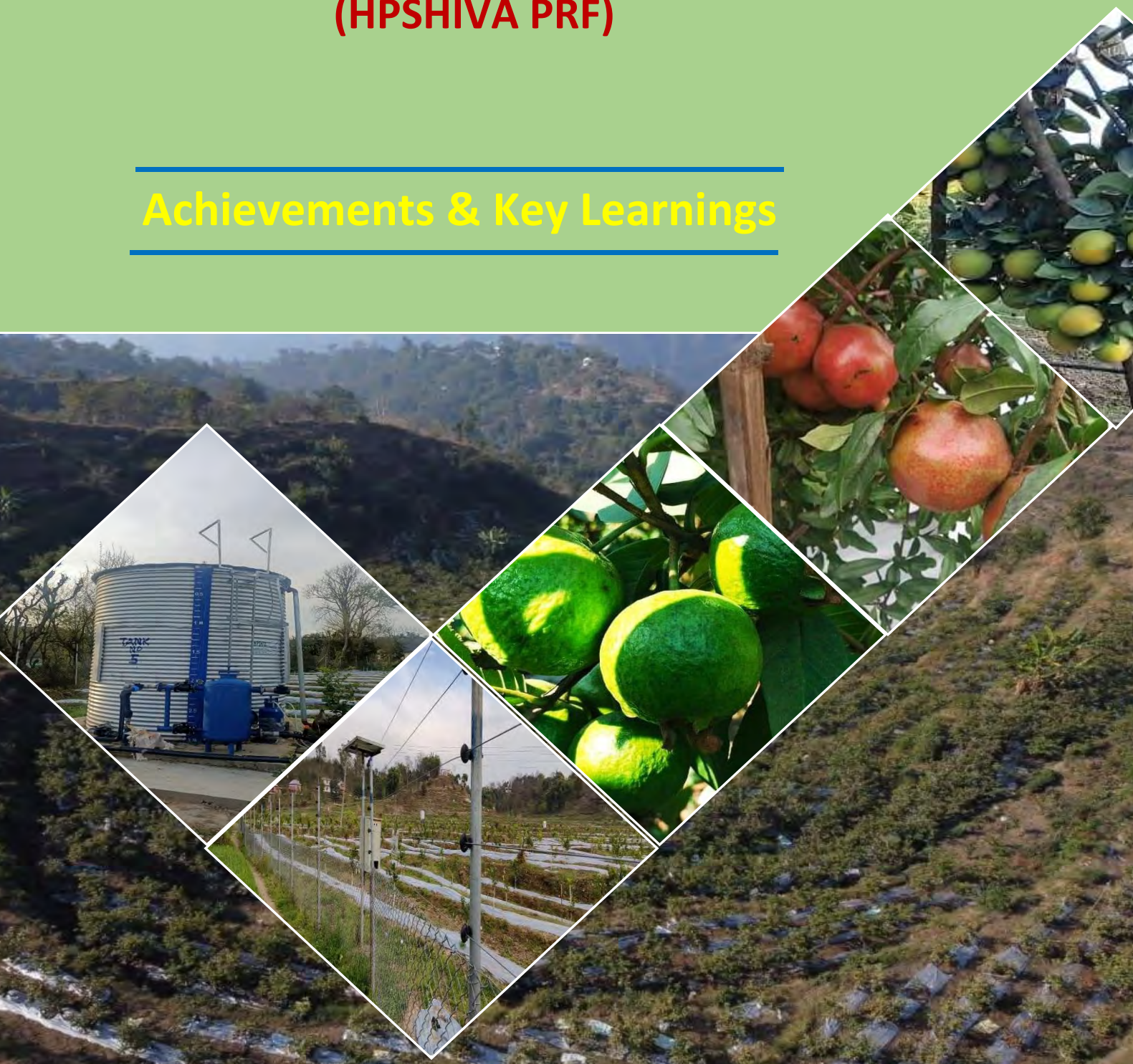




Himachal Pradesh Subtropical Horticulture, Irrigation & Value Addition Project Readiness Financing (HPSHIVA PRF)

Achievements & Key Learnings



**“We must enable farmers to feed
India and the world;
and earn a good livelihood.”**

— Narendra Modi
Hon’ble Prime Minister of India

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JAI RAM THAKUR



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Message

It gives me immense pleasure to know that the Department of Horticulture is going to publish a report highlighting the achievements and key learnings of Himachal Pradesh Subtropical Horticulture, Irrigation and Value Addition Project Readiness Financing (HPSHIVA PRF).

Himachal Pradesh has made splendid progress in the field of horticulture as it has emerged as major sector to boost the agricultural economy. The role of Agriculture and Horticulture in employment generation, nutritional security, poverty alleviation and as holistic development is ever increasing. To boost the production and productivity of fruits, the State Government is already in the process of bringing in a new Horticulture Policy.

HPSHIVA Project in the state with the financial assistance from Asian Development Bank is a step forward in this direction. The Project is being implemented in the lower sub-tropical climate area of the state which holds a lot of promise to produce a variety of fruit crops. The various project interventions like composite solar fencing, extension of irrigation facilities, new improved planting techniques and planting material besides support to farmer in value addition and marketing of produce have motivated farmers to get associated with the Project. The success of pilot activities and results achieved have further increased the willingness of farmers to get back to fruit production activities.

I am extremely thankful to our Prime Minister Shri Narendra Modi Ji under whose guidance a comprehensive action plan to empower farmers throughout the farming cycle - a facilitating umbrella of Beej Se Bazaar Tak, is being implemented by central government. HPSHIVA Project is also built around the same concept promoting integrated farming approach and technology driven farming.

I wish to acknowledge the efforts of ADB team for their full cooperation and hope that the ADB would continue to extend its support in effective implementation of project activities.

My best wishes to the executing agencies for their ongoing implementation efforts. I also convey my good wishes for the successful publication of the Report.


(Jai Ram Thakur)



Message

Farmers are the backbone of our country. They play an important role in the survival of societies by providing food and fibre which is used for nourishing and clothing. Our state's economy too depends a lot on their active participation and contribution. But due to wild and stray animal menace, our farmers abandoned farming especially in the subtropical areas of the state. They started searching for wage job opportunities because of low returns from farming.

It has always been our endeavour to bring our farmers back to farming activity in the subtropical areas of state and also make farming a more lucrative option especially for the unemployed youth. During my visit to **Israel in February 2019**, I got an opportunity to witness sub-tropical fruit farming. I was so impressed by the results achieved and learnings that the idea of doing something similar in our state germinated.

Since, this area holds vast potential to produce different kinds of fruit crops, immediately after my return I discussed the idea with the department officials and subject matter experts. After discussing the various aspects, we conceptualised the components of HPSHIVA project. We tried to take care of all possible scenarios and decided to introduce improved farming techniques and planting material besides extending assured irrigation facilities and crop protection through composite solar fencing. I am grateful to Department of Economic Affairs, Ministry of Finance, GOI and Asian Development Bank for giving consent to finance this multidimensional project.

We were aware that it would be a challenging task but determined to bring about a meaningful change in the lives of our farmers. To gain confidence of the farmers, we started with Front Line Demonstrations (FLDs). The response from farmers was very encouraging and the project implementation started with pilot activities in four districts.

Today my heart swells with immense satisfaction after witnessing the results of **HPSHIVA** Project Readiness Financing. Whatever we had envisaged had been achieved, in fact more than that. The continued growing confidence of farmers and their willingness to get associated with the project is a testimony to the effectiveness of project interventions. But our task does not end here. We have to ensure that the value chain interventions that we have planned are carried out as per the plan so that our farmers get the best price for their produce. I have made a commitment to myself that I will personally monitor the project progress and see it through its duration. I take this opportunity to express my gratitude to our **Hon'ble Chief Minister Sh. Jai Ram Thakur** for supporting us in our endeavour and to Government of India for accepting our proposal. My heartfelt gratitude to our farmers for the willingness shown to get associated with the project; to ADB for lending finance for the project; to ADB team members for their continuous support; to Officers / Officials of DoH & JSV; and to all others involved in the execution of project interventions for their sincere, dedicated and untiring efforts.

Mahender Singh Thakur

Secretary



Ellerslie
Shimla-171 002

Message

In our endeavour to promote Himachal Pradesh as a fruit bowl of India, HPSHIVA is an important and integral part. There is enough untapped potential in the sub-tropical climate areas of the state to produce a gamut of fruit crops. HPSHIVA is not only harnessing that potential but also providing a productive alternative to farmers and unemployed youth to take up activities which are going to improve their livelihood.

The success of PRF has been quite encouraging for all the stakeholders. The learnings from the PRF have paved way for many innovations for the ensuing loan project which once implemented will further enhance the project outputs. The scientific approach and methodology used for crop selection and results achieved from it has built confidence in the farmers regarding the practices promoted by the project. The openness and willingness of these farmers is the driving force for implementing the project interventions.

Besides, the project is also ensuring self-sustainability of ground level institutions created under the project even after the completion of project duration. After all it is a people's project and beneficiaries' interest needs to be protected even after completion of project.

I take this opportunity to convey my appreciation to the executing departments and wish them all the success for future.


Amitabh Avasthi, IAS



Director of Horticulture

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Message

Horticulture in Himachal Pradesh has been responsible for many of the positive outcomes like employment generation, wage employment and in turn, increasing farm income. Despite many challenges, Horticulture production in the state has vast potential to contribute to higher economic growth and poverty reduction objectives.

To ensure rapid and sustainable development of Horticulture sector, a number of initiatives have been taken by the State government in line with Government of India's strategy. New projects are being implemented in the state and HPSHIVA is one such ambitious project which is being implemented in the sub-tropical areas of the state. The project is financed by Asian Development Bank.

The project has introduced many unique features such as composite solar fencing, assured irrigation facilities, improved plantation techniques like high density plantation and integrated post-harvest marketing support to farmers to ensure higher returns. The learnings from pilot activities in HPSHIVA PRF have been very encouraging and motivating to scale up the activities in ensuing loan project. The scaling up of activities holds a lot of promise and is a driving force for farmers to get associated with the project activities.

I am thankful to Hon'ble Minister (Horticulture, Jal Shakti, Revenue, Sainik Welfare) for conceptualising this project and guiding us at every step of execution. My gratitude to Asian Development Bank for financing this project and sincere appreciation for the hard work put in by the officers & officials of two implementing departments – Department of Horticulture and Jal Shakti Vibhag. Last but not the least I wish to acknowledge the willingness of farmers without whom we would not have achieved the results that we have in pilot demonstrations.


Dr. R. K. Pruthi, IAS

From the Project Director's Desk...

To harness the potential of producing other fruit crops especially in the low lying subtropical climate areas of the state, the Himachal Pradesh Sub Tropical Horticulture, Irrigation & Value Addition (HPSHIVA) project was conceived with the financial assistance from Asian Development Bank. The idea was to bring farmers back to their traditional occupation by providing them with an opportunity of scientific and commercial farming followed through by post-harvest value addition opportunities. The project has been built on the concept of “Beej Se Bazaar Tak”. The project also is a step towards realising the dream of making Himachal Pradesh the ‘Fruit Bowl of India’.

The success of first phase of project which constituted of various pilot activities (constituted and formulated under the name and style of “Project Readiness Financing’ – PRF) has been very heart warming and encouraging. The results of two years’ of working on the PRF have paved way for upscaling the activities to a much larger area which has the potential of making a significant difference to lives and livelihoods of many more rural households, under the larger ensuing loan project. I feel indebted to the farmer community who took keen interest in learning and adopting project interventions. It is the willingness shown by these beneficiaries which has resulted in successful execution of project activities and achievement of more than the envisaged results.

I take this opportunity to express my heartfelt gratitude to the Government of Himachal Pradesh and especially to the Honourable Minister of Horticulture (Himachal Pradesh) for his grand vision in conceptualising the HPSHIVA Project and providing all necessary support at all stages of the project. Without this strong and unflinching support at the state level, I dare say, it would have been very difficult to move ahead with this project and its achievements till date. I also would like to sincerely thank Secretary Horticulture (GoHP); Director of Horticulture, HP; colleagues at the DoH & Jal Shakti Vibhag, HPSHIVA PMU team, various Consultants, associated consulting & resource agencies, all concerned field officers / officials and others involved in the execution of this project for their concentrated efforts towards realization of the project goals. A special thanks to the Government of India and the ADB Project Team for supporting us all the way through on this multifaceted and multidisciplinary project with all its challenges. And last but not the least, a gigantic thank you to all out participating farmers who had the courage of conviction to believe in our vision and have graciously allowed their lands to be used as a means for achieving the desired objectives of the project!!

I am not only hopeful but confident that the continued persistence and diligence of the entire team and our other stakeholders will help us achieve all quantitative and qualitative objectives of the HPSHIVA Project. The success of this project will not only bring significant and meaningful changes in the lives of the rural beneficiaries but also create a platform for many such projects in the future.

Devinder S. Thakur

1|Prologue

Government of Himachal Pradesh submitted two separate projects to the Department of Economic Affairs (DEA), Ministry of Finance, Government of India in May 2018:

1. Horticulture value chain infrastructure & promotion of climate resilient technologies for development of subtropical horticulture in Himachal Pradesh for Rs.1688.00 Crore by Department of Horticulture (DoH); and
2. Doubling farmer's income for Rs.4751.00 Crores by Department of Irrigation and Public Health (DIPH).

These projects were approved by DEA in its 84th Screening Committee meeting and posed to ADB for external funding. The ADB fielded Consultation Mission to Himachal Pradesh on 18-22 September, 2018 and 6-14 February, 2019 whereby, the Mission proposed integration of both projects with a phased approach.

