigation and transport & marketing during the impact assessment study. This can also be attributed by looking at the decrease in use of human labour by 3%.

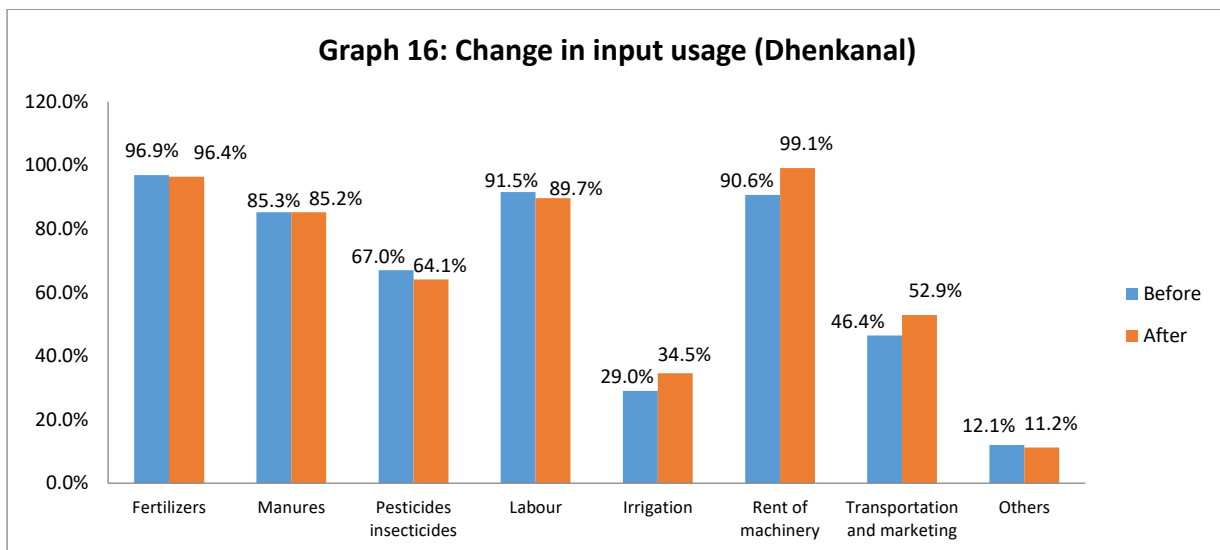
Expenditure on the input being a skewed distribution, it is found that shareholder on an average (median) spend INR 17,500 in 2021 on all the inputs excluding seed. Input cost has increased by 9.3% since the pre-implementation of project. This change in input cost is incremental with reference to time. This is also due to diversification of crops from paddy to vegetables and horticulture. Through qualitative data, it was also validated that most of the expenditures towards input includes application of fertilizers and use of farm machinery.

On an average shareholder spend INR 17500 towards Input purchase in 2021

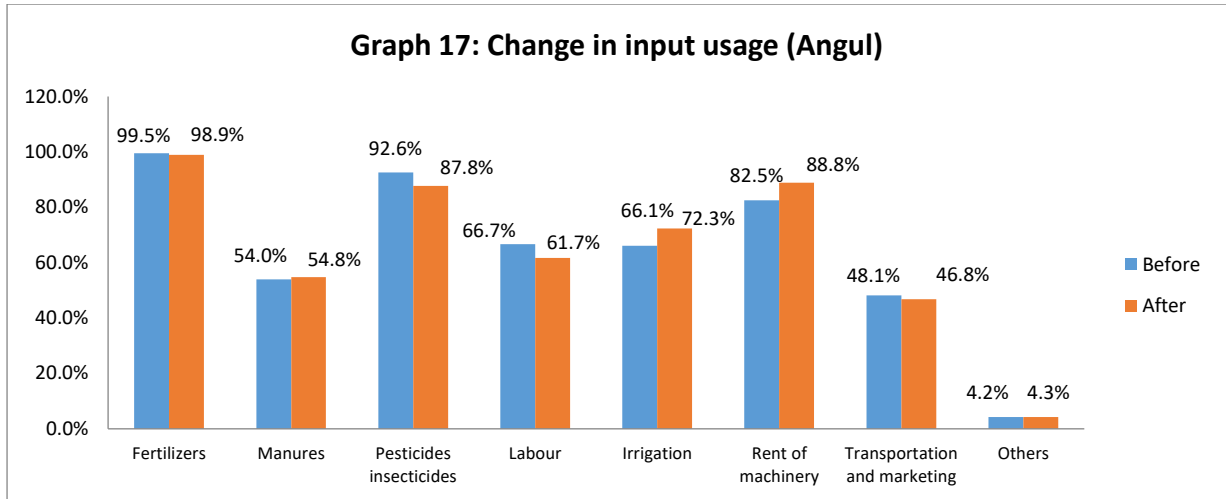
8% increase in expenditure towards hiring charges for farm machineries, irrigation



In Dhenkanal district, while the use of fertilizer and manures remain unchanged over the project implementation duration, the dependency on pesticides decreased from 67% to 64% over baseline. Similarly, the human labour has reduced by from 92% to 89%. The investment of farmers towards transportation and marketing has increased from 46% to 53% that is due to increased market facilitation through FPC.



While the trend of investment in input cost by farmers in Angul district is similar to Dhenkanal district, percentage of farmers reporting investment in irrigation is more in Angul (72%) as compared to Dhenkanal (34%). The other difference is there has been a reduction of investment by farmers in transportation and marketing activities in Angul as compared to Dhenkanal. It was validated from the qualitative interviews that due to remoteness of the villages in Angul districts, farmers prefer to sell their crops at farm gate or locally in the village to the traders or wholesalers unlike Dhenkanal where farmers prefer sending their crops to nearest market. Dhenkanal being strategically located near to major urban markets of the State i.e. Cuttack & Bhubaneswar, the probability of farmers supplying vegetables to these major cities are more as compared to Angul.

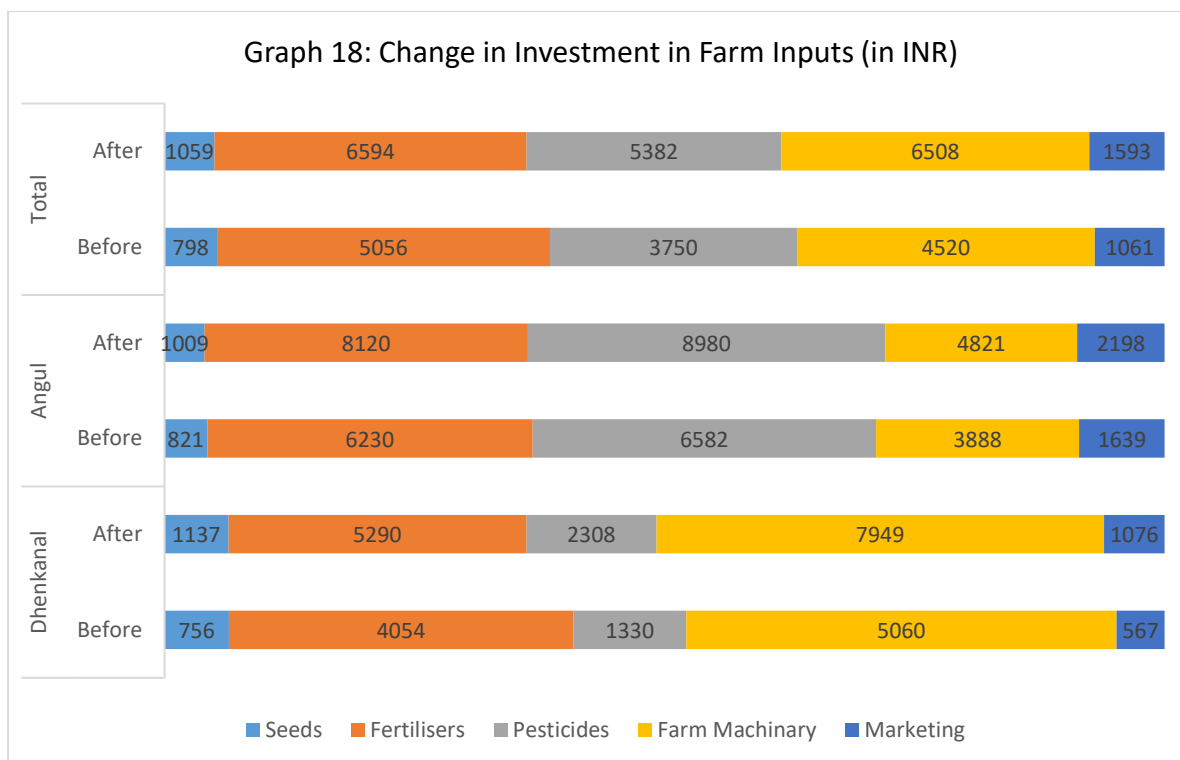


4.3.2 Investment on farm inputs by farmers

It is seen from the application of inputs that on an average, farmers are making highest proportion of investment in fertilizer followed by pesticides and marketing. Farmers comparatively spend less on marketing and transportation due the fact that local traders visit villages regularly and sometimes procurement is done at farm gate. Trend shows that expenditure on inputs is increasing due to the incremental increase in prices of input with respect to time. There is 30% increase in investment on fertilizer, 44% increase in pesticides and 50% increase in marketing since baseline. As reflected earlier, there is also shift in focus on growing vegetables as a cash crop that has impacted higher investment in these farm inputs particularly fertilizers, pesticides and marketing.

The overall investment in inputs have increased by 40% over baseline, where before the project the average investment in farm inputs was INR 15,184 which has been increased to INR 21,135. In Dhenkanal the investment on input has increased by 50% over baseline, whereas in Angul the investment has increased by 31%. In Angul the investment in fertilizer and pesticides are more as compared to Dhenkanal. Similarly, in Dhenkanal the input investment towards transport and marketing is more as compared to Angul. These differences are due to the level of fertility of land, distance from market and choice of farmers in investing in input.