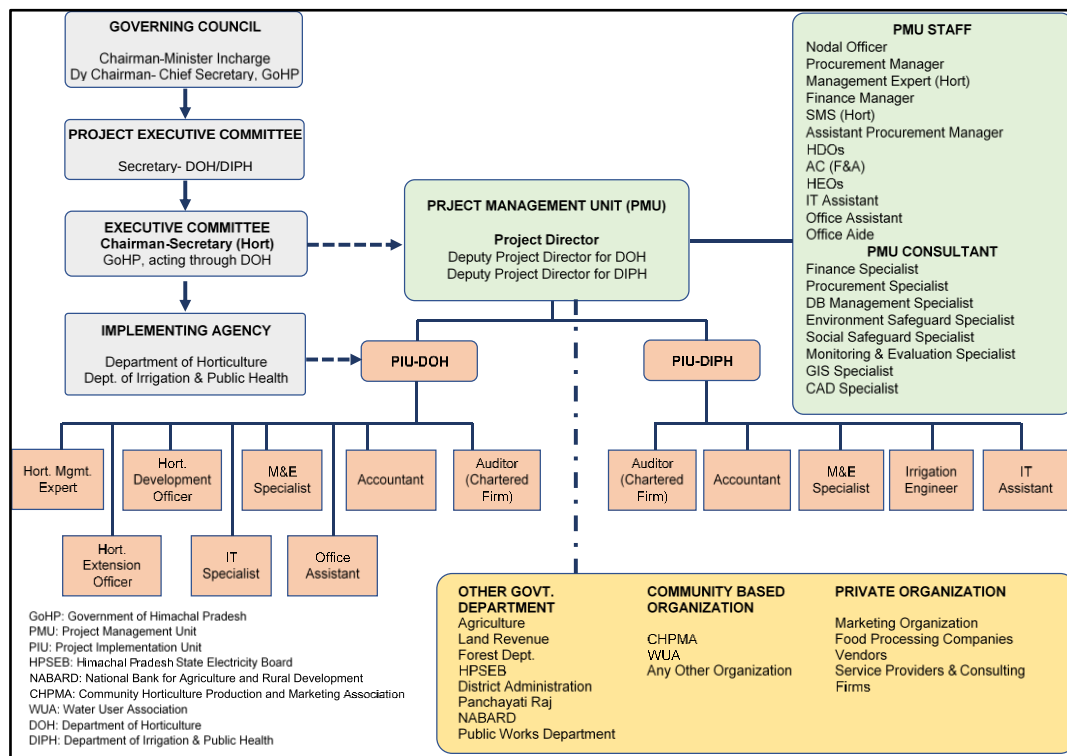
After integration, the project was named as Himachal Pradesh Sub Tropical Horticulture, Irrigation & Value Addition (HPSHIVA) Project with a total cost of USD 130 Million and ADB's resources of USD100 Million.

The ADB proposed to implement the HPSHIVA Project in two parts

1. HPSHIVA Project Readiness Financing (HPSHIVA- PRF): December, 2020 – November, 2022
2. Main Ensuing Loan: December, 2022 - November, 2028.

The Nodal agency of the HPSHIVA Project is Department of Horticulture (DOH). A Project Management Unit (PMU) at the State level has been established under DOH. Two separate Project Implementation Units (PIUs) are established in DIPH & DOH for implementation of respective project components.

The Project Implementation Structure



The main objective of HPSHIVA project is development of sub-tropical horticulture on commercial lines in cluster approach besides providing sustainable livelihood opportunities to the farmers, who have abandoned their cultivable land because of menace of stray animals, monkeys & wild animals and to the youth population migrating to urban areas to seek wages employment.

The ADB mission finalized indicative PRF financing plan (December, 2020 to November, 2022) of US\$10.00 million out of US\$100.00 total project outlay. DOH and DIPH identified 17 subprojects/ clusters in 12 Blocks of 4 Districts covering a total area of approx. 200 hectares with assured irrigation and 1081 farmers for pilot testing of four fruits namely guava, litchi, citrus (sweet orange) & pomegranate.

Till date approx. 200 ha. has been brought under high density plantation of sweet orange, guava, litchi and pomegranates. For main project 342 clusters in 4550 ha have been jointly identified by DOH & DIPH for plantation in the year 2021-22 and 2022-23. In the First phase of the project around 10,000 ha area will be covered, benefitting thereby more than 25000 farmer families.

Details of various ADB Missions w.r.t. HPSHIVA

To finalise the project components and implementation mechanism as per Asian Development Bank guidelines, various ADB Missions visited the state and proposed project areas. The mission members gained first-hand knowledge of the ground realities and suggested modifications in the project design and implementation procedures.

Sr. No.	Particulars	Date
1	Project approved by the Planning Department, GOHP	01-May-2018
2	Project approved by DEA, Ministry of Finance, GOI in 84 th Screening Committee Meeting	14-Jun-2018
3	Project posed to Asian Development Bank by DEA, GOI for external funding	06-Jul-2018
4	Visit of the ADB Consultation Mission headed by Mr.Sanath Ranawana, Mission Leader	18-22 -Sep- 2018
5	Notification of Governing Council & Executive Committee of HPSHIVA by State Govt.	26-Nov-2018
6	Notification of PMU of HPSHIVA by State Govt.	13-Feb-2019
7	Visit of 6-Member Consultation Mission of ADB headed by Ms. Sunae Kim, National Resources and Agriculture Specialist, SAER and Mission Leader, HPSHIVA	6-14 -Feb-2019
8	Visit of ADB TRTA Consultants	9-25- Oct- 2019
9	ADB Pre-Fact Finding Mission	24 -28 -Aug - 2020
10	ADB Virtual Fact Finding Mission	31-Aug-2020 to 3-Sep-2020
11	Inception Mission	25-Jan-2021 to 3-Feb-2021
12	ADB's Virtual Review Mission	25-Oct 2021 to 08-Dec-2021
13	ADB Fact Finding Mission	28-Mar-2022 to 08-Apr-2022

Details of Executive Committee and Governing Council Meetings

Sr. No.	Particulars	Date
1	FIRST Meeting of HPSHIVA Executive Committee	30-March-2021
2	SECOND Meeting of HPSHIVA Executive Committee	19-Feb-2022
3	FIRST Meeting of HPSHIVA Governing Council	22-June-2021

2 | Rationale and Scope

Himachal Pradesh is one of the smaller states in India being 17th in terms of size and 21st in terms of population. Around 50% of its area is mountains and less than 10% area is under cultivation. More than 90% of the population resides in rural area and about 62% of population is engaged in agriculture activities. The total contribution of agriculture-horticulture sector to state's gross value is less than 15%.

Need for the project

In the state, income disparity can be seen between temperate horticulture farmers and subtropical horticulture farmers. The migration of youth population, abandoning of agricultural activities, inefficient utilization of irrigation potential and need for crop diversification (Apple alone comprises 79% of state's fruit production) has necessitated a project like HPSHIVA.

Rationale

The main reasons behind HP SHIVA project are:

1. Not adequate water to meet demand: Nearly 75% of annual rainfall happens during the 3-month monsoon season and most of it is lost as run-off. Moreover only 25% of potential irrigated areas are developed.
2. High percentage Crop Loss: The encroachment by monkey and other wild animal causes significant crop losses, costing the sector over Rs. 500 Crore annually.
3. Climate changes which is moderate in subtropical areas while very high risks in temperate zone.
4. Low share of Farmers in the market price: Nearly 70% of the farmers are marginal farmers and their share is less than 25% of the consumer price.

Perceived Impact

The project envisages to impact the lives of farmers and make significant contribution to the state's economy by

- I. Expanding irrigation to farmers,
- II. Strengthening climate resilience in Himachal Pradesh
- III. Increasing subtropical horticulture production,
- IV. Increasing income of rural households in Himachal Pradesh,
- V. Raising the profitability and farm gate price of subtropical horticulture production through value chain development of targeted commodities.

Scope

Increase the income of at least 25,000 farm households in 28 development blocks of seven districts (Bilaspur, Hamirpur, Kangra, Mandi, Solan, Sirmour and Una) covering an area of 10,000 Ha in subtropical areas of Himachal Pradesh

3 | Project Output

The project output as envisaged are:

Output 1: Expansion and sustainable operation of Irrigated area by JSV.

- To develop 100 irrigation schemes in 10,000 ha, distributed across 7 subtropical districts
- Activities include design and operation of irrigation schemes (60% rehabilitation, 40% new), DIPH capacity building, WUA mobilization and capacity building, new WUA Act (for water use efficiency, water wastage reduction, transfer the management to farmer-based WUAs)

Output 2: Development of Climate resilient subtropical horticultural production by DOH.

- To assist at least 25,000 farm households to invest in drip irrigated, high density production of citrus, guava, litchi, mango and pomegranate fruits, other sub-tropical fruits and possibly flowers and vegetables.
- Activities include development of horticulture development strategy and investment framework, fencing, field preparation, plantation, MIS, package of practices for key horticulture crops, training of farmers, nursery development.

Output 3: Development of Market access for subtropical horticulture farmers by DOH.

- To assist farmer marketing organizations to improve their market access and increase share of final price.
- Activities include farmer training, marketing organization formation, business plan development, investment in value chain marketing programs and infrastructure.
- Value chain investment includes civil works, equipment, refrigerated transportation, marketing, other activities

The HP SHIVA PRF will have the following four outputs:

Output 1: Irrigation infrastructure development and farmer management systems established. Output 1 is a pilot work to be managed by the Jal Shakti Vibhag. The pilot will:

- a) construct or rehabilitate 16 irrigation schemes introducing innovative technologies for water extraction, distribution and storage, and for enhanced climate and disaster resilience; and
- b) establish and capacitate water user associations on the constructed irrigation schemes with women's participation and gender-equitable leadership.

Output 2: Subtropical horticulture production technology and marketing systems established. Output 2 is the pilot to be managed by the Department of Horticulture (DOH). The project will:

- a) develop 17 subtropical horticulture plots in total areas of 200 hectares, engaging 1081 farmers for high- and ultra-high density production of citrus, guava, litchi and pomegranate;
- b) fence all the horticulture plots to protect from animal predation;
- c) form community horticulture production and marketing associations (CHPMA) in the PRF areas and build their capacities for business; and
- d) initiate investment in subtropical horticulture value addition and market development, including product grading, packaging and storage, in partnership with CHPMA.

Output 3: Capacity development for intensive irrigated subtropical horticulture provided. Output 3 focuses on developing capacity building tools and creating enabling environment for the ensuing loan project implementation. Specifically, the project will

- a) support DOH to prepare the Himachal Pradesh Horticulture Sector Development Strategy and Investment Plan 2022–2028 and draft Horticulture Policy;
- b) support Jal Shakti Vibhag to draft and raise awareness on the water user associations act;

- c) prepare the packages of practice for key subtropical horticulture crops;
- d) provide on-site training and experimental study tours for DOH and JSV staff, and CHPMA members or farmers in farm management and business/marketing development; and
- e) provide technical support and investment for subtropical horticulture nursery development.

Output 4: Ensuing investment project and its implementation readiness prepared. Under output 4, DOH and JSV will prepare the feasibility studies, detailed engineering design and surveys, due diligence assessments, safeguards preparation work and bid documents for the ensuing loan, supported by PRF consultants. Possible public-private partnership pathways will be explored in collaboration with the Private Sector Operations as part of the ensuing loan preparation. The project will also provide capacity building training to DOH and JSV in areas such as safeguards, procurement, gender, financial management and institutional strengthening for a smooth transition from project preparation to implementation.

4 | PRF Packages

All the project activities under PRF were divided into three packages. The details of these packages and activities covered under them are:

Package 1. Goods and Supplies

- G1 : Planting Materials
- G2 : Computer Software
- G3 : Supply of Horticulture Input
- G4 : Supply of Farm Equipment
- G5 : Office Equipment
- G6 : Vehicle
- G7 : IEC Materials

Package 2. Civil Work

- CW01 : Irrigation Scheme Mandi
- CW02 : Irrigation Scheme Hamirpur
- CW03 : Irrigation Scheme Bilaspur
- CW04 : Irrigation Scheme Kangra
- CW06 : Installation of water storage tank
- CW07 : Field preparation and land levelling
- CW08 : Animal proof fencing and installation

Package 3. Consulting Services

- CS01 : Construction Supervision Consultant
- CS02 : PMU Consultants
- CS03 : Horticulture Strategy
- CS04 : Package of Practices
- CS05 : DoH/JSV Capacity Building
- CS06 : Various Government Studies
- CS07 : WUA Facilitation (JSV)
- CS08 : CHPMA
- CS09 : Ensuing Loan Preparation
- CS10 : Internal Audit
- CS11 : Hubertus Hendricks
- CS12 : MIS / GIS
- CS13 : IEC Design and Development

The details of tasks carried out under the above packages is in the Annexure-1.

5 | PRF Activities

PRF was approved by ADB on 8th December 2020 for an amount of INR 743.54 million to be implemented over a period of two years from 2021 to 2022. Department of Horticulture, Government of Himachal Pradesh (DOH) and Jal Shakti Vibhag (JSV) are the implementing agencies for the project where DOH acts as the nodal agency. The funds under the PRF facilities were supported to undertake advanced solutions which created an environment for subtropical horticulture development in the State.

The PRF has been successfully implemented. The main activities included demonstrating the Project concept in 17 subprojects/clusters in 12 Blocks of 4 Districts covering a total area of approx. 200 ha with assured irrigation and 1081 farmers for pilot testing of four fruits namely guava, litchi, citrus (sweet orange) and pomegranate.

The details of activities that were carried out in the PRF is given below:

1. Identification of cluster

The cluster having at least 10 households where farmers were engaged in agriculture activities were selected for the project. Out of total numbers of farmers in every cluster, 80% were small and marginal growers. The extension team of the Department of Horticulture sensitised the farmers for diversification of the crops from traditional agriculture to horticulture, explaining the benefits of the project through meetings, workshops and one to one discussion. Farmer's willingness to participate in the clusters was undertaken and Field Level Demonstrations (FLDs) were established in 9 places in four districts in the state. With the initial investment provided from the government schemes, the department motivated the farmers to adopt the proposed project intervention on their parcel of land and get the benefit.

District	Development Block	Cluster Name	Cluster Area (in Ha)
Mandi	Dharampur	Binga	10.00
	Dharampur	Sandhole-Neri	9.50
	Dharampur	Dabrot	8.50
	Dharampur	Kalswani	10.90
	Gopalpur	Tanda-Matour	14.46
	Sundernagar	Kalahod	12.62

Hamirpur	Bamsan	Kehdroo	10.00
	Sujanpur	Bhaleu	10.00
Bilaspur	Sadar-Bilaspur	Majher	17.00
	Ghumarwin	Talwara	10.81
	Shri Naina Devi	Dulhet	18.23
	Ghumarwin	Lanjhta	13.25
Kangra	Sullah	Lahat	14.50
	Lambagaon	Rit-Trehla	10.00
	Bhowarna	Sehal	7.20
	Baijnath	Ghraoon-Dehan	11.20
	Baijnath	Gartholi-Dhanag	11.50
		Total	200



2. Identification of Irrigation Schemes

In consultation with the Irrigation Department water sources were mapped around the clusters and assessed for ensured water availability for the next 30 years. A total of 16 irrigation schemes were developed for 17 PRF clusters by introducing innovative technologies for water extraction, distribution and storage. Out of the total 16 irrigation schemes, 7 functional schemes were upgraded, 4 non-functional schemes were rehabilitated, and 5 new irrigation schemes were developed. The total investment incurred on schemes was ₹ 15.70 Crores.



3. Crop Selection for the Clusters

A team of HPSHIVA Management experts and university scientists was constituted to collect the ecological parameters in the proposed clusters. The experts along with the technical field officers of the department collected the soil samples randomly from the identified clusters which were analysed for water holding capacity of the soil and nutrient status in the laboratory.

A consultative approach was adopted by the Department to bring the consensus amongst the beneficiary farmers and scientists to finalize the particular crop and variety for the respective clusters on the basis of ecological parameters, soil analysis report and farmer's choice. The Four major horticulture crops namely Sweet Orange, Guava, Pomegranate and Litchi were finalised for plantation in the PRF Cluster. On the basis of findings of analysis, 7 Varieties of Sweet Orange (Valencia, Red Blood, Hamlin, Jaffa, Pera, Westin and Natal), 3 varieties of Guava (Lalit, Sweta and VNR Bihi), 2 varieties of Litchi (Calcuttia and Dehradun) and 1 variety Pomegranate (Bhagwa) were identified and finalized for plantation.

District	Cluster Name	Cluster Area (in Ha)
Mandi	Binga	Citrus
	Sandhole-Neri	Litchi
	Dabrot	Guava
	Kalswani	Guava
	Tanda-Matour	Guava, Pomegranate
	Kalahod	Guava
Hamirpur	Kehdroo	Citrus
	Bhaleu	Guava
Bilaspur	Majher	Citrus
	Talwara	Citrus
	Dulhet	Citrus, Guava
	Lanjhta	Litchi
Kangra	Lahat	Guava
	Rit-Trehla	Citrus
	Sehal	Guava
	Ghraoon-Dehan	Litchi
	Gartholi-Dhanag	Litchi



Ecological Parameter details for crops

S.No.	Parameter		Citrus	Guava	Litchi	Pomegranate
1	Altitude		Upto 900 m amsl	Upto 1500 m amsl	Upto 900 m amsl	Upto 1500 m amsl
2	Aspect		Northern is preferable	Southern is preferable	South-East is preferable	Southern is preferable
3	Soil	Type	Deep soils with no hard pan upto 2 m depth. Sandy loam to Clay loam	Varied types of soils but best results can be achieved in Sandy loam	Alluvial sandy loam deep soils rich in organic matter. Slightly acidic for mycorrhizal growth	Varied types of soils. Heavy soils with poor drainage are not suitable.
4		pH	5.5-7.5	5.5-7.5	5.5-7	Around 7.5
5		EC	EC less than 1.	Moderately salt tolerant	Sensitive to saline soils.	Salt tolerant
			Sensitive to high salt concentration in the soil.		EC below 0.2 dS/m	EC upto 6 dS/m
6		Water drainage	Well drained soil	Well drained soil	Well drained soils	Well drained soils
7	Climate	Annual Rainfall	500-775 mm	500-1000 mm	1000 mm	180-550 mm
8		Frost	Can withstand occasional light frost	Susceptible to severe frost	Sensitive to frost	Can tolerate frost
9		Temperature	3°C -40°C	10°C -46°C	21°C - 38°C during flowering and fruiting.	Upto 45 °C
	Average temperature for growth :13°C to 37°C		Summers are hot and wet whereas winters are cool and dry. High humidity requirement under the canopy.		Require hot and dry climate during fruit development and ripening.	

4. Site Clearance

The land in the clusters was cleared and prepared with the help of the community for plantation of saplings of horticulture crop. The land clearance involved levelling of land and removal of unnecessary hindrance.



5. Animal Proof Solar Fencing

To protect the farm harvest and the plants from animal (wild and stray) menace, a new model of solar fencing was introduced across all the PRF clusters. Approximately 46,000 meter length of composite fence, having mesh upto 4 ft height and solar current wires for next 3ft height, was installed within the PRFs.

The standard specifications and designs were finalized keeping in view the type of menace prevalent in the identified project area and was effectively implemented in the PRF clusters.



6. Field Preparation

The field preparation activities were undertaken for the identified 17 clusters. A crop wise standardized layout design and specifications were prepared for each of the clusters. The major field preparation activities included layout plan, land levelling and terracing, dressing cum bed making and pit digging.



7. Plantation

Plantation is considered to be one of the most important activity under horticulture. Every cluster on the basis of crop selection done earlier was supplied with the required quantity of planting material in time, with no compromises on the quality.

To support the future need of planting material for the project, Nursery Development is also planned to be strengthened within the state.



Cluster wise Plantation and Beneficiaries details

District	Block	ClusterName	Beneficiaries	Plant	Total Plants
Mandi	Dharampur	Binga	105	Citrus	8783
	Dharampur	Neri (Sandhole)	45	Litchi	2056
	Dharampur	Dabrot	73	Guava	17676
	Dharampur	Ghamdhal	55	Guava	20532
	Gopalpur	Tanda Matour	104	Guava	3347
	Gopalpur	Tanda Matour	0	Pomegranate	17564
	Sundernagar	Kalahod	22	Guava	29564
Hamirpur	Bamsan	Kehdroo	56	Citrus	9570
	Bamsan	Kehdroo	0	Pomegranate	267
	Sujanpur	Baleu	38	Guava	23433
Bilaspur	Sadar	Majher	58	Citrus	14672
	Ghumarwin	Talwara	52	Citrus	11586
	Swarghat	Dulhet	23	Citrus	10502
	Swarghat	Dulhet	0	Guava	5500
	Ghumarwin	Lanjhta	52	Litchi	11665
Kangra	Sulah	Lahat	135	Guava	24701
	Lambagaon	Rit-Trehla	54	Citrus	9929
	Baijnath	Sehal	37	Guava	11750
	Bhawarana	Dehan	61	Litchi	11020
	Baijnath	Dhanag (Gartholi)	111	Litchi	10360
TOTAL			1081		254477

8. Drip Irrigation

Drip irrigation is a smart and innovative solution for the horticulture plantation. It is significantly proven to be effective in case of hilly areas and for small farmers and particularly for the regions of low water availability. It can increase the production by 50% and also limits topsoil erosion, pest infestation and evaporation from the soil surface. The advantages of the drip irrigation system are as follows:

- Improves quality and ensure early maturity of the crops.
- Water Saving up to 40% – 70%.
- Controls weed growth, saving of fertilizer (30%) and labour cost (10%).
- High water use efficiency.
- Reduces greenhouse emission



9. Mulching

The use of mulching is recognized as an important part of crop management to reduce the application of chemicals for weed and pest control while conserving the soil moisture from evaporation. The activity also helps to decrease the requirement of water and is considered to be environment friendly. The use of mulch has been provisioned under the PRF clusters considering the following advantages:

- a) Helps in conserving the moisture by reducing the amount of soil water loss through evaporation which is beneficial for plant productivity in sub-tropical areas.

- b) Reduces the soil erosion and compaction from heavy rains and aid in water penetration rate.
- c) Supports root growth of the plants by regulating soil temperature, aeration and micro organism activities.



10. Grievance Redressal Mechanism for the Project

The project stakeholders have the – i) right to information; ii) right against inappropriate intervention and iii) right to a project free of fraud, corruption and coercion.

In case of any deviation, the stakeholders have the right to register complaints and DOH is bound to redress them and resolve these at the earliest.

The Government has issued gazette notification for formation of Grievance Redressal Committees for all the levels. The GRM will continue to function throughout the project life. A Govt. portal titled E-Samadhan is also available to lodge complaints.

All out measures will be taken to resolve concerns/issues/complaints/grievances on the spot or within a day or

two at the local level where it is raised. Serious issues will be referred to higher authorities. It should be mandated to resolve grievances within a maximum of 60 days. And any feedback will be answered within maximum of 15 days.

The first level of feedback will be at the WUA/CHPMA level which should be sorted out within a maximum of 2 days. Beyond this it will be handled at the district level within a maximum of 15 days and if not resolved then will be handled at PMU level and resolved within a maximum of 60 days.

11. Community Awareness and Formation of CHPMAs

The community was made aware of the project design, project objectives, implementation process, project outputs, role of various stakeholders and role of community as a group in HPSHIVA project. To generate awareness individual meetings, focussed group discussions, meetings at cluster level were organized. A provisional management committee was constituted by electing representatives from among the project beneficiaries and the Community Horticulture Produce Marketing (CHPMA) Cooperative Societies were formed in the PRF clusters. These CHPMA Cooperatives were registered as a legal entity under HP Cooperative Societies Act 1968. Separate bank accounts of each CHPMA were opened and four (04) shares of Rs 500 each were collected by the members as share capital of the CHPMA Cooperative Society. The major role of CHPMAs is to undertake collective production and marketing from the cluster. Besides this the CHPMAs will also undertake various other business activities so as to increase the income of the members. In addition, the CHPMAs will also operate and maintain various facilities/infrastructure being created at the cluster level. As an initial support for institutional development, CHPMAs are being facilitated by CHPMA Group Facilitation and Training Facilitators, an agribusiness professional having expertise in farmer group formation and development.



12. Capacity Building of CHPMAs

The project Beneficiaries were exposed to various trainings during PRF implementation. The trainings included fertigation, micro-irrigation, training and pruning of fruit plants, insect & pest management, maintenance of drip irrigation systems, harvesting of fruits, packaging of fruits, management of weeds, mulching, CHPMA functioning and role of office bearers, CHPMA Record keeping, Business Development Strategies for FPOs, etc. The Scientist, extension officer and CHPMA Facilitator are organizing regular training programmes at the cluster level. Exposure visits were also organized for the farmers by enabling them to participate in state

level events such as exhibitions and workshops at different locations of the state

13. Water Users Association

Participatory irrigation management (PIM) has been advocated in the national Water Policy, 2012. In line with this the state government is on way to enact an act titled Himachal Pradesh Irrigation Water User Association Act 2021. In the act, it is proposed that at local level irrigation water management be done by the Water Users Association (WUA). It is expected this would ensure management of irrigation water in more reliable, equitable, efficient and optimal manner. A three layered system namely at command level, distributary level and project level has been proposed. The WUA will be a registered body and all the irrigation water users will be its members. It will have a General body and a Managing Committee.

In the PRF, out of total 17 clusters, registration process of 14 WUAs has been completed, 2 are yet to receive their certificates and 1 is under process. Drafting of WUA Manual has been completed and about 800 farmers have been trained so far.

14. Inter Cropping in PRF

Since the production is expected to start after three years of plantation, the major concern of the beneficiaries in the clusters is the loss of farm income and livelihood during initial years of the project. Hence, to mitigate the problem and to create alternatives for farm income and livelihood of the project beneficiaries, concept of intercropping has been introduced in the PRF clusters. Crops such as onion, ginger, turmeric, wild marigold, coriander, pea, cowpea, cabbage, urd, etc. have been planted by the farmers on recommendations of the experts and has shown good results. The inter crops were also used for fodder. The experiments were found encouraging for the farmer beneficiaries and will be replicated in the ensuing loan phase of the project with modifications as per recommendations of the expert.



15. Marketing Experience of PRF Produce

First harvest of the fruits was experienced by the farmers of the FLDs being established under the project. Since the quantities were very small and the lot size was not enough to supply to the organized markets, beneficiary farmers decided to sell their produce on their own. This not only built the sense of ownership but has also increased their confidence of undertaking the marketing process.

Initiatives were taken at the project level by holding interaction of the farmers with the local buyers at farm gate level, which has resulted in sale of guava crop at a good price. Besides this dialogue with various renowned companies such as Reliance Fresh, Dabur, Mother Dairy, Patanjali, etc. have been initiated with positive response from all. Being new in the commercial production, the farmers have yet to learn the processes of sale and purchase of agricultural produce and hence based on the learnings of the PRF, a marketing strategy is being formulated for marketing of the produce.



16. Stakeholder Consultations

Stakeholder consultations were organized, not only at institutional level but also at cluster level to shortlist the issues and concerns of not only the project beneficiaries but also of the other institutional stakeholders during implementation of the project activities. One workshop on “Ways forward for value chain development and marketing of Sub-tropical Horticultural Crops” was organized at Ghumarwin, Bilaspur by DoH/CHPMA Consulting Firm during 27 Nov. 2021, which received participation of more than 200 experts and participants from various institutions and clusters.

A series of stakeholder consultations was initiated on the occasion of first HPSHIVA day which was celebrated on 1st March 2022. The stakeholder consultation workshops were organized by DoH/CHPMA Group Consultation Firm simultaneously at 7 locations in all project districts on the occasion, which were participated by more than 2000 participants across the state.



17. MIS and Monitoring Framework for the PRF

The MIS and monitoring framework assists the farmers in performing various tasks, ranging from operational planning and implementation to documentation for assessment of performed field work. It is aimed to support management tasks and real-time decision making, as well as compliance management by automating data acquisition and market information etc.