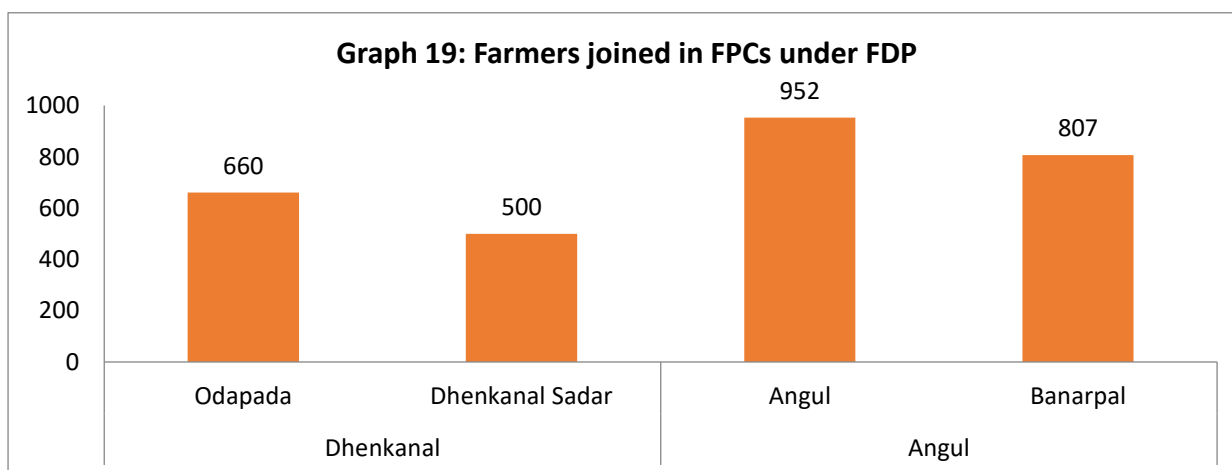
During the qualitative discussions, it was observed that farmers are preserving their seeds for paddy, they prefer procuring vegetable seeds in each season – preferably hybrid variety of vegetable seeds. This has resulted in increase in average expenditure on seed over project implementation period. Farmers usually invest in hybrid seed of Brinjal, Cabbage/Cauliflower and Tomatoes that provides a better margin and return on investment. Average expenditure on procuring these vegetables seeds calculated to be INR 1059.00 as compared to INR 798 during baseline, with an increase of about 33%. The FPCs are facilitating the supply of seeds to the farmers in the project villages at par with the market price to ensure availability of timely and quality seeds to the farmers.



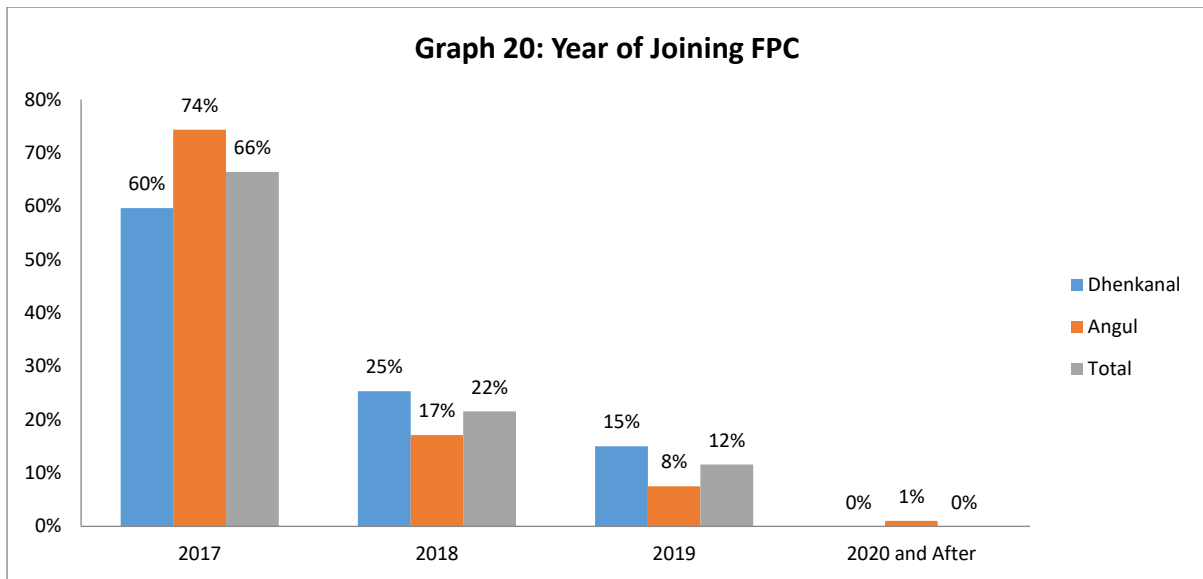
4.4. Establishment of Farmers Producer Companies (FPC) and its sustainability

4.4.1. Composition of FPC

The project has established four Farmer Producer Companies (FPC) in four blocks of Dhenkanal and Angul district. Initially the project targeted to reach out to 5000 farmers in both the districts, however, due to Covid19 pandemic started in early 2020 the total number of farmers included in four FPCs are 2919 (1160 farmers in Dhenkanal and 1759 farmers in Angul) from 51 villages in the project area. The distribution of the farmers who have joined as shareholders of the FPC are given in the following chart.



These farmers were mobilized by the implementation partner to join the FPC. At the village level, a group of 20 farmers were organised into Farmers Producer Groups (FPG) who were subsequently joined the FPC by paying membership fee and investing in FPC as a shareholder. The trend of inclusion of farmers in FPC over the project period is presented in the following chart.



Out of the 2919 farmers who joined FPC, about 66% have joined during first year of the project implementation i.e., 2017. Subsequently, 22% farmers joined in 2018 and 12% joined in 2019. As informed by the FPC leaders and CRPs worked in the project, due to Covid19 lockdown the farmer contact programs could not be organised in the villages and due to mobility restrictions reaching out to farmers through CRPs became challenging.

4.4.2. Collection of Membership fees and allocation of Share

For joining the FPC, the farmers paid INR 250 towards membership fee to the FPC. Subsequently, for becoming a shareholder in the FPC, the farmers who became the member of the FPC invested INR 1000 towards share capital of the FPC. Each farmer invested in share of INR 1000 were allotted 10 shares of FPC with a face value of INR 100/share and each farmer allocated 10 shares. The share capital invested by the member farmers of the FPC accumulated at the FPC level and became the share capital of the FPC. The shareholding pattern in all the four FPC is uniform.



Figure 12 Share Certificate

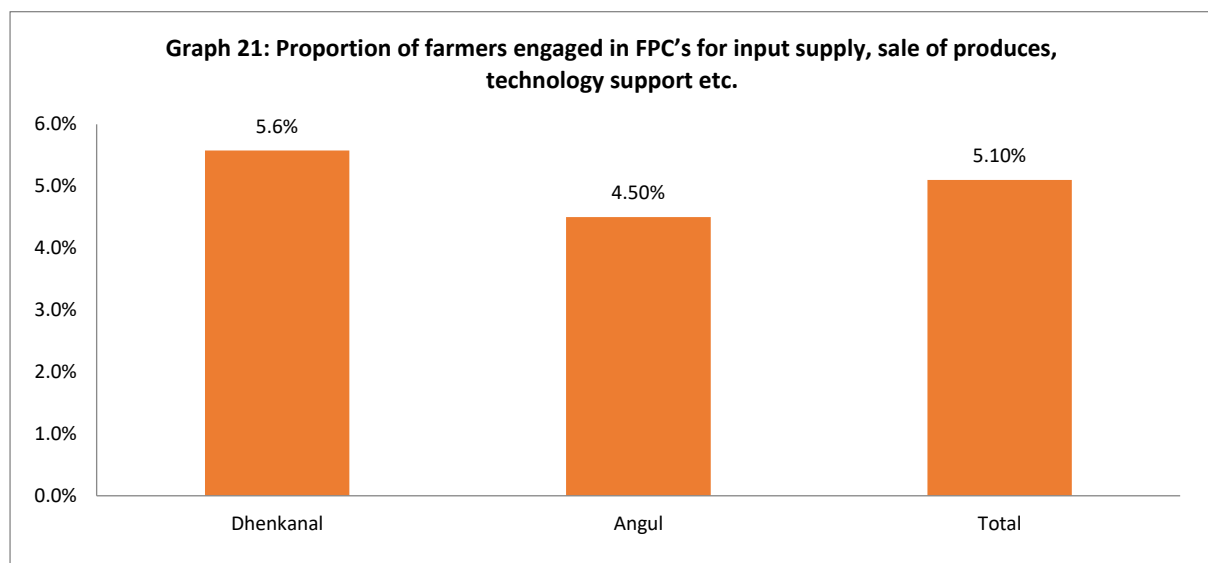
For expediting the joining of farmers in FPC and further investing in the share capital of the FPC, the implementing partner propelled the process through the CRPs, and they were directed to form FPGs in the project villages taking 20 farmers. Based on the formation of FBG and farmers joining the FPC by paying membership fee and procuring shares, the CRPs were paid their honorarium. This process was followed for expediting the formation of the FPC through incentivising the CRPs.

The farmers invested in FPC were issued with a share certificate by the FPC. These certificates are the proof of investment by the farmers in the FPC and can be redeemed at the FPC at any point of time. While these share certificates are inheritable, but it is not transferable. During the qualitative data collection, there was no such mention by the participants regarding farmers redeeming their membership from FPC. However, in few of the distantly located villages, some farmers expressed their willingness to redeem their membership as it is becoming difficult for them to access the services of the FPC in regular manner.

4.4.3 Leadership in FPC

As informed by the FPC leaders and CRPs engaged under the project as part of the qualitative interviews, there was an initial delay in constituting the Board of Director (BoD) for the FPCs. The implementation partner expedited this process by forming a quasi-board by taking the lead farmers from the villages and registered the FPC under the Companies Act 2013. The understanding was that post registration of the FPC, the quasi board will be dissolved, and a new board will be formed following the due procedure as per the provisions of the Act. However, due to Covid19 pandemic, the process could not be completed, and the quasi board is continuing to manage the affairs of the FPCs.

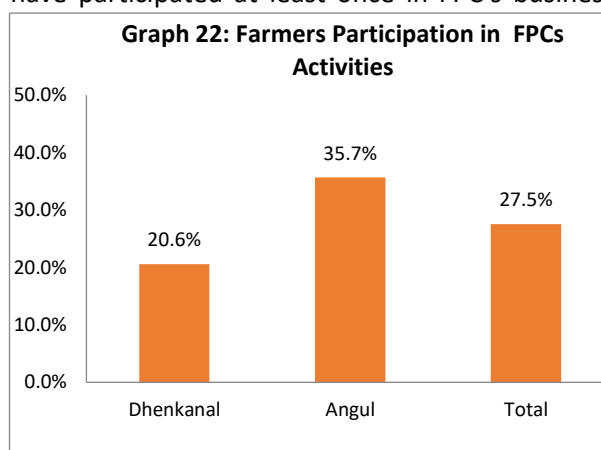
Out of the total farmers interviewed, 5.1% reported that they are holding positions in the Board of Directors of the FPCs. Out of these members, 18.2% are holding leadership position in the board i.e. President, Secretary, Treasurer.



These BoD members and FPC leaders meet more frequently to manage the operations of the FPC that includes administrative functions such as farmers registration as shareholders, accounts keeping, documentation etc., business functions such as procurement of inputs, sale of inputs, managing the custom hiring centre, procurement of produces from the farmers, sale of produces, input facilitation to farmers, training and exposure of farmers etc. The implementing partner during the project supported the BoD members in delivering their duties and also supported them in enhancing their managerial capacity to manage the operations of the FPC activities.