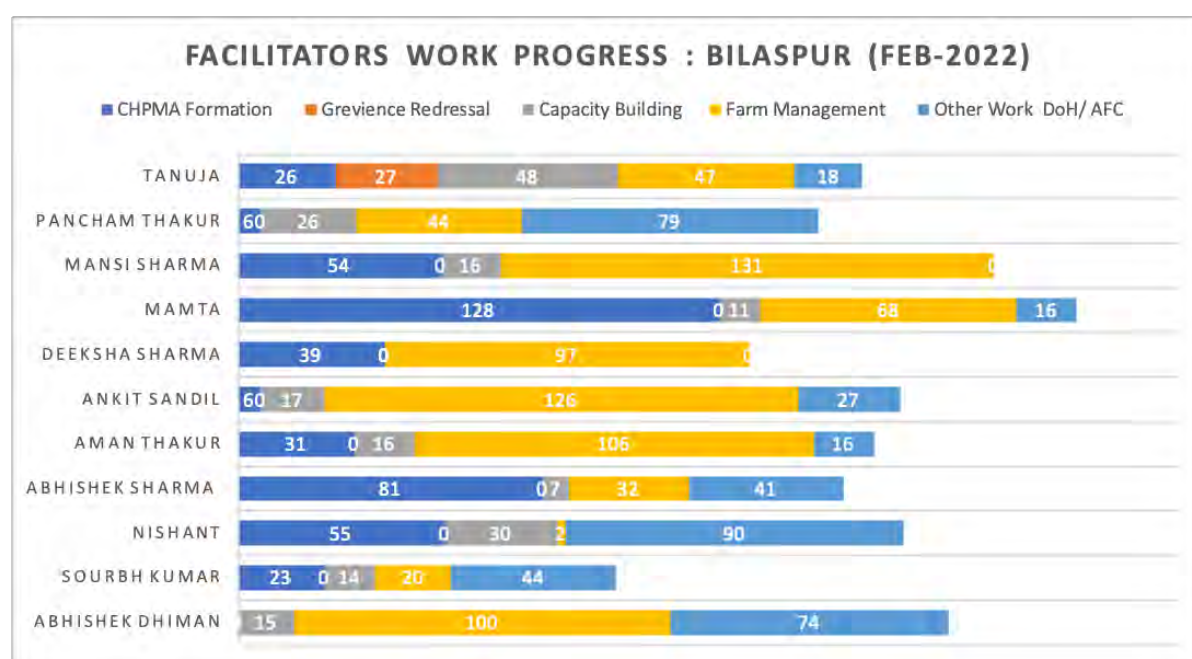
A SQL database was created for the MIS and monitoring of the PRF activities. The SQL database included the following parameters:

- Beneficiaries: Name, Gender, Caste Category, Annual income, Total Land Ownership, Parcel of land under the project
- Cluster: Name of the Cluster, Block & District
- Plant: Name of the plant and its varieties
- Plantation: Farmer wise plantation details, along with varieties and date of plantation
- Input, Tools and Equipment: Inventory of input issued to the individual beneficiaries and similarly the tools and equipments.
- Infrastructure Details: Water Tanks, Drip Irrigation, Mulching, Solar Fencing, etc.
- Water User Association (WUA): WUA data on working members, registration, training
- Community Horticulture Produce Marketing Association (CHPMA) Cooperatives: CHPMA Provisional committee, CHPMA registration, activities being undertaken, manpower (Facilitators and District In-charges), work monitoring database, meetings etc.
- Farm Management: Farm activities database for fortnightly monitoring of Package of Practices, Training and Marketing activities

18. Online Monitoring Framework

The concept of online monitoring has been framed with the aim of representing the knowledge that can be used for understanding the concepts and relations regarding various aspects of horticultural development. Also to support farmers in decision-making regarding the land and crop management. It is aimed that the monitoring framework platform will integrate the external services including value chain development i.e. business process modelling between farmer, suppliers and potential clients as well.

The online monitoring framework has been prepared to monitor the day-to-day activities performed by the facilitator and district in-charge of CHPMA. Similarly, a fortnightly monitoring system of farm practices, capacity building, training, pruning and consultation meetings with the beneficiary farmer has been put in place. MIS reports are generated, and regular review meetings are conducted at the PMU level.

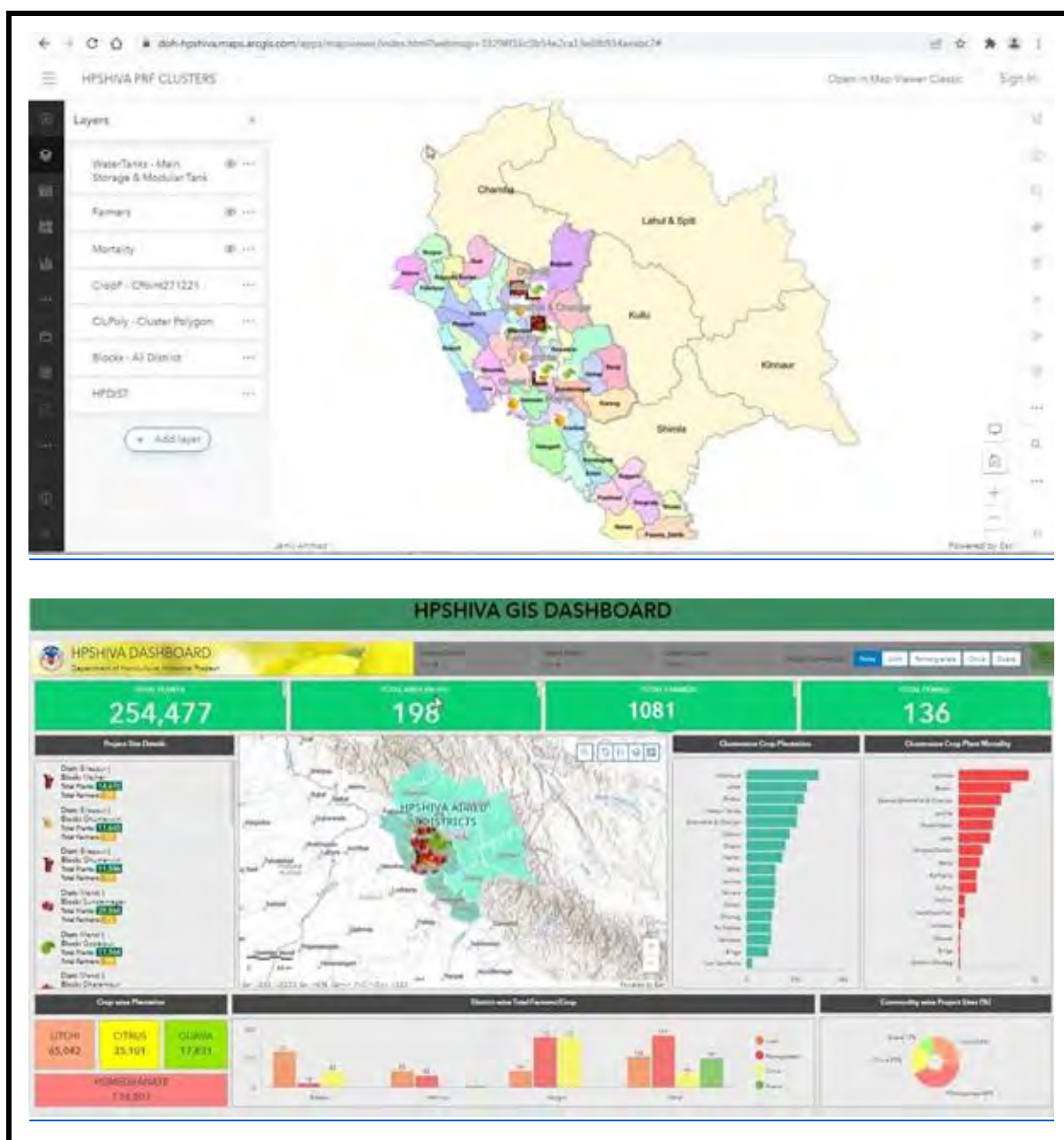


19. GIS Application for the PRF

A WebGIS is developed for PRF clusters, where users can get the information on individual clusters, farmers, plants, crops etc. Several layers such as clusters points, cluster boundary polygons, Water tanks points, blocks and districts are integrated in the application. Satellite images can also be overlaid for further analysis.

PRF WebGIS can be accessed through this link:

<https://dohhpsiva.maps.arcgis.com/apps/mapviewer/index.html?webmap=33298f16c3b54e2ca13e6fb934aeabc7#>



A GIS based dashboard has been developed for the PRF clusters, where different data are linked and displayed on a single screen with Maps, Charts, Graphs, Lists etc.

20. Tagging of plants in PRF Clusters

Every plant in the cluster shall be given a unique code for better monitoring of the plant. The unique code shall be associated with /

refers to owner detail, plant variety, date of plantation, cluster, etc. A complete history of the plant will be maintained in the big larger database for farm practices (which includes Irrigation, Fertigation, plant protection, Pruning, Shaping, etc.) with an alert trigger for the next upcoming activities to be performed with for the individual plant. This database will also help in future projection of production and early warning system for disease outbreak based on set of symptoms and control measures. This database will be linked with Block Chain Technology in future for Traceability and other transactions. This activity has been initiated as pilot activity in Talwara cluster.

21. Social Safeguards

During the PRF, a baseline survey was conducted to understand the socio-economic status of the region. The survey interviewed 304 farmers out of which 12.6% were women farmers. Majority of the farmers across the targeted districts were marginal landowners with only 6% semi-medium in Bilaspur district, 14% and 6% small farmers in Hamirpur and Kangra district respectively. In majority of cases, barren land that was lying fallow has been utilized for the HPSHIVA project. Thus, the farmers did not have to forgo any produce in the project land. A lower level of academic achievements was noted amongst the women farmers. In terms of the social category status, 81.5% farmers belong to General Caste with 6.5% belonging to Scheduled Tribes (6.5%) such as Gujjars and Gaddis in Bilaspur & Kangra.

In terms of crop production, generally wheat is grown during Rabi and maize during Kharif seasons which is mainly grown for subsistence. Only a small number of farmers were involved in multi-cropping of chilies, ginger, pulses, fodder, soya bean, cucumber, turmeric, etc. which is also grown for self-consumption. 71% of the farmers use their own labour for on farm activities whereas 25% use both own labour and hired help. It is pertinent to note that while women farmers comprised of 15% of the respondents for this survey, overall labour provided at the cluster level is more than 50% by women. The land ownership rests mainly with farmers above the age of 50 years, the family members participating in the cluster activities are much younger. More qualified women family members provide labour for the cluster.

From the PRF, social baseline survey was conducted. General findings and issues are:

- Out of the 304 farmers surveyed, around 12.6% were women farmers.
- All farmers in Mandi district are marginal landowners, while 6% in Bilaspur district are semi-medium and 14% in Hamirpur district and 6% in Kangra district are small farmers. Majority of cases, barren land that was lying fallow has been utilized for the HPSHIVA project. Thus, the farmers did not have to forgo any produce in the project land.
- Average literacy level of 91.75% amongst the farmers surveyed in the four districts is better than the HP's respective districts' rural literacy averages.³ Except Bilaspur (82%), farmers surveyed in the other three districts have literacy level above 90%. Graduates, Masters, and even PhDs were noted amongst 17% males. Comparatively, lower level of academic achievements was noted amongst the women farmers.
- 81.5% farmers belong to General Caste. Some Scheduled Castes and Other Backward Castes were also noted along with Scheduled Tribes (6.5%) such as Gujjars and Gaddis in Bilaspur (Dalhet) and Kangra⁴ (Dhanag). The STs, did not demonstrate any distinct features that would classify them into marginalized category.
- Generally, wheat is grown during Rabi and maize during Kharif season. These crops are rain fed and not much effort is required to grow and is mainly used for subsistence, rarely for selling any extra produce.
- In the clusters, only a small number of farmers are involved in multi-cropping. These are chilies, ginger, pulses, fodder, soya bean, cucumber, turmeric, etc. mainly used for self-consumption. An exception was noted in Dhanag in Kangra where a farmer demonstrated large production of cucumber through multi-cropping in the cluster and sold it for 80,000/- in one season.
- It was seen that cluster level activities on land are 71% provide their own labour and 25% use both own labour and hired help. It is pertinent to note that while women farmers comprised of 15% of the respondents for this survey, overall labour provided at the cluster level is more than 50% by women.

- The land ownership rests mainly with farmers above the age of 50 years, the family members participating in the cluster activities are much younger. More qualified women family members provide labour for the cluster. The number of younger persons in clusters is likely to go down as they go back to work with the economy opening up again.
- 46.25% of the total income is spent on food by the surveyed households. However, expenditure on food is higher in Mandi at 59% and Kangra at 49% indicating less dependence on subsistence farming. Around 11% of the income is spent on health and 7% on education. Expenditure on farm equipment is low. On an average, 2.5% of their income is set aside as savings.

22. Environmental Safeguards

As per ADB's environmental safeguards requirements to ensure the environmental soundness and sustainability of PRF and to support the integration of environmental considerations into the project decision-making process, the Safeguard Policy Statement (SPS) requires borrowers to identify project impacts and assess their significance; examine alternatives; and prepare, implement and monitor environmental management plans. Also, The SPS requires borrowers to consult people likely to be affected by the project and disclose relevant information in a timely manner and in a form and in languages understandable to those being consulted. Therefore, following the requirements of the ADB's Safeguard Policy Statement (SPS), the HPSHIVA-PRF has adopted environmental considerations during project designing and implementation.

During the initial environmental screening, the project has been assessed with minor Environmental impacts and classified as Category C for environment risks associated in accordance with ADB's Safeguard Policy Statement. Although environmental risks are minor, the mitigation measures are added to employer's requirements in the bidding documents to ensure that the PRF's piloting activities are done within the scope as a Category C project. For overall management of the Project, in the Department of the Horticulture a PMU has been establish which is being assisted by the Environmental Safeguards Specialist to oversee monitoring and documentation of the implementation of environment mitigation measures and

reporting as part of the environmental monitoring progress reports to be submitted to the ADB.

The risk and impacts related to Biodiversity and Natural Resources will be addressed through implementation of mitigation measures including applying offsetting measures such as compensatory afforestation activity along the periphery of pilot-test areas by the JSV and DOH, if required, to mitigate residual impact.

In addition, the project will not place harm to existing wildlife, and conserve the natural resources of the pilot-test areas. In compliance to the government's policy, the implementation of the PRF will follow standards for safe disposal of construction wastes, used oil and discarded paints. JSV and DOH will follow standards for controlling the pollution on ambient air, water quality and noise levels following the, applicable national rules and amendments. Similarly, all applicable rules and guidelines for Hazardous Waste Management, Construction and Demolition Waste Management, Noise Pollution will be strictly followed as per the requirement of the environmental safeguards. Similarly, Workers will be provided with a safe and healthy working environment, taking into account risks inherent to the type of construction and specific classes of hazards in the pilot-test areas. PMU will take steps to prevent workers' accidents, injury, and disease (i.e., COVID-19) arising from, associated with, or occurring during implementation of pilot test irrigation schemes. PMU will continue to ensure no damage and impacts to physical cultural resources. Access of people for entering temples, cremation ground across, and other religious and culturally important places will not be blocked at any the pilot-test sites. The passages will be maintained open as it is even during the PRF implementation.