4.4.4. Farmers participation in FPC Activities

About 27.5% of the farmers reported that they have participated at least once in FPC's business activities during the project implementation duration and out of them 56% informed that they have been continuing the process post completion of the project implementation. These activities include business planning for the FPC for agricultural seasons for vegetable production, input facilitation, value addition, managing the CHC, marketing of produces etc. The participation of farmers in FPC activities is higher in Angul (35.7%) as compared Dhenkanal (20.6%). Post implementation of the project, the FPCs is continuing the processes with the support of the BoD Members and the CRP who are currently inducted as BoD of the FPC.



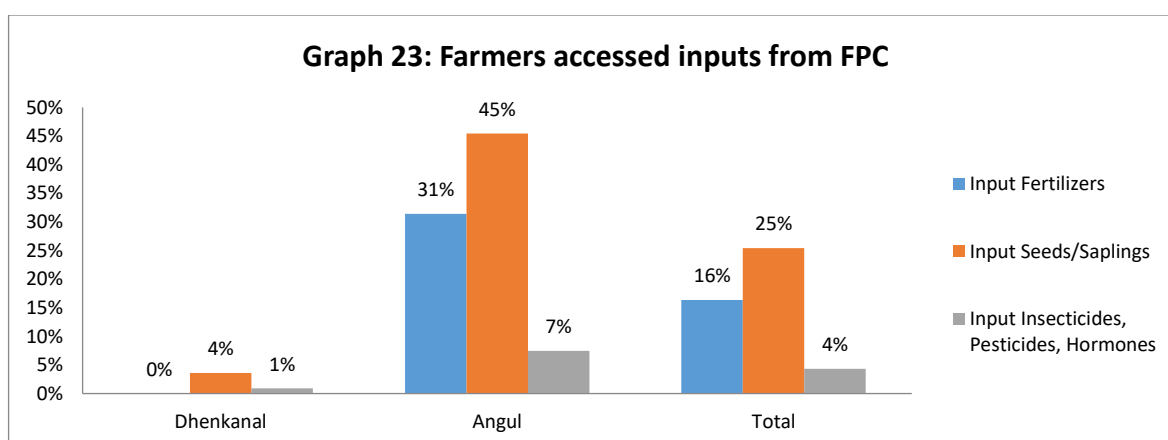
4.4.5. Farmers accessing services from FPC

4.4.5.1. Input Supply – Seeds, Fertilizer, Pesticides

In both the districts, about 74% of the respondent reported that they have received at least one input either Fertilizers, Farm Machinery on hire (Tractor, Power tiller, power prayer, weeder etc.), seeds, Pesticides, marketing support services, training, field exposure and demonstration through FPC.

16.4% of the farmers reported that they have received fertilizers from the FPCs based on their demand and 4% of the farmers reported that they have received pesticides from the FPC. The low intake of fertilizers and pesticides as input service from the FPC was due to delay in supply through the authorised dealer of the FPC and lack of credit facility for procuring the inputs from the FPC. 65.4% farmers who received inputs from the FPC reported that, they availed these inputs at lower price from FPC as compared to the market price.

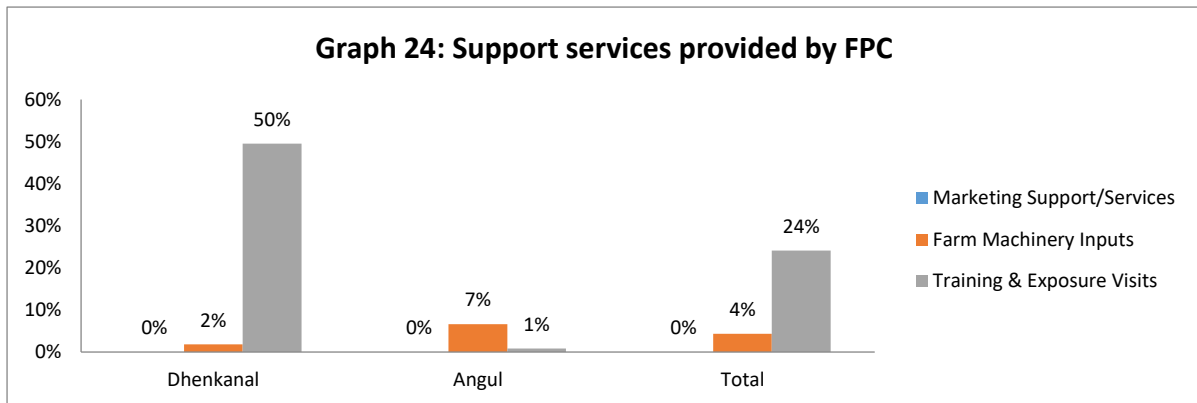
25% of the shareholders reported to have received input seeds from the FPC. It is interesting to note that the input support services provided by the FPC are much higher in Angul district as compared to Dhenkanal district.



4.4.5.2. Support Services received from FPC

Training & Exposure

The details of training and exposure visit, support services provided by the FPCs were captured in the farmer’s interviews in Dhenkanal district where 50% of the farmers reported that they have received training from the project. However, the number is quite low in Angul district. 53% of the shareholder farmers have received mobilization support whereas 37% and 8% of the shareholders received various training and field exposure visits. However, the support towards training and exposure are concentrated more at Dhenkanal district while farm machinery in Angul district.



Farm Machineries

4.3% of the respondents reported that they have used farm machinery from the custom hiring centres (CHC) managed by FPC. The use of farm machinery is better in Angul as compared to Dhenkanal district. Low usage of the farm machineries is due to a smaller number of machineries available at the FPC managed CHCs. While farmers have acknowledged that the rental charges of the machinery were relatively lower at FPC managed CHCs as compared to the private owners/ providers, due to more number of farmers in the FPC dependent on these farm machineries, the availability to all the farmers remained an issue. The farm machineries available at the FPC managed CHC was limited to power tiller, power weeder and power sprayer. Farmers

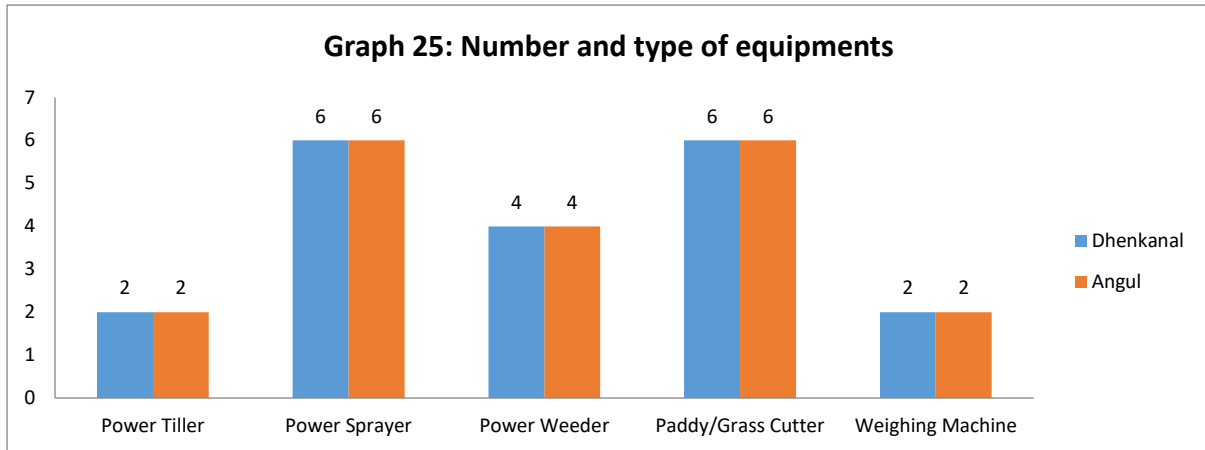
80% of the farmers who accessed inputs, hired Farm Machineries from Common Hiring Centres (CHC) setup by FPC

reported that the machineries available at CHCs offered at low user fee to the FPC shareholders as compared to local market price. A comparative cost of hiring the farm machineries from FPC and local market is given in the following table. It is observed that the FPC is charging more 40% lower hiring charges as compared to the local market.

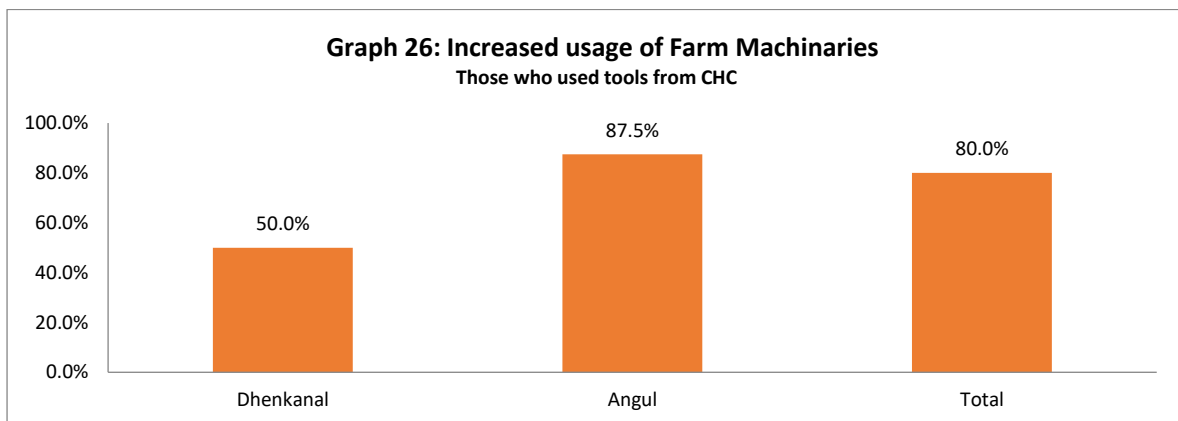
Table 1 Comparative Hiring Cost of farm Machinery

Farm Tools	Rental Basis	Cost in INR from FPC	Cost in INR from Local Market
Power Sprayer	Per Day	100.00	Not Available
Power Tiller	Per Hour	400.00	600
Grass Cutter	Per Day	100.00	200
Power Weeder	Per Day	200.00	350

A total of 40 number equipment is available in both the districts. Each FPC has procured 1 Power tiller, 2 Power Weeder, 3 Grass/paddy cutters, 3 Power Sprayer and 1 weighing machine. There is one mother CHC usually at FPC office whereas there are 2-3 agri-points within the FPC. Agri equipment like Power weeder, power sprayer, and paddy/grass cutter are available in these agri-points. Power tiller is usually available at mother CHC.



80% of the farmers who accessed farm machineries from the FPC expressed that their usage has increased. This has also resulted in farmers individually procuring low-cost machineries such as power weeder after realising the utility of the tool and its efficiency. Usage these machineries was marked higher in Angul as compared to farmers of Dhenkanal. Through IDIs and KIIs, it reflected that number of these farm machineries managed by the CHC was not adequate during the peak seasons. Thus, at times farmers hired farm machineries from local suppliers.



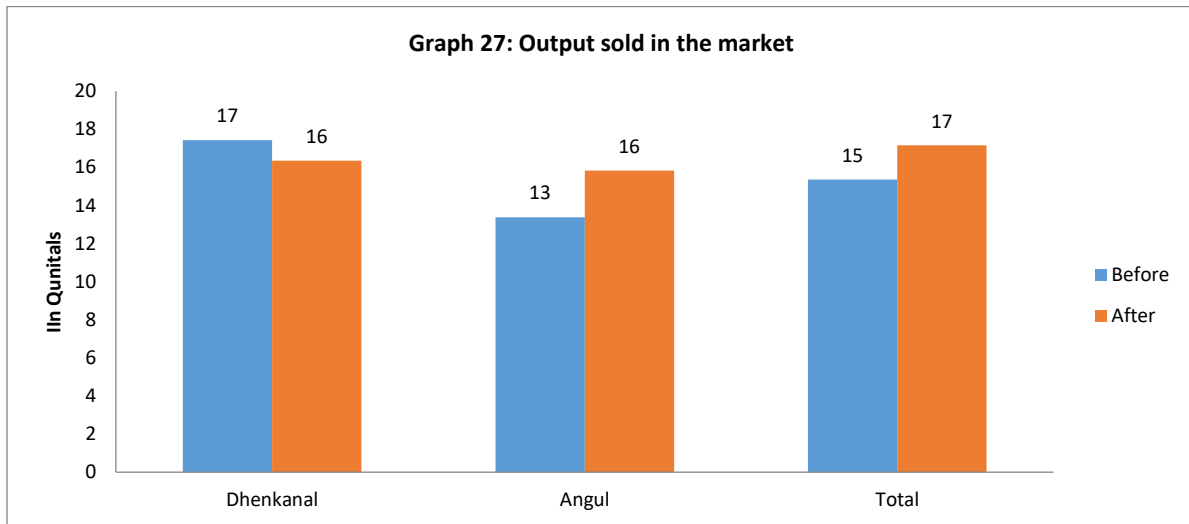
Market Linkage

Collectivisation of farm produces, and marketing being one of the key interventions under the project, could not be initiated by the FPC due to the onset of Covid19 pandemic. Only 6.5% of the respondents in Angul reported that they have sold their crops in a better price as compared to prevailing local price that was facilitated by the FPC. However, about 17.6% of respondents from Angul reported that they have

On an average farmers sell 17 Quintal of total produce (All varieties of crop including cereals and vegetables) in post project period as compared to 15 quintals in pre-project phase.

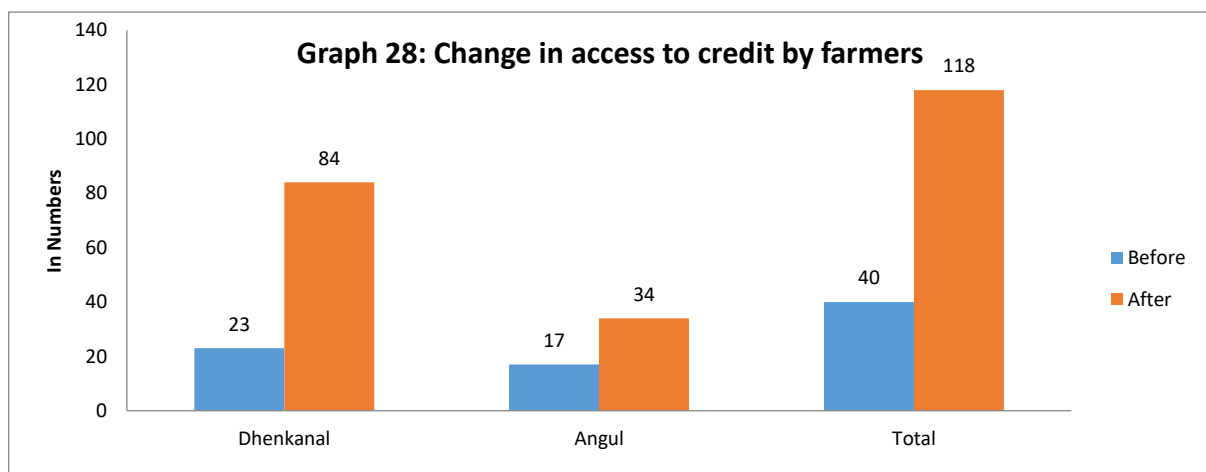
sold at same or in lower price as compared to local market price facilitated by FPC. In Dhenkanal, there is not much effort visible in the collectivisation and marketing of the crops by FPC.

Despite of the sporadic marketing support through the FPC, the farmers could sell 17 Quintal of total produce (All varieties of crop including cereals and vegetables) in post project period as compared to 15 quintals in pre project – reporting an increase of 12% of output sold after the project is implemented. In Dhenkanal there is a marginal reduction in the outputs sold as compared to Angul. However, from the qualitative interviews it was ascertained that this decrease is only in the year 2021 but in the preceding years, there were more quantities of outputs sold as compared to base year i.e. 2017.



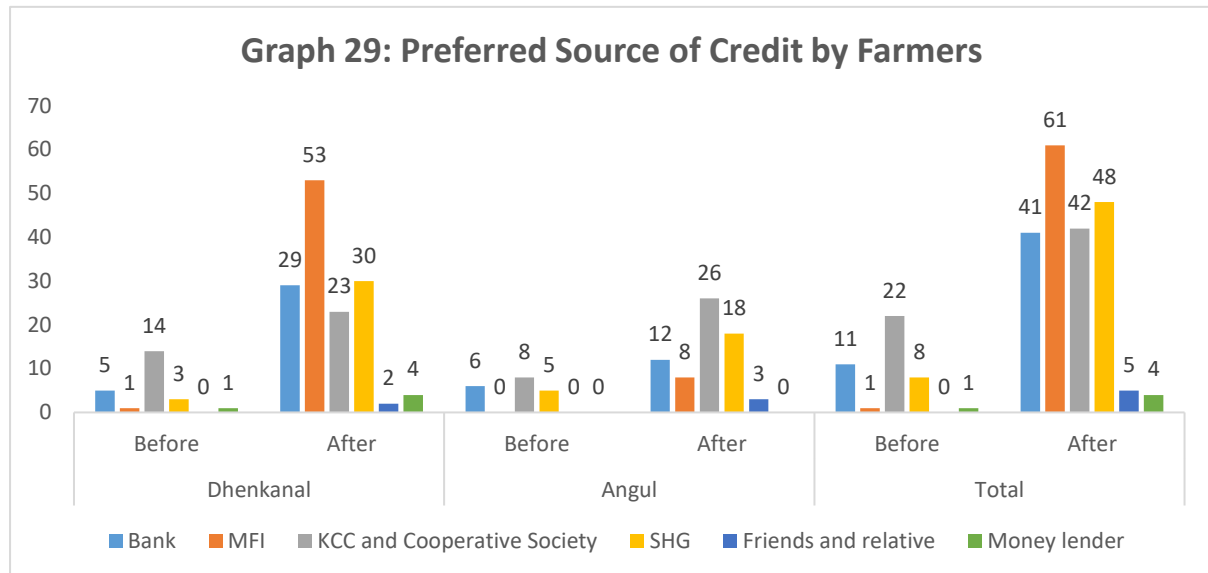
4.4.2.3. Access to Credit

Post implementation of the project has increased demand for rural credit in the project villages. About 27.3% of the farmers from both the districts have availed credit from different sources at least once during the project implementation duration. Accesses to credit by the farmers have increased by three times in post project scenario as compared to the baseline. Access to credit by farmers of Dhenkanal is higher as compared to Angul, which is increased by 265% as compared to 100% increase in Angul. (Graph 28)



**Description is mentioned in percent change*

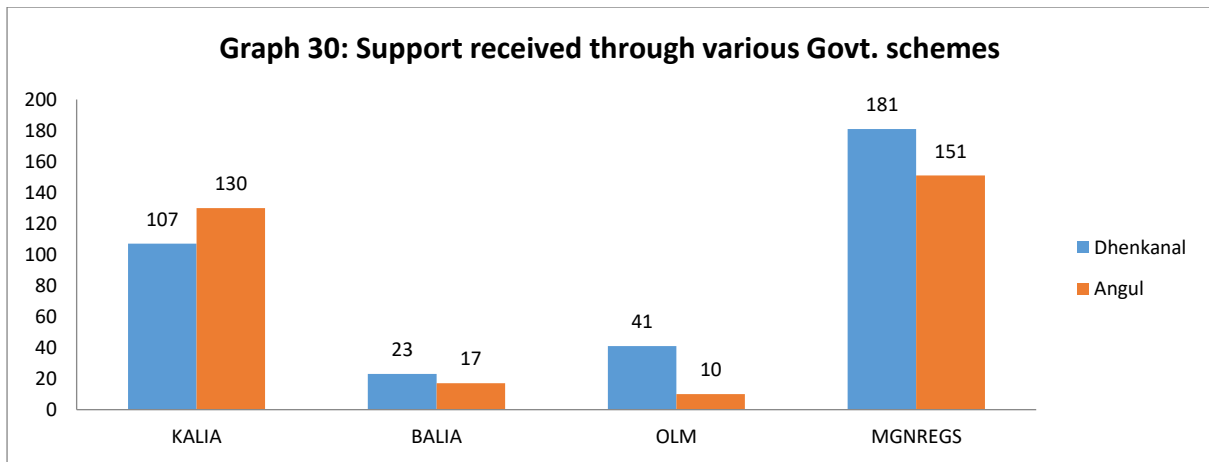
Among the farmers who have accessed credit, about 29% of them availed credit from MFIs viz. Annapurna, L&T, SKS Microfinance, Bandhan etc. Farmers availing loans from MFIs have significantly increased about 60 times in both the districts. 24% of the farmers availed loan from SHGs followed by 20% from cooperative societies/ KCC and 20% public/private sector banks. The average loan ticket size in both the district is INR 30,000 as compared to the ticket size of INR 25000/- before the project implementation. The ticket size has increased by 20% over the project implementation period. The average tenure of these credits availed by the farmers is 12 months.(Graph 29)



**Description is mentioned in percent change*

4.4.2.4. Convergence with Government Schemes

Given the economic context of the project geography, income support from the social security schemes is a critical to the farmers. While the FPC does not have a direct role in providing these services, however, it facilitated farmers to access to these services. About 77% of the farmers in both the districts have reported to be benefitted from MGNREGS wage employment. This has become one of the major supports for these households during the Covid19 pandemic. In addition, post 2019, DBT under Krushak Assistance for Livelihood and income Augmentation scheme ([KALIA](#)) and subsequently [PM-KISHAN](#) benefited 55% of the farmers in both the districts. About 12% of the farmers benefitted from income support scheme from Odisha Livelihood Mission ([OLM](#)) and 9% availed [BALIA](#) scheme.