The DOH has also constituted a Grievances Redressal Mechanism (GRM) under the PRF to support the environmental and social safeguards of HPSHIVA project. The GRM is accessible to aggrieved farmers at any time prior or post involvement with the project GRM which will receive, evaluate and facilitate the resolution of impacted people's feedback, including concerns, complaints and grievances about the social and environmental performance at the level of the Project. The GRM will aim to provide a time-bound and transparent mechanism to voice suggestions and appreciations and to resolve

social and environmental concerns linked to the project. The project specific GRM is not intended to bypass the government's own redress process, rather it is intended to address stakeholders' concerns and complaints promptly, making it readily accessible to all segments of the community, and is scaled to the risks and impacts of the project. Complainant may access the formal legal system at any time.

23. Internal and Statutory Audits

To ensure smooth financial functioning to meet Financial Obligations as per ADB Finance Guidelines and Government Treasury Advisory, following audits have been conducted:

- Internal Audit : Internal audit has been completed for the FY ended on 31st March 2021. It has been submitted to and accepted also by the Secretariat.
- Statutory Audit : For the FY ended on 31st March 2021, has been completed and APFS has been submitted to ADB for their compliance.

Significant Milestones

- The Hon'ble Prime Minister of India, Shri Narendra Modi visited the Horticulture Exhibition in Mandi, Himachal on 27th December 2021. HPSHIVA Horticulture Cluster Development Model was showcased and appreciated by the Hon'ble PM who emphasized to focus on the Value Chain Development and Marketing Linkages for Horticulture crops.



- Foundation Stone for the Plantation Drive under HPSHIVA laid by the **Hon'ble Chief Minister Sh. Jai Ram Thakur** on 25 July 2021.



- Plantation drives by Hon'ble Horticulture, Jal Shakti, Revenue & Sainik Welfare Minister Sh. Mahender Singh Thakur and other ministers/ members of Legislative Assembly, Public Representatives, etc.



6 | PRF Achievements

The HPSHIVA PRF has been a truly inspiring and encouraging journey for everyone. All the envisaged targets were met within the project timelines. The Key PRF Outcomes can be summarised as follows:

- PRF has successfully implemented the concept “One Cluster, One Crop” which will be further upscaled in 1000 clusters across the seven districts on similar lines in ensuing loan project.
- Established 17 subtropical horticulture clusters in total areas of 199.62 hectares, benefitting 1081 farmer families by introducing high-density production of Citrus, Guava, Litchi and Pomegranate.
- To protect the fruits and the plants from wild and stray animal menace, a new model composite animal proof fencing was introduced across all the PRF clusters. Approximately 46,000-meter length of fencing has already been laid for PRF clusters.
- 16 irrigation schemes were developed for 17 PRF clusters by introducing innovative technologies for water extraction, distribution and storage. Out of the total 16 irrigation schemes, 7 functional irrigational schemes were upgraded, 4 non-functional schemes were rehabilitated and 5 new schemes were developed. Currently, the 16 irrigation schemes cover an area of approximately 200 hectares within the PRF clusters, however, these schemes are designed to cater an overall area of 300 hectares, thus provides a potential to expand the cluster area by 100 hectares subsequently.
- To support collective actions and community participation within the targeted clusters, Community Horticulture Production and Marketing Associations (CHPMA) were formed for the respective clusters. 17 CHPMAs were formed and registered under the Himachal Pradesh Cooperative Act of 1968. CHPMAs were formed with an objective to have collective production and collective marketing by building farmer’s capacities. Further a CHPMA manual has also been prepared for guiding the development and management of CHPMAs in the ensuing loan project.
- Established and capacitated water user associations (17 WUAs formed) on the constructed irrigation schemes with women’s participation and gender-equitable leadership. Further Water User Association Act and Water User Association Manual are being prepared.
- Intercropping models were proactively adopted by the farmers in PRF clusters. Some of the inter crops cultivated by farmers included

turmeric, flax seeds, black grams, wheat and vegetables etc. This initiative supported earning additional income for the farmers.

- The concept of promoting beekeeping within the clusters, which would be additional source of income for the sub-tropical farmers, is being considered for the main project taking into account the potential scope and advantages of it.
- GIS and MIS have been introduced and initiated to practice timely monitoring of the performance and management of on-going activities within the clusters
- To support Govt. of Himachal Pradesh and Asian Development Bank for preparation of ensuing loan project, various consultants and consulting firms were engaged. It also included various studies, feasibility assessment, investment plan preparation, detail design reports, training material, manuals and capacity building initiatives and stakeholder consultations.

The outputs from various consulting packages are mentioned as below:

- Ernest Young LLP was engaged to prepare the 'Himachal Pradesh Horticulture Sector Development Strategy and Investment Plan 2023–2030'. This includes an overall visionary plan for development and fast tracking of the horticulture sector in Himachal Pradesh including horticulture production, marketing and post-harvest value chain assessment, nursery development plan. This Horticulture Development Strategy and Investment Plan also focuses on the HPSHIVA ensuing loan project covering sub-tropical areas horticulture development. The firm will also prepare draft Horticulture Policy for the state of Himachal Pradesh.
- Package of Practices of Sub Tropical fruit crops are being developed by Y.S Parmar University to support and provide technical knowhow, scientific knowledge on modern fruit production practices for the use of field level extension workers and sub-tropical fruit growing farmers under CS-04 package.
- Supervision of irrigation construction contracts was done by MSV International.
- Academy of Management Studies was engaged to establish sustainable Water User Associations (WUAs) under the PRF clusters. Further, the agency would support in the development of WUAs on the approximately 4,000 ha of irrigable area

identified and designed during the first phase of the HPSHIVA project.

- AFC India Limited was engaged to establish sustainable CHPMAs involving the development and formal registration of CHPMAs in the pilot PRF clusters and also planning and laying the groundwork for CHPMAs covering the estimated 10,000 farmers who will be engaged in irrigated sub-tropical horticulture production on the approximately 4,000 ha of sub-tropical horticulture production area under larger the ensuing loan project.
- Joint Venture of Grant Thornton Bharat LLP and Tata Consulting Engineers was engaged to conduct necessary consultations, surveys, studies for preparation of the project due diligence documents and assessing project feasibility for various components of the ensuing HPSHIVA loan project as required by the Government and ADB towards preparation and finalization of a Project Investment Plan covering 10,000 ha of sub-tropical horticulture area and a target beneficiary of 25,000 rural households.

Survey

- Baseline survey – The baseline survey was conducted by carrying out primary surveys of targeted project beneficiaries across 28 blocks in the 7 project districts, covering a total of 1016 households, covering 10% of the total households. The detailed district wise baseline survey outputs are annexed with the report.
- Topography survey – A topographic survey of 17 clusters in four PRF districts was done to ascertain topography of the site & features, fencing length, cluster area, approach road, location of main water supply tank and modular tank, etc. The drawings are included in the cluster profile chapter of this report. The same data has been exported to GIS Platform. For the ensuing loan project, survey of more than 4000 hectares identified under phase 1 of the project has been completed. The topographic survey of the clusters spread over seven district has been carried out for designing the irrigation system from source to cluster and within the cluster. The survey also included existing status of crops, accessibility to farms, and terrain of the clusters.

Project Design

- **Horticulture Design** - Prior to identification of selected sub-tropical fruit crops, detailed survey and feasibility studies have been made involving all the concerned stakeholders i.e., HP DoH, SAU's, Jal Shakti Vibhag (JSV), CHPMA farmers, Entrepreneurs, Co-operatives, HPMC Market Linkage Board and other progressive growers of the areas etc. These studies include land availability, interest of growers, soil type, physio-chemical characteristics of soil, nutrient status, altitude, availability of irrigation facilities, orchard management practices, production and marketing facilities. In addition, intercropping with a suitable crop for each cluster will be promoted for initial 2-3 years of plantation so that the beneficiary growers get some revenue to meet the required expenses while establishing the orchard.
- **Irrigation Design** - The topographic survey of preselected clusters of area more than 4,000 Ha provided by the DOH & Jal Shakti Vibhag (JSV) was carried out at site and drawings of the same is being prepared. The clusters with definite source of water and having more than 10 Ha area (few with 5 Ha also) were considered further for developing irrigation design. Based on the topography survey, field visits and stakeholder consultations, the irrigation schemes were mapped and designed for the individual clusters. A total of 206 irrigation schemes were identified for 290 clusters. These are categorized under three categories that are functional, non-functional and new irrigation schemes, where 60 were functional, 30 were non-functional and the remaining are new schemes.

Detailed analysis on the irrigation system selection - Considering the type of crop, type of existing soil, terrain increasing demands on limited water resources, application efficiency and the need to minimize environmental consequences of irrigation, it is proposed to provide DRIP irrigation system for the clusters. DRIP Irrigation technology involves irrigating plants at the root zone through emitters fitted on a network of pipes.
- Economic Analysis for each Crop Production Model, Cluster Models and Household models was undertaken for targeted 8 value chains.
- Safeguards Assessment – In terms of the safeguard compliances within the project, various environmental and social safeguards compliances have been documented.

- Project Component Design - More than a hundred stakeholder consultations had been organized by the project to finalize the project components and design of the ensuing loan project.

PRF Project Procurement

- As part of the implementation of the PRF, a full suite of Goods, Works and Services needed to be procured under ADB mandated procedures. In accordance with ADB requirements, a Strategic Procurement Planning Exercise was initially carried out and this resulted in the development and finalization of a PRF Procurement Plan which was the guiding document for all procurement to be carried out under the PRF
- Procurement under the PRF broadly included the following:

Goods

- Planting Materials (covering various varieties of Citrus, Gauva, Litchi, Pomogranate)
- Plant Inputs (covering Fertilizers, Nutrients, Insecticides, Manure etc.)
- Farm Equipment and Implements

Works

- Field Preparation Works
- Drip Irrigation and Modular Water Storage Tank
 - CW01 : Irrigation Scheme Mandi
 - CW02 : Irrigation Scheme Hamirpur
 - CW03 : Irrigation Scheme Bilaspur
 - CW04 : Irrigation Scheme Kangra
- Animal Proof Composite Fencing

Services

- Construction Supervision
- Water User Association Development and Facilitation
- Package of Practices
- CHPMA Facilitation
- Himachal Pradesh Horticulture Sector Development Strategy and Investment Plan 2023–2030
- HPSHIVA Ensuing Loan Detailed Design and Investment Proposal
- IEC (Information, Education and Communication) Services
- Internal Auditing Services
- Statutory Audit Services
- Several Individual Consultants/Specialists for PMU technical support operations

All major procurements under the PRF have been satisfactorily completed (or substantially completed) within the overall PRF budget and with due clearances from the ADB and the Government of Himachal Pradesh.

7 | PRF Learnings

Implementation of various outputs under PRF has provided key learnings, designing, implementation and further improvement of the ensuing loan project on various mentioned below aspects

1. Beneficiaries

- Development of horticulture clusters and standardizing specifications for various subcomponents within such as land development, fencing, planting materials, micro irrigation systems etc.
- Training and capacity building needs of farmers, CHPMAs, WUAs and line departments.
- Finance plus element in the project needs to include beneficiary farmers contribution in the form of cash, kind and labour during the cluster investment period. It has been observed that beneficiary farmers contribute more than 20% of the total investment cost for cluster.
- Convergence with various schemes such as MNREGA and PM Kustum Yojna.

2. Project Components

- **Planting:** In PRF, 2% extra plants were delivered by the suppliers than the ordered quantity, without any additional cost. However a mortality rate of about 5-7% has been observed in the field which is similar to national average of mortality rate in horticulture. Therefore it is proposed to procure 107% of estimated quantity in the ensuing loan project.

Plant Mortality in the PRF Clusters				
Plant / Crop	Variety	Planted Quantity	Mortality	% Mortality
Citrus	Jaffa	5828	323	5.54
Citrus	Valencia	16479	658	3.99
Citrus	Blood Red	21550	1418	6.58
Citrus	Hamlin	2597	119	4.58
Citrus	Westin	6817	115	1.69
Citrus	Natal	2719	0	0.00
Citrus	Pera	8705	293	3.37
Citrus	Mosambi (Andhra)	347	10	2.88
Guava	Sweta	45334	3112	6.86
Guava	Lalit	54328	9070	16.69*
Guava	VNR Bihi	36911	2699	7.31
Litchi	Dehradun	25169	4282	17.01*
Litchi	Calcuttia	9932	16	0.16
Pomegranate	Bhagwa	17831	1320	7.40
	Total	254547	23435	9.21

- Reasonably high mortality rate was observed which could be due to late planting / environmental factors.
- **Fencing:** On the basis of experience of PRF, a composite and innovative fencing model has been adopted for the clusters after examining various combination of mesh and pole sizes. The performance of this new design is similar to old, with an increase in voltage and is more cost effective.

The height of the fencing above ground level will be 6.95 feet, rather than 7.15 feet as was considered for PRF. Additionally, the depth of the fencing below the ground will be 1.5 feet. The interlink chain will be till a height of 4 feet, and the wire at an additional height of 2.95 feet. 3 wires are to be fixed, with current flowing in each of them. A height of 0.5 feet will be left both above the interlink chain and from top, and the 3 wires will be fixed within the width of 1.95 feet. The specifications of the poles are such that the corner pole will be of 40 mm diameter, intermediate pole 32 mm diameter, and supporting pole of 25 mm diameter. The pole to pole spacing will be 3 m and after a distance of every 100 m, there will be a corner pole.

Performance monitoring and effectiveness of animal proof composite fencing in each cluster will be strengthened by improving and implementing regular monitoring mechanism in preventing crop depredation by wild and stray animals involving CHPMA members.

- **Land Preparation:** PRF is a successful model of high density plantation. The bed height in consultation with the Department of Horticulture, and other Horticultural experts have been raised to 0.3 meters from 0.25 meters in the PRF. The planting spacing has also been modified on the basis of PRF learnings for the ensuing loan project.

Crop	Spacing (m)
Citrus	3*3
Guava	3*3
Litchi	4*4
Pomegranate	3*3
Kiwi	4*3
Mango	3*3
Pecan nut	6*6
Persimmon	4*4
Plum	4*4

The experiences gained from the PRF implementation specially with regards to felling of trees for clearing and preparation of land for horticulture plantation or for cutting of any tree at weir site will be adequately addressed by following due process of government regulations for ensuing loan project.