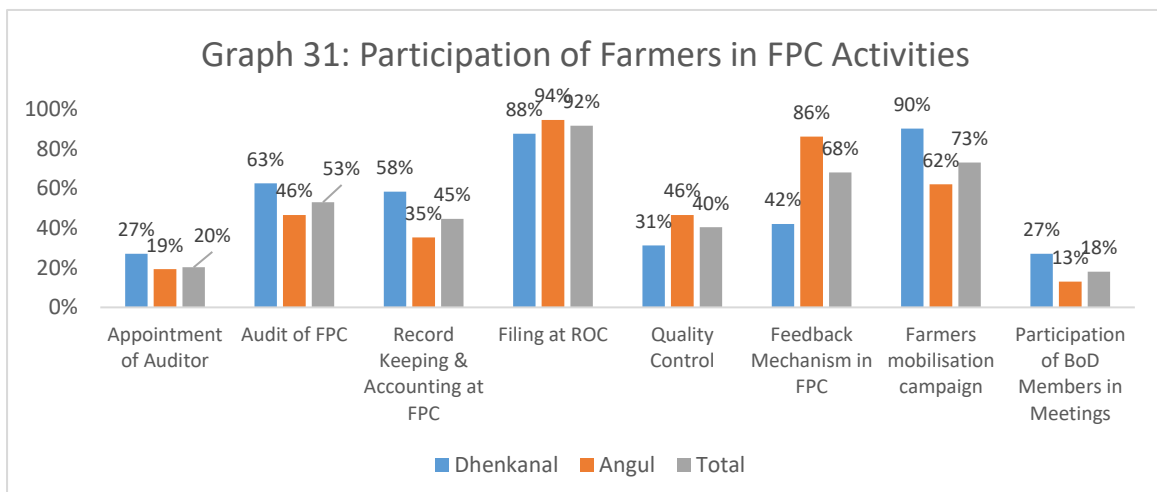
Farmers in Dhenkanal have benefitted lesser as compared to farmers of Angul from these social benefit schemes. Near half of the sample farmers i.e 46% of farmers in Dhenkanal and 65% shareholders with respect to district samples have received PM-KISAN (KALIA). Through, FGDs, it reflected that, many farmers are unaware of the possible reasons for not getting PM-KISAN (KALIA) benefit.

In addition to these social security schemes, the FPC has facilitated procuring seeds from the Horticulture Department and supplied it to the farmers. Vegetable kits, potato seeds etc. were procured and supply by the SHG in both Dhenkanal and Angul districts. Similarly, FPC has obtained the fertilizer dealership through AgrisNet which is a Government of India enterprise supporting farmers and their collectives in supplying agriculture inputs.

4.4.6. Sustainability of Farmers Producer Companies (FPC) and Stabilisation of Farmer's Income

4.4.6.1. Members participation in Decision Making

28% of the farmers have responded that they have participated in FPC activities. The participation of farmers in Angul (36%) district is higher as compared to Dhenkanal (21%). Farmers who participated in FPC activities reported that they are aware about the appointment of auditors (20%) and audit of the FPC accounts (53%), have exposure to the accounts of FPC (45%), filing returns at Register of Companies (92%), quality control protocols of FPC (40%), farmer's feedback mechanism (68%), farmers mobilisation campaign (73%) and participation in BoD meetings (18%). This indicates that the farmers have a fair exposure to the FPC processes and participated in some of the processes that have been established through the project support.



4.4.6.2. Capacity Building of FPC

Capacity building trainings and awareness programs to FPC leaders were provided time to time by the implementation partner. Trainings included bookkeeping, mobilization and use of machinery at CRP level. Trainings for FPC members in Board of directors included team management, bookkeeping, banking procedures and funds mobilization.

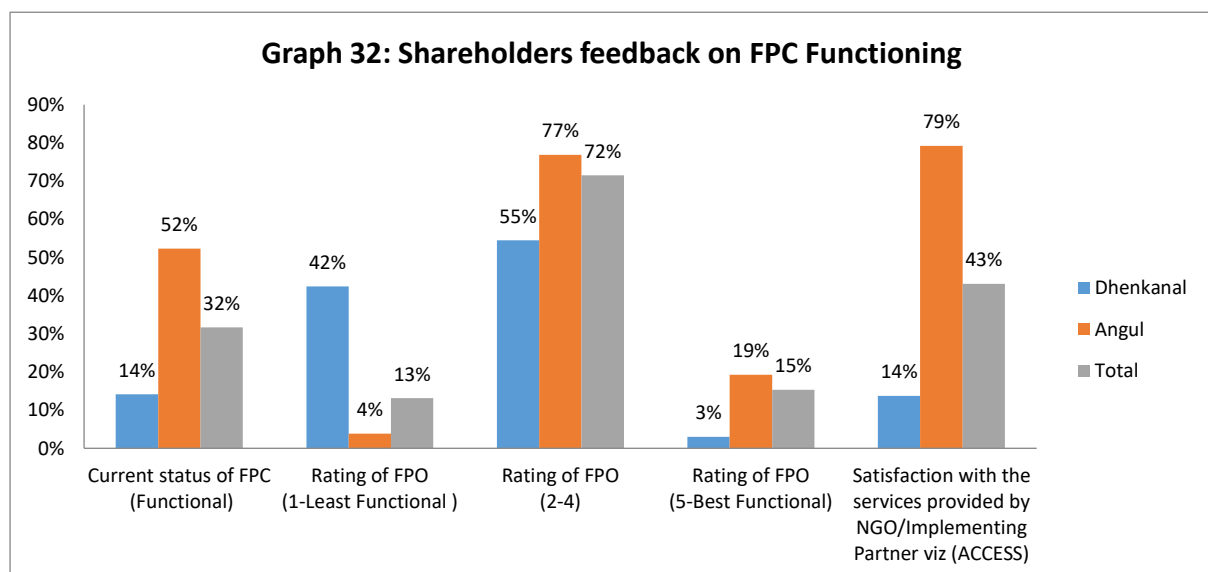
Board members of the FPCs meet once in a month. However, during the need of the hour, more than one meeting are also organised. The FPC board meetings were facilitated by the implementation partner staff; however, post completion of the project the FPC BoD members are organising these meetings themselves.

4.4.6.3 Optimal use of share capital, equity contribution by farmers and benefit sharing

As mentioned in earlier sections, the membership fee and share capital invested by the farmers have been deposited in the FPC bank accounts. These FPC bank accounts are operated by the selected BoD members. As the project has been completed, the funds available at the FPC need to be invested optimally to ensure maximum profit to the FPCs. The FPCs could not take up organised marketing of the products from the farmers during the project implementation period due to covid19 pandemic. These have resulted in limited income to the FPC only from the sale of farm inputs and hire charges from the farm machineries. However, the Satkosia Agro Producer Company Ltd. in Angul reported a marginal income from selling tomatoes collectively through the FPC. Due to such limitations and low business volume the FPCs could not share any benefit from their business to the farmers.

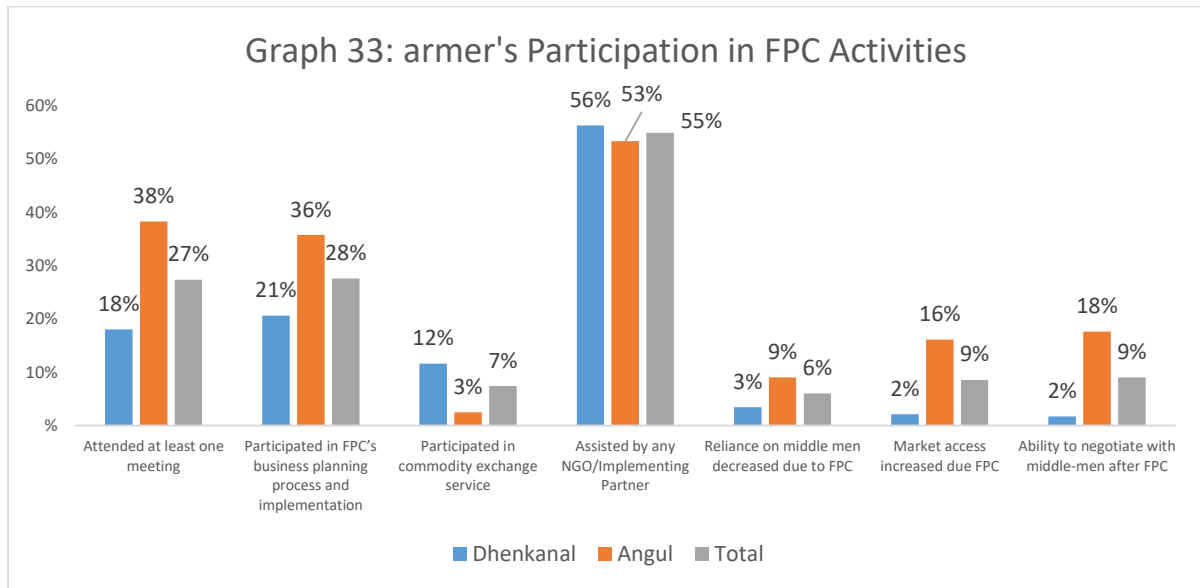
4.4.6.4. Increased trust on the FPC services and facilities

During the initial years of the project implementation, the FPC was able to generate the energy and enthusiasm among the farmers. Due to covid pandemic, the continuation of such efforts were lost. In post project implementation scenario, about 32% of the farmers reported that the FPC is functioning; however, majority of farmers are unaware of the current functioning of the FPC. Due to limited mobility and support during covid19 pandemic, the FPCs faced challenges in terms of connecting with the farmers, reduced the frequency of their meetings etc. that caused such low level of awareness and participation in post project scenario.



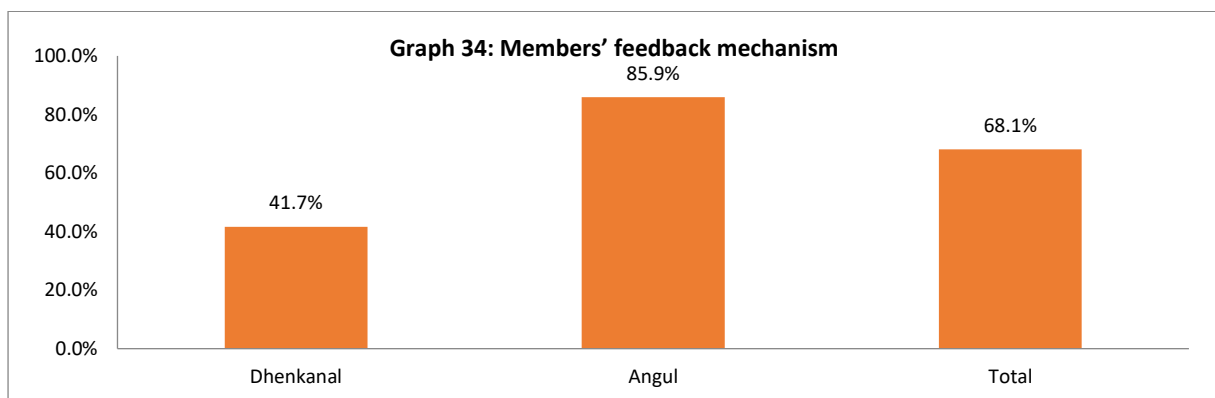
In spite of these challenges, about 7% of farmers reported that they have participated in commodity exchange events organized by FPC, 55% of the respondents reported that they have been assisted by the Implementing Partner for any of the farmer outreach/ mobilization/ enrolment activities, 6% reported that their dependency on middle man has reduced, 9% farmers reported having better access to market due to FPC, and 9% farmers reported that they have increased negotiation capacity with the middleman post joining of the FPC.

While there are variations between Dhenkanal and Angul district across these responses, the FPC could generate that spark among the farmers that they need to continue further.



4.4.6.5. Restoring farmers feedback mechanism

68.1% of the farmers who participated in the FPC activities reported that the feedback mechanism in the FPC in the initial phase was working well and they could be able to raise their concerns before the FPC. However, during and after the Covid-19, feedback mechanism was discontinued. Banarpal Agro Producer Company Ltd., Angul was implementing the feedback mechanism more effective as compared to other FPCs, where the FPC was intervened to replace inputs like seed and pesticides supplied through various agencies to the FPC. FPCs may continue restoring such feedback mechanisms that will help them in providing better services to the farmers and also generate profit for the FPC.



4.4.6.6. *Coping with market challenges through FPC*

The project has demonstrated the collective model of economic development that would enable the farmers to mitigate the potential production and market risk through the FPC. Connecting with mainstream agriculture and livelihoods improvement programs, the project has minimized the risk to the farmers and enabled them to enhance their economic opportunities through collective efforts in production and marketing.

As discussed in earlier sections, the FPCs could promote collective production of vegetables and marketing in a limited way. In addition to Covid-19 pandemic being one of the primary reasons for restricting the collective marketing of produce, market intelligence in terms of price, location and traders, are some of other factors which impacted the FPC marketing process. However, it was observed that Satkosia Agro Producer Company Limited in Angul marketed Brinjal collectively in 2019 through the Regulated Market Committee (RMC), Angul. These are the little steps that the FPCs could take to create impact on the farmers in the project villages regardless of challenges such as delay in payment from the bulk buyer at RMCs, price offered to FPC was less than the procurement price of the FPC etc.

4.4.6.7. *Quality Control & Value Addition*

For fetching better market price, the project promoted basic value addition of the products through the FPC such as sorting, grading, standardised packaging etc. FPC needs to popularise these basic value addition approaches through its members farmers to fetch a better market and price of the produces. Post-harvest technologies need popularisation in the project area for better sustainability of the FPC interventions. For better facilitation of the post production value addition support, FPC may consider setting up cluster level common facility centres to manage the value addition and marketing related services for the farmers.

5.0 Review of program interventions against efficacy, effectiveness, and sustainability

The assessment of the project efficacy, effectiveness and sustainability is based on the mapping of the output and outcome indicators assessed between two time ranges, on a scale of 1 to 5, where 1 least and 5 is most preferred score.

In terms of efficiency of the project, the design of the project has moderately address the key issues of the farmers including increased availability of farm inputs and machineries, propelled credit, facilitated collective support through promotion of FPC and more importantly, increasing gross income of the farmers through vegetable cultivation. The efficiency of project implementation scored lower as compared to its design due to discontinued support post Covid19 pandemic. This has resulted in slowing the pace of implementation affecting the farmers expectation from the project interventions and partnerships established. The project lacked in establishing an effective exit protocol leaving the FPC leaders and farmers in uncertainties of continuation of support services.

Efficacy







- To what extent the program design and interventions addressed the problems identified at the beginning of the programme?
- How efficiently the program interventions have been implemented in achieving the goals?
- How efficient are the institutions/partnerships/networks/linkages established under the program to sustain the outcomes or changes?

Assessment Results







Targeting of small and marginal farmers, women farmers is one of the critical interventions that resulted in increase in income from vegetable cultivation in the project area. The project reached out to about 60% of the targeted farmers as planned through an inclusive and sustainable manner. The project’s interventions around provisions of affordable, accessible and quality services is was affected by limited number of resources available before the project and lack of augmenting adequate support from mainstream government schemes. The value chain support services at pre-production and production stage was well established through the FPCs; however, the support in post-production stage particularly collective marketing lacked in the project due to Covid19 pandemic induced lockdown.

Effectiveness

To what extent the program achieved the goal of enhancing livelihood of 5000 farmers sustainably and inclusively by promoting Farmers Producer Companies		3
To what extent the program interventions provided affordable, accessible and quality technical support and access to market and financial services of the members of the FPC.		2
To what extent the program promoted integrated value chain to promote sustainable processes resulting in an increase in the income level of farmers.		2
Are there evidences of positive changes in livelihoods, income and overall well being of farmers?		3
To what extent the programme delivered on equity and empowerment (Partner Agency-Structure-Relationship)?		3
What are the key learnings from the program implementation which can be useful for other programs of similar nature?		4

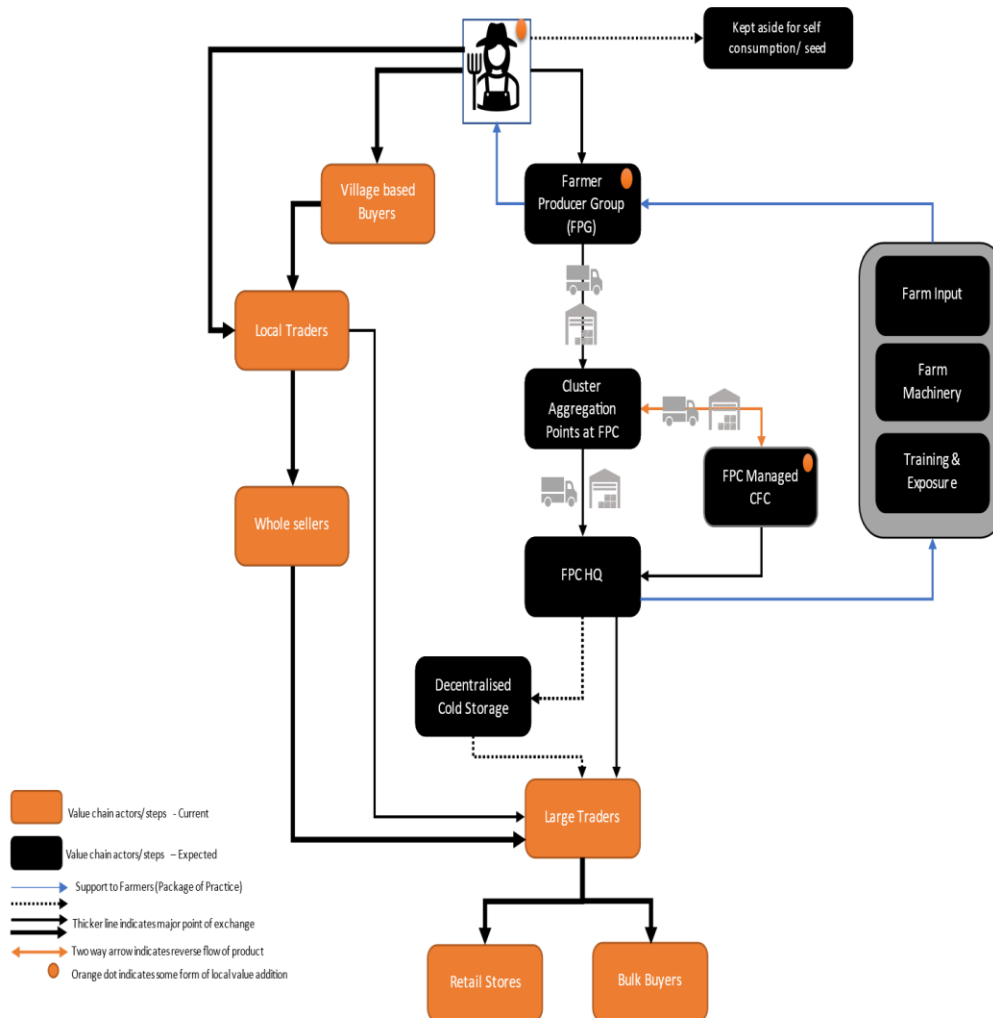
As regards to the sustainability of efforts and institutions, the ownership over the FPCs is quite visible among the shareholder farmers and their attribution toward project’s efforts in channelizing mainstream resources to them. However, FPC as an institution lacked in continuing these efforts and processes due to their lack of capacity in managing a legal institution such as FPC. However, the involvement of implementation partner and support from the government agencies were well facilitated under the project. The project has least contribution in terms of contributing to state policy in agriculture and influencing for a better policy and legal environment for promotion of farmers collectives such as FPC etc.

Sustainability

How far the communities and institutions are prepared themselves to sustain and take forward the positive changes?		2
What has been the involvement and support of all partner organisation, local stakeholders, government and private sector in the process of program implementation?		3
What are the implications of the programme for state policies and programmes?		1
To what extent has the programme contributed in enabling a better legal and policy environment for tribal development?		1

6.0. Conclusion and Recommendations

The project envisaged to establish processes that would enable the farmers to enhance and stabilise their income. In addition, the institutional mechanism that has been promoted would sustain the initiatives taken under the project. The following illustration explains how the envisaged processes has addressed some of the key issues in the production value chain of vegetables and provided a better appreciation of the value created through the project.



The project interventions positively positioned the concept of collective model of business operation by establishing the FPCs across four locations covering about 2919 farmers in 51 villages. These initiatives have penetrated an organised process of collectivising input supply, farm mechanisation and output sale through the FPCs. Regardless to the economic and social challenges encountered as part of the processes, the FPC established the business model and operated in four-year timeframe that will possibly sustain the efforts and practices in future.

The project attributed about 24% increase in income of farmers from the vegetable cultivation that helped the farmers during the difficult times of Covid19 pandemic. The increase in income was achieved through increase in production and crop diversification. About 20% additional farmers joined in cultivating vegetables and others intensified vegetable cultivation through adoption of better cultivation practices such as multi-layer farming, trellis method of farming etc. Promotion of

vegetable cultivation through FPC has propelled the demand for credit that has been increased by four times during the project duration.