- **Package of Practices:** In PRF high density plantation was done and the estimated quantities of various inputs like fertilizers, pesticides etc. were found not adequate to meet the actual requirement. In the ensuing loan project, all the quantities will be as per the PoP being developed by Y S Parmar University.
- **Drip Irrigation:** During implementation of PRF it was observed that single drip line was less effective. Hence in consultation with the Department of Horticulture, Jal Shakti Vibhag and other irrigation experts it was concluded that a double drip lateral line of irrigation be used which subsequently has proven to be more efficient to allow distribution of water around the plant.
- **Irrigation Design:** In PRF the task of irrigation design was done by two agencies- one for drip irrigation and second for modular tank. In the ensuing loan project these two tasks will be done by a single agency to avoid any possible design conflict. The location of modular tank shall also be optimized for efficient use of the resources.

The Irrigation designs for the clusters have been put together in a way where the source parameters, component of irrigation pipelines, layout and the drip irrigation within the entire cluster area are drafted altogether.

- **Nursey Development:** During the implementation of PRF, some of the planting material was procured from out of the state nurseries. It was realised that the current strength of nurseries in the state is not adequate to provide sufficient planting material for ensuing loan project. Therefore, to uplift the infrastructure facilities of Nurseries within the state, an upgradation plan for approximately thirty (30) present nurseries is to be prepared for additional production of quality planting material, with state government schemes. A proposal of developing seven (7) new nurseries in private sector, to facilitate the nursery requirements has been scheduled in the main project.

3. Production & Marketing

- The normal duration of fruiting is generally 5-6 years. However, in the PRF clusters it has been observed that the fruiting started from the third year itself. The reason for this change could be High Density Plantation technique and proper management of field activities such as drip irrigation, timely fertigation from the PoPs, pruning activities and various others. Proper guidance and best practices have been adopted in consultation with the University.
- Third-year fruit production has been observed around 5-6 MT on an average per ha both in Guava & Sweet Orange. It can be estimated that the production target of 30 MT per hectare is achievable. Also, the fruits being produced are of high quality in the initial observations. The production and quantity will finally be ascertained after 3rd / 4th year of the plantation and after testing for different quality parameters.

4. Project Procurement

The execution of the planned procurement packages under the pilot PRF threw up a few challenges which needed to be overcome. Also the learnings (in the procurement domain) achieved under the PRF will be gainfully utilized in planning and strategizing the procurement operations for the larger ensuing loan project. Some of the key learnings are:

- i. Packaging the procurements into appropriate Lots and Lot Sizes is a prime requirement. The PRF experience has shown that most of the suppliers/vendors/contractors that expressed interest and participated in the PRF procurement tenders (mainly from Himachal Pradesh and a few from other adjoining states) are normally part of the MSME sector with relatively small or modest financial turnovers. Maximum participation can be expected from this category of bidders. Therefore it will be necessary for procurements planned to be conducted under the ensuing loan project to be judiciously and appropriately packaged into Lots and Lot Sizes so as to achieve a reasonably acceptable level of competition and also to allow local and regional bidders to effectively participate in the business opportunities that would be thrown up through the procurement process.
- ii. Procurement of Quality Planting Material needs to be judiciously planned since the quantities required under the ensuing loan project are very high (including the various crops and varieties involved) and there is a likelihood of supplies not being readily available for the large quantities required. Procurement of Quality Planting Material is not an off the shelf type procurement and needs to be carried out with due diligence on the supplier nursery (in terms of quality of saplings, due certifications from statutory authorities, capacity of the nursery) due to the fact that nurseries only plant and develop varieties that are readily sold and in market demand quantities. Since the quantities required under the ensuing loan project are much higher than normal market demands, it will be necessary to plan the procurement through some innovative contractual methods to ensure that the required quantities of Quality Planting Material will be available for planting as per the planned schedule. Based on these considerations, a Global Request for Expression of Interest has been issued under the PRF and assessment is currently being made on the projected availability of quality planting material based on which

the procurement and contracting strategy for the ensuing loan project will be finalized.

- iii. As regards the planned procurement of the Animal Proof Solar Fencing Works to be undertaken under the much larger Ensuing Loan Project, the design of the Bidding Documents for such works would need to take into consideration the fact that there is very limited public procurement experience (within the country) of such large sized single procurement contracts (of similar solar fencing works) and therefore the packaging of the required works into smaller lots with appropriate minimum qualification requirements (based on available market considerations) would be necessary. This is based on the PRF experience of procuring such solar fencing works.
- iv. Based on the PRF experiences on irrigation schemes, it has been decided that the expansion of the irrigation schemes under the much larger Ensuing Loan Project would incorporate a technological improvement through installation of SCADA (Supervisory Control and Data Acquisition) systems for more effective water management and better monitoring & evaluation of irrigation and fertigation schemes.

5. Project Management & Contract Management

- i. During PRF, CHPMAs were formed on each cluster basis. But this arrangement was not found suitable or viable for effective management of activities and statutory compliances. Hence in the ensuing loan project, CHPMAs will be formed for a group of clusters.
- ii. In PRF, 16 irrigation schemes were developed for 17 clusters. In the ensuing loan project, clusters have been grouped as per irrigation scheme for effective and efficient management.
- iii. During PRF, the communication and extension services to all the stakeholders, especially to beneficiaries, were found inadequate. Hence an IEC Specialist has been recruited to propose a communication strategy and take

care of all IEC requirements. The activities of IEC Component will be further scaled up in ensuing loan project. A communication firm is also proposed to be engaged to producing various creatives as per communication strategy / plan, brochures / flyers/ leaflets, print campaign, radio spots, informational films, farmers' training videos, etc.

6. Beneficiary Satisfaction Survey

A beneficiary survey was conducted during 28th to 30th March 2022 in all PRF Clusters, through a structured survey questionnaire pertaining to pilot test activities implemented under the project. The respondents were asked to give rating from highly unsatisfied (1) to highly satisfied (5). A total of 169 respondents from 13 clusters participated in the beneficiary survey. The analysis of survey is presented below.

PRF Producer's Satisfaction Level in HPSHIVA Project Implementation					
Producer Response Results in Percentage					
Nos	Questions	Very Unsatisfied	Unsatisfied	Neutral	Satisfied
Q1	Awareness Programs and Consultations organized by the Project	0.00	0.00	4.73	34.32
Q2	Regularity/Frequency of Meetings and Consultations with farmers conducted by Department of Horticulture	0.00	8.28	13.02	35.50
Q3	Quality of Field Preparation Work (leveling, Bed Preparation, Pit Digging etc.)	0.00	3.55	10.65	42.01
Q4	Quality of Fencing Work in Field/Cluster	1.78	20.71	14.20	28.99
Q5	Availability and Quality of Water for irrigation	13.02	7.10	18.93	37.28
Q6	Quality of Drip Irrigation System established in the cluster	15.38	24.26	24.26	31.95
Q7	Quality of Training/Facilitation for Training and Pruning of plants by DoH/Scientists	7.69	1.78	8.28	44.97
Q8	Quantity and Quality of Inputs (Fertilizers) provided by DoH under the project	0.59	2.37	7.69	48.52
Q9	Awareness/trainings/support for Disease & Pest management by DoH	1.78	1.78	27.81	39.64
Q10	Growth/Development of plants in the cluster	0.00	0.00	4.73	39.05
Q11	The processes of Formation and Working/functioning of CHPMA Group/Cooperative Society in the cluster (meetings, share collection, monthly savings, information sharing, etc.)	0.00	0.00	13.02	51.48
Q12	The processes of Formation and Working/functioning of Water User Association (WUA) in the cluster (meetings, collection of user charges, information sharing, etc.)	17.16	0.59	27.22	52.07
Q13	Information and knowledge shared by facilitators and other officials on Marketing of fruit Produce through CHPMA	0.00	0.00	14.20	46.15
Q14	Information and knowledge shared by facilitators and other officials on Post Harvest Management of the produce	0.00	1.18	31.36	41.42
Q15	Exposure Visits/ Training/Workshop/ Fair/ Buyer Seller Meet organized by DoH/CHPMA	7.69	1.78	26.63	34.91
Q16	Awareness of Grievance Redressal Committees formed in your Cluster	0.00	0.59	37.87	31.95
Q17	Over All implementation of HPSHIVA Project	0.00	0.00	11.83	58.58

The suggestions were also sought from the beneficiaries to improve the quality of work. The major suggestions given by the beneficiaries are as under:

Sn	Suggestions
1.	Irrigation pipes should be changed and quality of irrigation water should be improved
2.	BOD member should be trained about pruning in citrus and disease Management
3.	Beneficiaries of cluster wants to change the pipes of drip irrigation and use more thicker pipes in the field
4.	After installation of drip system drip team should told farmers that check their field either water is coming through pipeline
5.	Installation of extra water chamber in cluster for sufficient irrigation water
8.	Current should be passed in fencing property
9.	Time to time support of department to farmers
10	Proper management of water system should be done
11	Proper guidance to farmers about training and pruning
12	Department should check plants time to time
13	Provide good marketing facilities
14	Mortality plants should be provided in the coming planted session
15	Solar Pumps System should be install instead of electric MoterPump connection
16	Solar lights should be install in the PRF cluster along with fence.
17	Fertilizer on 80% subside, it should be continue for coming years as because the requirement of the fertilizer will increase proportionality with age of the plants
18	Beneficiaries of cluster wants new Main storage tank near the main source of water (kulh) so that the water is filtered for further use. At present various waste material is mixed with water. The beneficiaries of cluster wants new tank so that the water reached to the cluster is pure
19	improvement in dripper placement, drippers must be at proper spacing

Details of FLDs in Convergence with MIDH Scheme

District / Crop	Number of FLDs
Bilaspur	27
Citrus	19
Guava	5
Litchi	1
Pomegranate	2
Hamirpur	27
Guava	2
Pomegranate	9
Sweet Orange	16
Kangra	32
Guava	4
Pomegranate	1
Sweet Orange	27
Mandi	88
Guava	27
Litchi	2
Pomegranate	2
Sweet Orange	43
Apple	2
Plum	9
Persimmon	3
Solan	15
Guava	12
Pomegranate	2
Sweet orange	1
Una	9
Citrus	1
Guava	4
Pomegranate	4
Sirmour	12
Guava	11
Litchi	1
Grand Total	210

7. Miscellaneous / Others

- i. The selection of a few clusters in the PRF was based more on social commitments as per farmer's choice than on scientific parameter. This resulted in slightly high plant mortality as climate and other factors were not favourable for cluster sites and crops. To avoid this, a scientific tool was developed based on the following parameters:

- a. Perineal Source of Water ensuring water availability for the next 30 Years.
- b. Soil Testing,
- c. Ecological Parameters suitable to subtropical crops,
- d. Producers' willingness
- e. Connectivity with roads, and
- f. Drainage System in the cluster area.

To review the data and advise cluster site selection, a team of university scientists, technical professionals (Total Station Survey), horticulture domain specialists and producers priority matrix was formed.

- ii. The language of the standardised MoU has been changed to regional language so that it can be easily comprehended by the producer. The Horticulture Department, Jal Shakti Vibhag, and Producers' roles and responsibilities have clearly been specified in the MoU.
- iii. During PRF implementation, it was observed that enhanced women participation in the activities gave better results and better ownership. Hence it has been decided to encourage more women to participate in cluster activities. It has also been decided to ensure 33% women members on the committee through CHPMA.
- iv. Out of total 1081 beneficiaries of PRF, 80.67% (872) beneficiaries have land less than 0.25 ha, 12.48% (135) beneficiaries have land between 0.25 ha and 0.50 ha, 5.83% (63) beneficiaries have land between 0.50 ha and 1.0 ha, and only 1.02% (11) beneficiaries have land larger than 1 ha. Secondly, only 25% of beneficiaries have used the Kisan Credit Card option to obtain credit from the cooperative bank at interest rate of 7% with further rebate of 3% on timely repayment, to fulfil their fertilizer and pesticide requirements in the field.

Therefore it has been decided to increase the amount of credit available to producers through banks (KCC and other State/Central Government Schemes). A huge awareness campaign is being executed throughout the clusters to encourage producers to enrol in KCC and to assist them with the documentation process.

Innovations for the Ensuing Main Project

The impact of the project will be strengthened by using innovative solutions at every output level whether these are in terms horticultural and irrigational practices, market accessibility or by any other intervention. The proposed assignment has three closely linked outputs where the following innovative steps and measures have been adopted.

- Unlike the existing scheme wherein the land was identified by the farmer themselves, in this project DOH and JSV together identified the land which is suitable for growing sub-tropical horticulture fruit plants along with ensuring water availability in the area.
- Ranking system methodology was designed and adopted by DOH for selection of clusters which will ensure future sustainability of farmers and the project.
- In order to promote the women participation, various provisions have been made in the project.
- For the project cluster minimum 10 Ha of contiguous land has been selected so as to achieve economies of scale in pre-production, production and post-harvest management.
- In order to protect the land and the produce from various stray and wild animals, Animal Proof composite solar fencing is being installed around cluster perimeter.
- Provision for intercropping, beekeeping, etc. have been incorporated to meet the farmer's requirement in initial years of plantation.
- To ensure crop water availability, the water storage tanks are being designed for each cluster by Jal Shakti Vibhag (JSV) and DOH. Jal Shakti Vibhag (JSV) is responsible for providing the water from the water source to the storage tank near the cluster; on the other hand, DOH is responsible for providing water from Jal Shakti Vibhag (JSV) storage tanks to the clusters, creating water storage facility within cluster, as per requirement and then distributing to the individual plants via drip irrigation.
- In order to maintain the uniformity in plantation, pre-designed plantation layout which include plant spacing, drip laying, mulching, etc. have been adopted in clusters based on its topography.

- Using Civil 3D Software for land Surveys for the complete project. GIS application in identification and mapping of clusters for designing ensuing loan areas in the state.
- Details irrigation feasibility scheme for each cluster and mapping group of clusters with an irrigation scheme. Further classification of scheme to functional, non-functional and new scheme to detail out the requirement of each scheme with costing.
- Using of Software i.e., Startpro Water Gems and epanet for designing of irrigation structure and water supply designs. Use of drone in field survey.
- To create the sense of ownership, a nominal contribution will be required from the farmer.
- For collective management of cluster, a cooperative society Community Horticulture Production and Marketing Associations (CHPMA) is being formed with cluster farmers which will make sure collective agri-input procurements, farm day-to-day operations and management.
- A provision of revolving fund has been created that will be disbursed to the clusters to cater the post-harvest expenditure, to avoid distress sales.
- An apex body will be created under the Company's Act 2013 with CPMA as its member for overall post-harvest management, processing, marketing, branding and sales of produce.
- A Water User Association (WUA) is being formed to keep check on proper availability of water to the clusters from the designated irrigation scheme. It will be responsibility of WUA for collection of water usage charges for operation and maintenance of the irrigation schemes.
- To meet the planting material requirement in future, various nurseries will be developed.