While the project interventions are quite impactful in terms of initiating income of farmers, the FPCs promoted are facing challenges around sustainability. The leadership of the FPCs needs more capacity development support in terms of collective marketing of produces and normalising the processes after a gap of 2 years due to Covid19 pandemic.

6.1. Recommendations and way forward

Based on the observations and analysis of primary and secondary information presented in this report, the impact assessment recommends two pathways for the HDFC Bank CSR to consider. The first is more of a strategic pathway in terms of ensuring and enhancing the intended impact of the “Focused Development Programs” of HDFC Bank CSR. The second is more of an operational pathway on how to consolidate the efforts that are already made in this project and ensure that the beneficiary households are not deprived from the service of the project and making the FPCs sustainable.

6.2. Strategic Pathway for achieving intended impacts

Under the first strategic pathway, there is a need to shift the focus of the existing implementation model and realign it with the state and national objectives that are currently promoted and/ or operational. Over the past decade, the FPC model is turning out to be a befitting approach in terms of collectively reaching out to the small & marginal farmers in delivering better quality inputs, subsidies, credit facility, value addition, marketing and other related business ecosystem services at an optimal time and cost. The Ministry of Rural Development (MoRD) is committed to promote 10,000 FPC across the country through their flagship program National Rural Livelihood Mission (NRLM). Similarly, the State Government of Odisha is promoting Agriculture Production Cluster (APC) under the purview of Department of Agriculture and Farmers Empowerment (DAFE) in convergence with Odisha Livelihood Mission (OLM) and Mission Jeevika with the participation of civil society organisations. The HDFC FDP project initiatives in Dhenkanal and Angul are quite similar to those projects promoted by the Government. Therefore, it is expected that these CSR investments needs to supplement its impact instead of recreating similar interventions. There are evidence of CSR investments made to manage public run projects in supplementing in terms of knowledge, technology, skills and other related ecosystem services instead of considering implementation of the project. In addition, this will provide an increased coverage in terms of geography and population along with building a stronger partnership with government and other civil society organisations. Following are some of the key considerations for the HDFC Bank CSR.

- a. Revamping the project design approach:
It is recommended to revisit the project design approach to ensure that the project goal, objectives, outcomes, and activities are aligned with the expected results of the project. Developing a Theory of Change or adopting Logical Framework Model would be beneficial in designing the project and that will also help in subsequent monitoring & evaluation.
- b. Robust Monitoring and Information Management:
In the absence of project related data and information, evaluation of the project becomes challenging as it required additional time and effort in producing baseline through recall. However, a strategic corporate monitoring plan for CSR projects and a common MIS may be

developed to ensure that the implementing partner are fetching implementation progress in regular and standardised manner.

6.2. Operational Pathways for the Odisha Project

While the project in Angul and Dhenkanal had an encouraging start, the time required for complete roll-out was affected by Covid19 pandemic induced mobility restrictions. The initial farmer contact programs, mobilization, value chain interventions were well conceived, and the motivation of the farmers were raised. However, abrupt discontinuation of the project support created discontent among the farmers, and they feel they are excluded from their project benefits. Keeping the farmers interest in mind following recommendations under a and b are made to be considered by HDFC Bank CSR. The recommendations from “c” onwards are primarily for considering future projects of similar nature.

- a. Consolidating the efforts and inputs given in promoting FPCs
After withdrawal of the implementation partner and due to a huge time gap due to Covid19 pandemic, the shareholding farmers in all the four FPCs are clueless, and the BoD members are confronting challenges in managing the FPC. Due to lack of monitoring and support, the FPC has also not completed their compliances requirements as per the Companies Act. 2013. In such a context, they need additional support for about six to nine months for consolidating the efforts and take the FPCs to a stage where other departments or agencies can take them for supporting.
- b. Institutional handover of the FPCs to mainstream organisation/ departments in government or supported projects
To ensure better sustainability of the FPCs, it is recommended to officially handover these four FPCs to some of the local agencies who are operating in the districts in promoting FPC particularly under Agriculture Production Cluster Project of Govt. of Odisha. As they have systematic support arrangements are in place, the FPCs will not be deprived of the benefits that they are entitled to receive. This may be conducted in coordination with the local agriculture or horticulture officer at the district, Odisha Livelihood Mission and local NGO's operating in the geography.
- c. Ensuring community participation to strengthen the FPCs
Community participation is the crux of the success of any community development initiative. The findings suggest that due to lack of community participation and ownership after withdrawal of the implementing partner, the FPC could not manage themselves and their leadership remains engaged in internal conflicts rather than acting proactively to promote and manage the FPC business. The other observation is elite capture which was also experienced in both the districts, where the influential and politically mobilised individuals took over the initial FPC operations without ensuring participation from the farmers. Similarly, women participation is also very critical in such community development projects.
- d. Developing perspective plan
A long-term plan for the project with year wise break up of activities and cost would enable the FPCs or similar community institutions to execute better and monitor their progress against the plan. While the project design was quite informative, due to lack of proper

implementation plan and timeline, the project could not be reached out to its intended number of beneficiaries and results.

- e. **Adopting a systemic approach in project implementation**

While the program focused on identifying and fulfilling needs of the community in different thematic areas, such need identification may not cover underlying factors or drivers that generate the problem in the first place. For example, while selecting types of inputs to be provided to the farmers is a good objective to have, a thorough analysis of why that input, at what quantity it is needed and how it will be practices are some of the critical questions that needs to be answered while developing the implementation plan. This will determine the drivers and constraining factors in achieving this outcome. Moreover, the programme may find it useful to undertake a systems analysis to determine actors, characteristics/ behaviours and leverage points, so that the interventions are better contextualized, and the outcomes expected are fine tuned.
- f. **Shifting focus on outcome monitoring**

It is also vitally important to assess outcomes or whether the intended outcomes have been achieved in addition to looking at outputs concurrently. In addition, the evaluation should be planned and carried out from the very beginning of the project. Evaluations should be conducted according to the nature of research designs. Insufficient and robust evidence of project success and/or learning can be obtained from post-project assessment without a baseline and comparison group. In order to ensure a successful evaluation, it may be helpful to have an evaluation partner on-board from the outset, which can provide support in designing the evaluation and support in providing frequent learning to the decision makers throughout the program in order to allow them to correct course, if necessary.
- g. **Setting up an appropriate exit strategy**

Project withdrawal strategy is critical for the sustainability of the project interventions, institutions and further continuation of the project benefiting the communities. In this project, the withdrawal was abrupt, uninformed and unplanned. Therefore, it created a chaos among the farmers who invested their time and resources over more than 4 years. Similarly, the implementing partner may be advised to submit an exit and sustainability plan at the state of project design and that may be considered as a major evaluation factor of the proposals from the potential implementation partner.

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Weblinks

- <https://angul.nic.in/about-district/>
- <https://dhenkanal.nic.in/>
- <https://farmech.dac.gov.in/FarmerGuide/OR/index1.html>
- http://www.desorissa.nic.in/agril_census.html

Annexure

Annexure 1: Parameters and Indicators (Quantitative & Qualitative)

Key Domains of Assessment	Parameters	Proposed Indicators	Dhenkanal			Angul			Total		
			Before	After		Before	After		Before	After	
Gross Income of farmers	• Production from farm	1. Increase in production (yields) of major crops (Vegetables and Horticulture)	19%		↑	8%		↑	15%		↑
	• Diversification of crops	2. Increase in Household incomes from farm-based activities in agriculture (types of crops grown, quantities produced, sales price of agricultural produce, monetary imputation of self-consumed produce)	22%		↑	26%		↑	25%		↑
	• Livestock / other supporting activities	3. Increase in net household income from livestock (types of livestock owned, number of livestock owned, sales of any livestock, sales of produce from livestock)	36%		↑	-16%		↓	5%		↑
		4. Expenditure on inputs (seeds)	756	1,137	↑	821	1009	↑	798	1059	↑
	Prices of the Produce	1. Income generated by the sale of crop (Vegetable only)	43.99	53.7	↑	51.4	64.9	↑	48.5	60.6	↑
		2. Increase in proportion of output sold in the market (In Qtls) vegetables only	-4%		↓	25%		↑	15%		↑
		3. Increase in proportion of agriculture output consumed (In Qtls)	-10%		↓	-1%		↓	-4%		↓
		4. Change in proportion of total agriculture output consumed (at HH level) vs sold	6%	5%	↓	5%	4%	↓	5%	4%	↓
	Options in farm/ non-farm	1. Proportion of people who are employed in farm related activities	69%	56%	↓	81%	83%	↑	61%	62%	↑

Classification - Internal

		2.Proportion of people who are employed in non - farm based activities	37.5%	51.5%	↑	35.7%	52.8%	↑	36.7%	52.1%	↑
	Increase in beneficiary income	1.Change in net HH income from non-agricultural activities	54,574	64,786	↑	32,853	35,411	↑			
●Composition of FPC		i. Number of general members of FPC	1160			1759			2919		
		ii. Proportion of people engaged in FPC's	6%			5%			5%		
		iii. Membership fees / share fee collection process in the FPC	1000			1000			1000		
		iv. Net income earned by farmers from FPC activities	0	0		0	0		0	0	
		v. Avg. Quantity of output sold in the market (Quintal) Vegetables only	20	19	↓	15	19	↑	17	20	↑
		vi. Amount of loans given and recovery rate of credit	0			0			0		
		vii. Promotion of member's participation in FPC's business activities	21%			36%			28%		
		viii. Percentage of Farmers received input supply									
		Percentage of Farmers received input (Machinery)	1.80%			6.61%			4.31%		
		Percentage of Farmers received input (Seeds)	3.60%			45.45%			25.43%		
		Percentage of Farmers received input (Fertilizer)	0%			31.40%			16.38%		
		Percentage of Farmers received input (Insecticides/Pest)	0.90%			7.44%			4.31%		
		ix. Members' feedback mechanism (Those who participated in FPC activities)	42%			86%			68%		
		●Support Received through various Govt. schemes and liaising with various	1. Number of farmers who benefit from PMKISAN (KALIA)	107			130			237	