8 | Financials at a Glance

The state government has sanctioned a total budget of Rs. 48.80 Crores for HPSHIVA Project as per following details:

FY 2018-19 :	Rs. 1.00 Crore
FY 2019-20 :	Rs. 4.00 Crore
FY 2021-22 :	Rs. 43.80 Crore

The expenditure has been incurred under various packages against total sanctioned budget as per ADB project financial management system, including internal controls. This entails aspects such as adequacy and effectiveness of accounting, financial and operational control; level of compliance with general financial rules and treasury rules of the state government and ADB finance guidelines.

- Package wise Financial Progress**

The details of various expenditure incurred on project activities under different packages is given below:

All Figures in Rs. Crores

Sr#	Package	Description	Contract awarded	Expenditure	Achievement	Reimbursement From ADB
		Goods & Supplies				
1	G1	Planting Materials	2.54	2.55	100%	2.15
2	G2	Computer Software	0.27	0.27	100%	0.22
3	G3	Supply of Horticulture Input	1.60	1.60	100%	1.31
4	G4	Supply of Farm Equipment	0.70	0.70	100%	0.59
5	G5	Office Equipment	0.85	0.56	66%	0.48
6	G6	Vehicle	0.75	0.48	64%	0.39
		Total Goods & Supplies	6.71	6.10	91%	5.15
		Civil Work				
1	CW01	Irrigation Scheme Mandi	5.51	5.51	100%	4.58
2	CW02	Irrigation Scheme Hamirpur	1.31	1.31	100%	1.11
3	CW03	Irrigation Scheme Bilaspur	4.15	4.25	100%	3.02
4	CW04	Irrigation Scheme Kangra	4.54	4.54	100%	3.85
5	CW06	Installation of water storage tank	4.17	4.17	100%	2.91
6	CW07	Field preparation and land leveling	5.29	5.28	100%	4.72
7	CW08	Animal proof facing and instalation	5.28	5.15	100%	4.59
		Total Civil Work	30.25	30.21	100%	24.78

Sr#	Package	Description	Contract awarded	Expenditure	Achievement	Reimbursement From ADB
		Consulting Services				
1	CS01	Construction Supervision Consultant	0.90	0.89	99%	0.85
2	CS02	PMU Consultants	5.26	2.41	46%	2.01
3	CS03	Horticulture Strategy	2.82	0.21	7%	0.21
4	CS04	Package of Practices	0.67	0.05	8%	0.05
5	CS07	WUA Facilitation (JSV)	4.41	0.91	21%	0.20
6	CS08	CHPMA	5.62	2.14	38%	1.44
7	CS09	Ensuing Loan Preparation	11.59	2.05	18%	0.48
8	CS10	Internal Audit	0.11	0.00	0%	
9	CS11	Hubertus Hendricks	0.15	0.15	99%	
		Total Consulting Services	31.52	8.80	28%	5.23
		Grand Total	68.27	44.58	65%	34.46

- **Status of Contracts under PRF as on 31.03.2022**

Summary of SPP under HP SHIVA - as on 31-03-2022							
Package	Particulars	Original Allocation as per SPP Aug 2020 (USD)	Revised including all variations (USD)	Contract Awarded Value in INR	Expenditure Till March	Reimbursed from ADB till March	Status
Goods							
G1	Planting Material	3,50,000	3,35,538	2,54,42,521	2,55,05,712	2,15,49,816	Completed
G2	Computing Software	63000	34,959	26,50,792	26,50,792	22,45,221	Completed
G3	Horticulture Input	2,80,000	2,11,317	1,60,23,305	1,53,71,773	1,31,04,597	Completed
G4	Farm Equipment	85,000	92,162	69,88,299	69,86,417	59,33,378	Completed
G5	PMU Office and Field Equipment	2,82,000	1,12,645	85,41,392	56,41,112	47,78,023	Ongoing
G6	Vehicles	1,90,000	98,586	74,75,384	48,41,645	38,59,352	Ongoing
G7	IEC Materials	0	30,000	22,74,780	0	0	To be awarded
Work							
CW1	DIPH - Irrigation - Mandi	8,00,000	7,26,920	5,51,19,419	4,63,00,738	4,71,09,707	Completed
CW2	DIPH - Irrigation - Hamirpur	2,30,000	1,72,713	1,30,96,137	1,24,35,431	1,10,82,920	Completed
CW3	DIPH - Irrigation - Bilaspur	5,00,000	5,47,508	4,15,15,338	3,92,29,962	3,01,64,639	Completed
CW4	DIPH - Irrigation - Kangra	6,70,000	5,98,774	4,54,02,607	3,77,04,178	4,38,13,692	Completed
CW6	Drip irrigation & modular water tanks	6,90,000	5,49,519	4,16,67,841	3,92,10,324	3,49,21,218	Completed
CW7	Field preparation	6,50,000	6,97,770	5,29,09,086	5,28,42,912	4,71,88,720	Completed
CW8	Animal Proof fencing	7,00,000	6,95,951	5,27,71,200	5,14,53,807	4,59,48,250	Completed
Consultancy							
CS1	Construction Supervision - DIPH	1,50,000	1,18,574	89,91,000	85,09,586	85,09,586	Completed
CS2	PMU Consultants	8,00,000	6,77,584	5,13,78,516	2,41,41,795	2,39,98,602	Completed
CS3	Horticulture Sector strategy	3,80,000	3,71,588	2,81,76,040	51,77,250	51,77,250	Completed
CS4	Package Of Practices	80,000	87,731	66,52,304	5,42,346	5,42,346	Completed
CS5	DOH/DIPH Capacity building	73,000	1,05,000	79,61,730	0	0	Completed
CS6	Various Government Studies	93,000	93,000	70,51,818	0	0	To be awarded
CS7	WUA Facilitation	8,00,000	5,81,076	4,40,60,692	19,61,815	19,61,815	Completed
CS8	CHPMA facilitation –	8,40,000	7,40,696	5,61,63,994	1,81,13,910	1,81,13,910	Completed
CS9	HP-SHIVA (ensuing loan) preparation for DOH and DIPH	13,62,650	15,28,277	11,58,83,132	2,05,85,100	2,05,85,100	Completed
CS10	Internal Auditing	20,000	14,426	10,93,860	0	0	Completed
CS11	WUA Expert	20,000	18,084	13,71,237	0	0	Completed
CS12	MIS/GIS	0	2,00,000	1,51,65,200			To be awarded
CS13	IEC Design and Development	0	1,00,000	75,82,600			To be awarded
	Other Office Expn				19,46,212		
	Total	1,01,08,650	95,40,398	72,34,10,224	42,11,52,817	34,46,30,556	

Bhaleu: Profile Guava

About Bhaleu

According The total geographical area of village is 61.48 hectares. Bhaleu has a total population of 356 peoples. There are about 73 houses in Bhaleu village. As per 2019 stats. The main occupation of the villagers are agriculture.



Producer and their land Share in Project					
	SC	ST	OB C	Total	Gen
Beneficiary	38	-	-	8	38
Land (ha)	11.64	-	-	1.88	11.64

Plantation of Guava and Mortality of Plant			
Guava Variety	Total Plantation	Mortality	% Age of Mortality
Sweta	9642	500	5.19
Lalit	11629	2356	20.26
VNR	2162	537	24.84
Total	23433	3393	

Connectivity of the Cluster

Description	KM
Distance from District HQ	25
Distance from Block HQ	8
National Highway Connectivity	20
Nearest State Highway Connectivity	2
Nearest Railway Station	65
Nearest Airport	80
Nearest APMC (F& V Market)	20
Common Service Center (Lok Mitra)	2
Nearest Processing Unit	20
Nearest Bank Facilities (Commercial)	2



Cost of Project and Means of Finance (Rs in Lakhs)		
1	Land Cost	0.00
2	Investment on Capital	168.94
3	Equipment & Tools	1.72
4	Misc Fixed Assets	4.00
5	Furniture and Fixture	0.90
6	Preliminary and Pre-Operative	11.59
7	Contingencies and Escalations	1.80
8	Security Deposits	0.60
9	Working Capital Margins	0.00
	Total	189.56
Means of Finance		
1	VG/ Budgetary Grant from Govt	19.56
2	Term Loan (ADB)	170.00
	Total	189.56
	USD (1 USD = INR 72)	263277.78
	USD Million	0.26

Financial Results

Sn	Particulars	Value
1	Debt Equity Ratio	8.69
2	Debt Service Coverage Ratio	1.32
3	Pay Back Period (Years)	17.00
4	Break Even Point Year	6.00
5	Cash Break Even Point (%age)	35.13
6	IRR (in %age)	19.22%
	ROI (return of Investment)	13.97

Irrigation Facilities

The project is provision of providing water to every plant for next 20-25 years. The total water requirement is calculated and accordingly perennial source identified. The main source of water is main source of water and connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000 liters capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is formulated for irrigation of plants. For better return and value addition of the produce a Community Horticulture Producer Marketing Association is Proposed to run the business of the cluster

SN	Name of Member	Gender	Producer's Name	Member Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Sh. Dharmpal	Male	owner	self	President	8544709393
2	Smt. Meena Devi	Female	Sh. Bishan Dass	Father in law	Vice-president	7876563721
3	Sh. Devraj	Male	Owner	Self	Secretary	9418490604
4	Sh. Prakash Chand	Male	Owner	Self	Vice-Secretary	7833029004
5	Sh. Ramesh Chand	Male	Owner	Self	Treasurer	9418534511
Water User Association						
1	Joginder Raj Sharma	Male	Self	Self	President	7018892511
2	Anita Devi	Female	Vijay Kumar	Wife	V.President	9418490418
3	Ravi Dutt Sharma	Male	Self	Self	Secretary	9418249004
4	Sumit sharma	Male	Self	Self	J.Secretary	9805085888
5	Kishan Chand Sharma	Male	Self	Self	Treasure	7018680643
6	Prakash Chand	Male	Self	Self	Member	7813029004
7	Dev Raj	Male	Self	Self	Member	9418490604

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	53.98	57.28	63.24	69.83
2	Cost of Operation as per Schedule B	0.00	8.96	10.83	13.21	16.22
3	Profit from Operations (A-B)	0.00	45.02	46.45	50.04	53.61
4	Less Interest on Term Loan	6.22	10.77	7.09	3.41	0.00
5	Total Interest	6.22	10.77	7.09	3.41	0.00
6	Profit after Interest	-6.22	34.24	39.36	46.63	53.61
7	Less Depreciation	0.00	6.17	5.17	4.34	3.64
8	Net Profit After Depreciation	-6.22	28.07	34.19	42.29	49.97
9	Less Pre. Expenses of Written off	0.00	0.00	0.00	0.00	0.00
10	Net Profit Before Income Tax	-6.22	28.07	34.19	42.29	49.97
11	Less Income Tax	0.00	0.00	0.00	0.00	0.00
12	Net Profit after Income Tax	-6.22	28.07	34.19	42.29	49.97
13	Cash Profit	-6.22	34.24	39.36	46.63	53.61
14	Less Dividend	0.00	2.11	2.56	3.17	3.75
15	Less Dividend Tax (@ 10%)	0.00	0.21	0.26	0.32	0.37
16	Retained Profit	-6.22	25.75	31.37	38.80	45.84
17	Reserve & Surplus	-6.22	-6.28	134.94	314.12	529.82

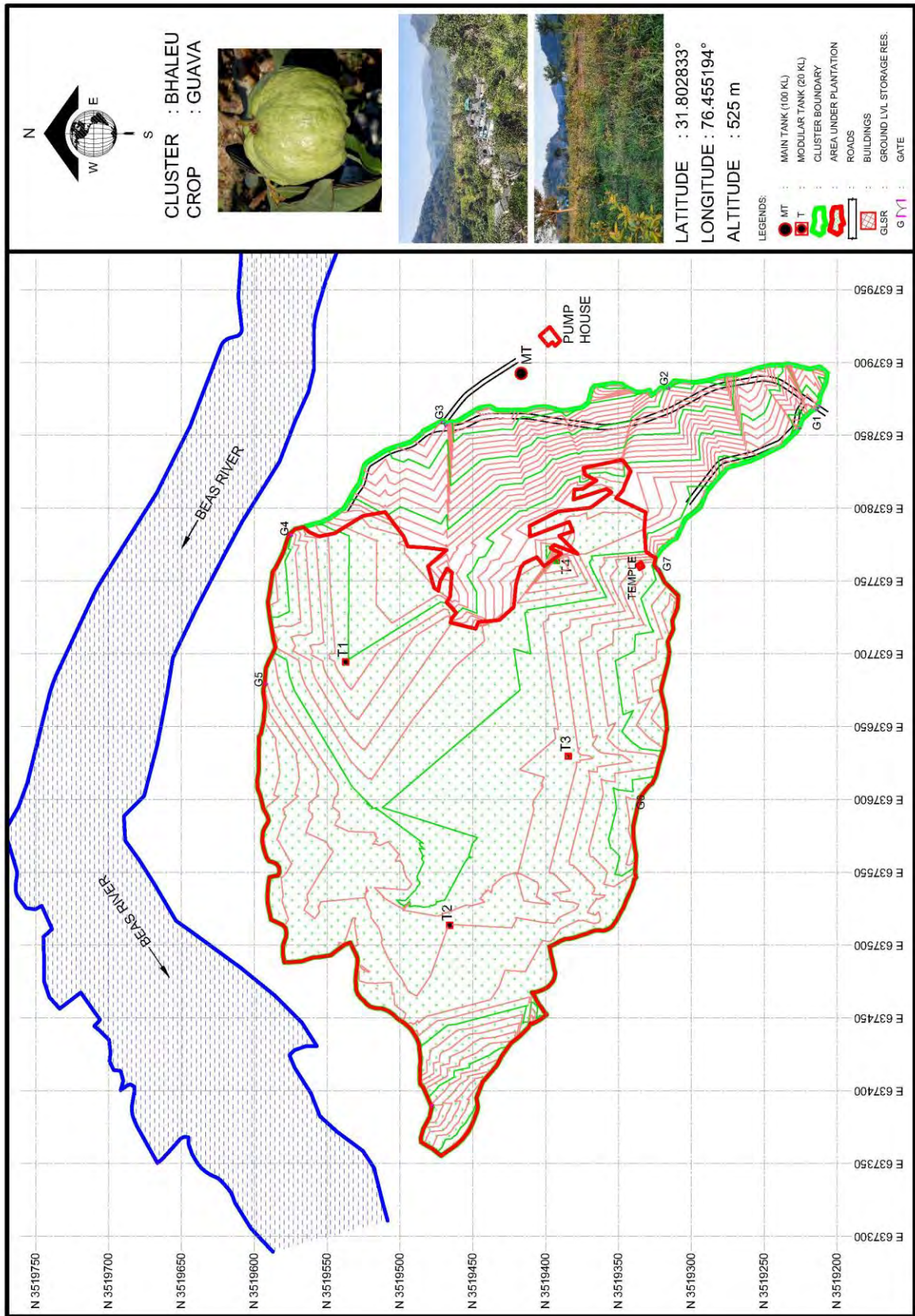
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
	Total :	318		206880.00
	Grand Total			206880.00

The rate of interest for loan is assumed @ 6.5% per annum. The repayment started from the 5th year on ward in 60 equal installments. The average wholesale price of for Guava is Rs 25000/- per Qtls. The Financial result is as follows:-

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	8.69
2	Debt Service Coverage Ratio	1.32
3	Pay Back Period (Years)	17.00
4	Break Even Point Year	6.00
5	Cash Break Even Point (%age)	35.13
6	IRR (in %age)	19.22%
	ROI (Return of Investment)	13.97



BINGA CLUSTER PROFILE

CROP: SWEET ORANGE



Brief Descriptions of Binga:

It is situated 70 km away from district headquarter Dhampur. The total geographical area of village is 202.68 hectares. Binga has a total population of 358 peoples. There are about 111 houses in Binga village. As per 2019 stats. The Binga village is well connected with pacca road. The literacy rate in th Binga village is very much high. Female literacy is also good. The land holding in Binag cluster is very very low. Agriculture is not the main source of income in the village. The main source of income in the village is service sector.