Classification - Internal

	department								
Input/ Investment Cost of Farmers	●Spend on purchased inputs which include seeds, fertilizers, pesticides & marketing cost etc.	1.Average expenditure on fertilizers (INR)	4054	5290	6230	8120	5056	6594	
		1.Average expenditure on Pesticides (INR)	1330	2308	6582	8980	3750	5382	
		2.Marketing cost incurred	567	1076	1639	2198	1061	1593	
	Complimentary mechanization adaptation	1. Increased usage of farmers' tools / equipments (Those who used farmers' tools)	50%		87.50%		80.00%		
		2. Rental cost per hour for tillers (per Hr), harvesters (per day) weeder (per day) (INR)	INR400;INR100;INR200		INR400;INR100;INR200		INR400;INR100;INR200		
Establishment of sustainable of Farmers Producer Companies (FPC)	Business Development Plan	1. Number of farmers joined as shareholders	1160		1759		2919		
		2. Proportion of farmers engaged in FPC's for input supply, sale of produces, technology support etc.	0		0		0		
		3. Net income earned by members through FPC	0		0		0		
		4. Number of BoDs meetings organized during a year	12		12		12		
		5. Business planning process and implementation <i>(Famers response in % from the total sample number in each district)</i>	21%		36%		28%		
		6. Appointment of auditor <i>(Famers response in % who participated in FPC activities)</i>	27%		19%		20%		
		7. Conduction of external auditor <i>(Famers response in % who participated in FPC activities)</i>	63%		46%		53%		

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		8. Process of keeping records of transaction <i>(Farmers response in % who participated in FPC activities)</i>	58%		35%		45%	
		9. Book / record keeping and filing to RoC <i>(Farmers response in % who participated in FPC activities)</i>	88%		94%		92%	
		10. Product quality control and inspection <i>(Farmers response in % who participated in FPC activities)</i>	31%		46%		40%	
		11. Members' feedback mechanism <i>(Farmers response in % who participated in FPC activities)</i>	42%		86%		68%	
		12. Campaign for membership mobilization in FPC	90%		62%		73%	
		13. Participation of directors in board meetings	27%		13%		18%	
	Share capital and equity contribution	1.Paid up share capital (in INR.)	1000		1000		1000	
		2.Number of equity share holders	10		10		10	
		3.Membership fees / share fee collection process in the FPC	250		250		250	
	Supply of Fertilizers, pesticides, and seeds	1.Quantity of fertilizers, pesticides and seeds provided by FPC						
		1a.Quantity of fertilizers provided by FPC (Avg. Kg/farmer)	50		50		50	
		1b.Quantity of pesticides provided by FPC (Avg. gm/farmer)	NA		NA		NA	
		1c.Quantity of seeds provided by FPC (Avg. gm/farmer)	250		250		250	
		2.Number of beneficiaries who received inputs	111		121		232	
		3.Number of varieties of seeds provided	5		5		5	

Classification - Internal

	Market Linkage and benefits	1. Annual Turnover for the last financial year	NA			35 Lakh					
		2. Net Profit of FPC's for the last financial year	NA			25,000					
		3. Quantity of output sold in the market (Average in QTLS/person)	20	19	↓	15	19	↑	17	20	↑
		4. No. of villages covered by FPCs	16			35			51		
	Income through custom hiring centres	1. No of farmers accessing agriculture equipment from the CHC.	2			8			10		
		2. No. and types of equipment available at CHC.	20			20			40		
		3. Average income of CHC from rental of equipment.	NA			NA			NA		
	Benefits received through credit linkage	1. Farmers accessing credit from FI, Bank, KCC etc.	24	141	↑	19	67	↑	43	208	↑
		2. Rate of Interest (%)	9.3	15.0	↑	7.7	8.3	↑	8.6	13.1	↑
	Support received through various Govt. schemes and liaising with various departments.	2. Number of beneficiaries under state sponsored program – KALIA	107			130			237		
		2. Number of beneficiaries under state sponsored program – BALIA	23			17			40		
		2. Number of beneficiaries under state sponsored program – OLM	41			10			51		
		3. Number of beneficiaries under central sponsored program – MGNREGS	181			151			332		
	Stabilization of farmer income	Coping mechanism through grouping farmers in FPCs, FPCs, etc.	1. Storage facilities accessed by farmers	187			182				
			2. Value addition facilities adopted by farmers	206			35			241	
			3. Output marketing services to members availed by farmers	No			No				
4. Participation of FPC in commodity exchanges availed by farmers			27			5			32		

Classification - Internal

	Capacity/ Knowledge of farmers	Number of farmers trained on Quality Control Process	0			0					
	Agriculture credit facilities available	1. Access to credit / working capital from bank/ FI	24	141	↑	19	67	↑	43	208	↑
		2. Amount of loans given and recovery rate of credit (Through FPC)	0			0			0		
	Forward and backward market linkage	1. Reduction in cost of transportation to markets in INR	567	1076	↑	1639	2198	↑	1061	1593	↑
		2. Availability of equipment for farming (No of equipment in each districts)	20			20			40		
		3. Market rates of various crops	Yes			Yes					
	Better irrigation cover	1. Water harvesting structures built and maintained	NA			NA					
		2. Conserved water redirected for HH use and irrigation for crops etc	NA			NA					
		3. Increase in ground water level	NA			NA					

Annexure II: Ranking Parameters

Criteria	Description	Source of Data	Selection Process
Remoteness	Distance from block headquarter or nearest town	Census 2011	2-3 nearest and 2-3 farthest
Net Sown Area	Cultivated Area in Ha.	Census 2011	High, Low, Mean
Area under Irrigation	Irrigated Aras owned by households	SECC 2011	High, Low, Mean
Availability of <ul style="list-style-type: none"> ●Mandi ●Weekly Haat ●Agriculture Marketing Society 	Combination of all these factors will be taken.	Census 2011	within Village within < 5 Km within > 5 km
Availability of Agricultural Credit Society (PACS)	Access to agricultural credit	Census 2011	within Village within < 5 Km within > 5 km
Infrastructure <ul style="list-style-type: none"> ●Road connectivity ●Storage Structure ●Transport facility 	Access to public infrastructure	Census 2011	All weather road Storage facility (Yes/ No.) Transport Facility (Yes/ No)
% of household owning land	Land ownership, tenancy etc.	SECC 2011	Yes/ No
% of ST/ SC households	Demography		High, Low, Mean

Annexure III: List of Sample Blocks & Villages

SL No	District Name	Village Name	Block Name	FPC Name	Gram Panchayat Name	Proposed sample : Number of Framers to be covered	Actual Sample : No of Sample Farmers
1	Dhenkanal	Bhubanpur	Odapada	Odapada Agro Producer Company Limited	Kalanga	18	20
2	Dhenkanal	Dinabandhupur	Odapada	Odapada Agro Producer Company Limited	Kalanga	18	23
3	Dhenkanal	Kalanga	Odapada	Odapada Agro Producer Company Limited	Kalanga	18	23
4	Dhenkanal	Kalikaprasad	Odapada	Odapada Agro Producer Company Limited	Kalanga	18	18
5	Dhenkanal	Mahendrapur	Odapada	Odapada Agro Producer Company Limited	Kalanga	18	9
6	Dhenkanal	Badarapalli	Dhenkanal Sadar	Saptasajya Agro Producer Company Limited	Saptasajya	20	19
7	Dhenkanal	Padmanavpur	Dhenkanal Sadar	Saptasajya Agro Producer Company Limited	Saptasajya	20	19
8	Dhenkanal	Pamala	Dhenkanal Sadar	Saptasajya Agro Producer Company Limited	Sankarpur	20	20
9	Dhenkanal	Patrabhag	Dhenkanal Sadar	Saptasajya Agro Producer Company Limited	Saptasajya	20	23

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10	Dhenkanal	Parbatia	Dhenkanal Sadar	Saptasajya Agro Producer Company Limited	Sankarpur	20	31
11	Dhenkanal	Badagila	Dhenkanal Sadar	Saptasajya Agro Producer Company Limited	Saptasajya	20	20
12	Dhenkanal	Basamana	Dhenkanal Sadar	Saptasajya Agro Producer Company Limited	Saptasajya	20	0
13	Angul	Chandanpur	Angul	Satakosia Farmers Producer Company Limited	Nandapur	20	20
14	Angul	Kantamegha	Angul	Satakosia Farmers Producer Company Limited	Talgarh	20	19
15	Angul	Pampasar	Angul	Satakosia Farmers Producer Company Limited	Nandapur	20	18
16	Angul	Ragadiapada	Talgarh	Satakosia Farmers Producer Company Limited	Talgarh	20	20
17	Angul	Talagarh	Talgarh	Satakosia Farmers Producer Company Limited	Talgarh	20	21
18	Angul	Sanahinsar	Banarpal	Banarpal Agro Producer Company Limited	Badahinsar	18	21

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19	Angul	Badakerejang	Banarpal	Banarpal Agro Producer Company Limited	Badakerjang	18	19
20	Angul	Jamunali	Banarpal	Banarpal Agro Producer Company Limited	Jamunali	18	20
21	Angul	Kuio	Banarpal	Banarpal Agro Producer Company Limited	Jamunali	18	20
22	Angul	Tasara (Tubey)	Banarpal	Banarpal Agro Producer Company Limited	Tubey	18	21

Annexure IV: Qualitative Schedule

District Name	Name	Type	Details	Area/Village	Proposed sample : Number of Framers to be covered	Actual Sample : No of Sample Farmers
Dhenkanal	Sudhansu Naik	KII	Ward Member, Partrabhadh Village	Saptasajya	18	20
	Annapurna Sahoo	KII	Block Proect Coordinator, Odopada Mission Shakti	Odapada	1	1
	Monalisha Bhanja	KII	DPC, Dhenkanal, Misson Shakti	Dhenkanal	1	1
	Rama Chandra Rout	IDI	Local Program Staff	Saptasaya	18	23
	Braabandhu Sahu	IDI	FPC Staff (MD)	Kalanga, Odapada	18	23
	Basanta Kumar Behera	IDI	Lead Farmer	Kalanga, Odapada		
	Rabi Behera(M)	FGD	Odapada Agro Producer Company Limited	Odapda	1	1
	Aditya Charan Behera (M)					
	Pravakar Sahoo (M)					
	Bidyadhar Behera (M)					
	Nilamani Behera (M)					
	Akula Behera (M)					
	Nalini Behera (F)					
	Jayanti Behera (F)					
	Rashmita Sahoo (F)					

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	Rina Rani Dehury	IDI	FPC-Staff (BoD)	Banarapal FPO	1	1
	Rasananda Sahu	IDI	Lead Farmer	Satkosia FPO	1	1
	Dileswar Sahu	IDI	Local Program Satff	Satkosia FPO		
	Anil Kumar Pradhan	KII	Sarpanch-Tubey	Banarapal FPO	1	1
	Amiya Kumar Sawin	KII	ADH-Angul	Angul	1	1
	Omrta Jaiswal	KII	AHO-Angul	Angul	1	1
	Menajka Behera (F)		Satkosia Agro Producer Company Ltd	Talagarh, Angul	1	1
	Sangeeta Pradhan (F)					
	Chaini Sahu (F)					
	Surekha Dehury (F)					
	Anita Sahu (F)					
	Sankukta Sahu(F)					
	Srinivas Behera (M)					
	Kailash Behera (M)					