Plantation Details				Cluster Connectivity		
Variety	Plants	Mortality	Percentage	Sn	Description	KM
Valencia	4425	40	0.90	1	Distance from District HQ	70
Jaffa	1800	24	1.33	2	Distance from Block HQ	10
Hamlin	758	0	0.00	3	National Highway Connectivity	7
Blood Red	1800	8	0.44	4	Nearest State Highway Connectivity	3
Total	9837			5	Nearest Railway Station	55
				6	Nearest Airport	109
				7	Nearest APMC (F& V Market)	70
				8	Common Service Center (Lok Mitra)	2.5
				9	Nearest Processing Unit	230
				10	Nearest Bank Facilities	2.5

The Beneficiary Details

Item	SC	ST	OBC	Gen	Total	Female
Number	4	0	0	101	105	9
Land (ha)	0.193	0	0	9.058	9.251	0.687

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Member Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Mrs. Aasha Devi	Female	Mr. Baldev kumar	wife	Pradhan	9015095997
2	Mrs. Usha Thakur	Female	Mr. Bihari Lal	wife	Up-Pradhan	8219623895
3	Mrs. Sapna Devi	Female	Mr. Krishan Chand	wife	Secretary	8988491501
4	Mrs. Jyoti	Female	Mr. Sahil kumar	wife	Vice-Secretary	8219848645
5	Mr. Ram Saran	Male	Mr. Ram Saran	-	Treasurer	9459943101
Water User Association						
1	Suresh Kumar	Male	Self	Self	President	7470657311
2	Asha Ram	Male	Self	Self	V.President	9418614183
3	Natha singh	Male	Self	Self	Secretary	8894571072
4	Bali Ram	Male	Self	Self	J.Secretary	8988185476
5	Sarladevi	Female	Vijay kumar	Wife	Treasurer	8278748500
6	Saroj Kumari	Female	Late Shri Desh Raj	Wife	Member	8278724604
7	Ram Lal	Male	Self	Self	Member	9315079507

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	2325	1150	2673750
2	Field Preparation (Area in Ha)	9.257	254556	2356425
3	Irrigation Scheme for the Cluster	1	9186570	9186570
4	Drip Irrigation and Modular Tank	9.257	200468	1855732
5	Tools and Equipment (as per Annexure)	As per Annexure		562275
6	Chemical Fertilizer (per Ha)	9.257	77092	713641
7	Plantation	8,783.00		20,15,750
				1,93,64,143

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.07	2.07	2.07	2.07
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07
3	Cost of FYM	1.30	1.30	1.30	1.30	1.30
4	Soluble Potassium	1.30	1.34	1.38	1.38	1.38
5	Water Soluble Phosphorus	3.90	3.90	3.90	3.90	3.90
6	IPDM and growth hormones	3.90	2.84	1.68	0.99	0.59
7	Harvesting	1.30	1.30	1.30	1.30	1.30
8	Irrigation system maintenance	0.00	0.37	0.37	0.37	0.37
	Total	13.83	13.20	12.05	11.38	10.95

Income from Plantation

SN	Item	3rdYear	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	7.74	23.40	31.50	31.50	31.50
2	Total Production in Kg	67980.4	205522.2	278884.5	278884.5	278884.5
3	Income from Plant	1359608	6165866	8299935	8299935	8299935
4	Total Income	13.60	61.66	83.00	83.00	83.00
5	Annual increment of income by 2% from 5th year onward	13.60	62.89	84.66	84.66	84.66

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations	0.00	62.89	84.66	84.66	84.66
2	Cost of Operation as per Schedule	0.00	13.20	12.05	11.36	10.95
3	Profit from Operations (A-B)	0.00	49.69	72.61	73.30	73.71
4	Less Interest on Term Loan	6.58	11.41	7.51	3.61	0.00
5	Less Interest on Working Capital	0.00	0	0	0	0
6	Total Interest	6.58	11.41	7.51	3.61	0.00
7	Profit after Interest	-6.58	38.29	65.11	69.69	73.71
8	Less Depreciation	0.00	7.14	5.98	5.01	4.20
9	Net Profit After Depreciation	-6.58	31.15	59.13	64.68	69.51
10	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
11	Net Profit Before Income Tax	-6.58	31.15	59.13	64.68	69.50
12	Less Income Tax	0.00	0.00	0.00	0.00	0.00
13	Net Profit after Income Tax	-6.58	31.15	59.13	64.68	69.50
14	Cash Profit	-6.58	38.29	65.11	69.69	73.71
15	Less Dividend	0.00	2.34	4.43	4.85	5.21
16	Less Dividend Tax (@ 10%)	0.00	0.23	0.44	0.49	0.52
17	Retained Profit	-6.58	28.58	54.25	59.34	63.77
18	Reserve & Surplus	-6.58	-28.12	229.20	515.93	826.59

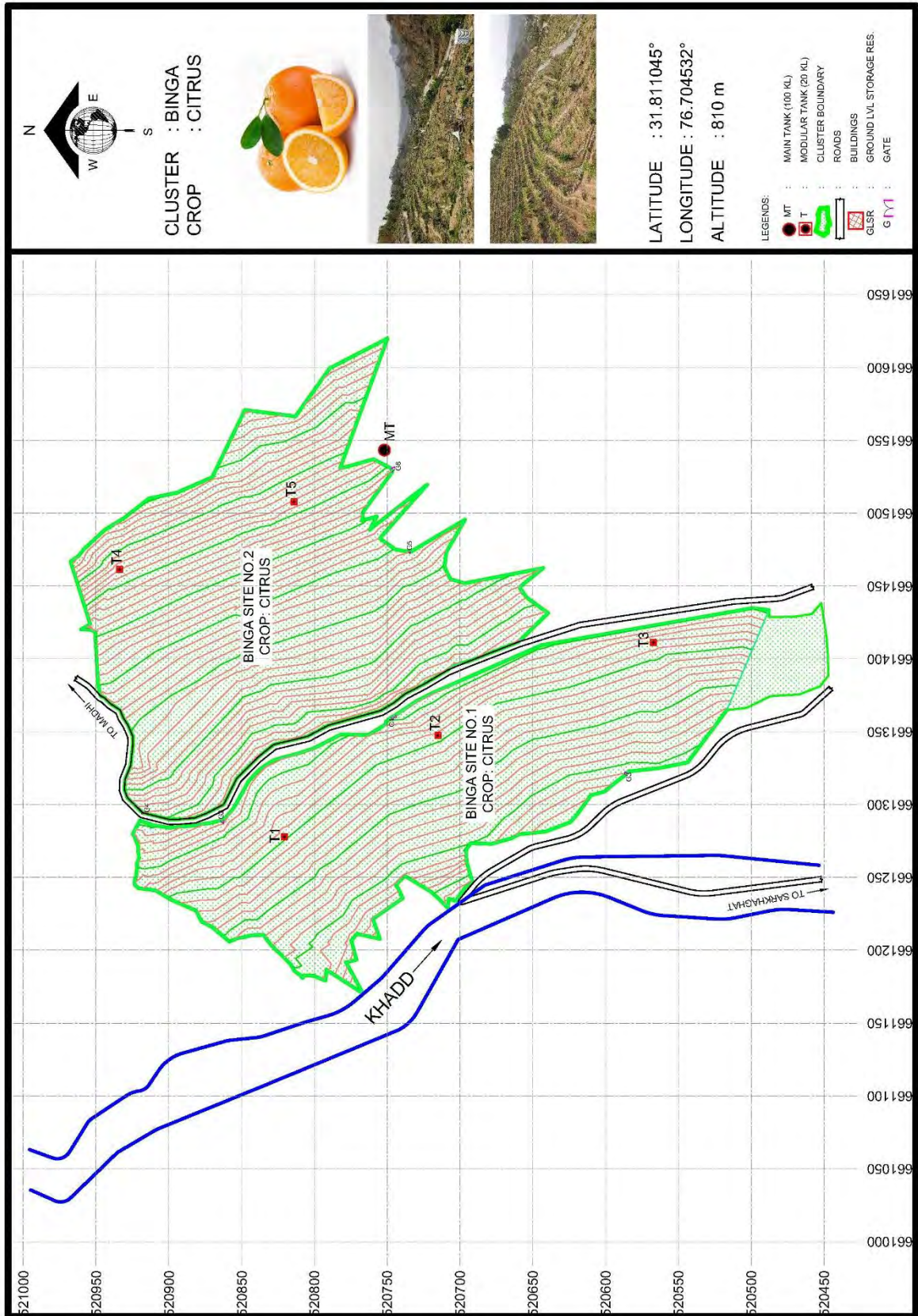
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
Total :		318		206880.00
Grand Total				206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of sweet orange assumed Rs 3000/- per Qtl. The Financial result are as under:

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	4.81
2	Debt Service Coverage Ratio	1.81
3	Pay Back Period (Years)	18.00
4	Break Even Point (Years)	6.00
5	Cash Break Even Point (%age)	32.78
6	IRR (in %age)	22.32%
	ROI (Return of Investment)	18.87



DABROT CLUSTER PROFILE

CROP: GUAVA



Brief Descriptions of Dabrot

According to Census 2011 information the location code or village code of Dabrot village is 013681. Dabrot village is located in Dharmpur Tehsil of Mandi district in Himachal Pradesh, India. It is situated 80km away from district headquarter Dharmpur. Dharmpur is the sub-district headquarter of Dabrot village. As per 2009 stats, Binga Dpr is the gram panchayat of Dabrot village.

The total geographical area of village is 128.22 hectares. Dabrot has a total population of 516 peoples. There are about 118 houses in Dabrot village.

Plantation Details : Guava				Cluster Connectivity		
Variety	Plants	Mortality	Percentage	Sn	Description	KM
Sweta	9981	NA	NA	1	Distance from District HQ	42
Lalit	6295	NA	NA	2	Distance from Block HQ	12
VNR Bini	1400	NA	NA	3	National Highway Connectivity	10
Total	17676	NA	NA	4	Nearest State Highway Connectivity	52
				5	Nearest Railway Station	170
				6	Nearest Airport	80
				7	Nearest APMC (F& V Market)	70
				8	Common Service Center (Lok Mitra)	2
				9	Nearest Processing Unit	72
				10	Nearest Bank Facilities	2

The Beneficiary Details

Item	SC	ST	OBC	Gen	Total	Female
Number	0	0	0	73	73	15
Land (ha)	0	0	0	13.840	13.840	2.680

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Rooplal Verma	Male	Rooplal Verma	Self	President	9816356640
2	Kanta Devi	Female	Gian Chand	Wife	Vice-President	9418742175
3	Chet Ram	Male	Chet Ram	Self	Treasurer	9418840034
4	Ranjeet Singh	Male	Ranjeet Singh	Self	Secretary	9459075246
5	Satya Devi	Female	Prakash Chand	Wife	Vice-Secretary	7982110241
Water User Association						
1	Roop lal verma	Male	Self	Self	President	9816356640
2	Kanta devi	Female	Gyan chand	Wife	Vice-president	9418742175
3	Ranjeet singh	Male	Self	Self	Secretary	9459075246
4	Prakash Chandra	Male	Self	Self	Joint Secretery	7982110241
5	Chet ram	Male	Self	Self	Treasurer	9418840034
6	Hira Singh	Male	Self	Self	Member	8894132096
7	Nirmala Devi	Female	Self	Wife	Member	9418427160

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	3225	1150	3708750
2	Field Preparation (Area in Ha)	13.84	254556	3523055
3	Irrigation Scheme for the Cluster	1	9186570	9186570
4	Drip Irrigation and Modular Tank	13.84	200468	2774477
5	Tools and Equipment (as per Annexure)	As per Annexure		144960
6	Chemical Fertilizer (per Ha)	13.84	77092	1066953
7	Plantation	17676		1767600
				2,21,72,365

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.20	2.42	2.68	2.95
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07
3	Cost of FYM	3.76	4.36	5.56	7.10	9.06
4	Soluble Potassium	0.41	0.47	0.60	0.77	0.98
5	Water Soluble Phosphorus	0.48	0.48	0.48	0.48	0.48
6	IPDM and growth hormones	0.16	0.11	0.07	0.04	0.02
7	Harvesting	0.79	0.91	1.16	1.48	1.90
8	Irrigation system maintenance	0.32	0.36	0.47	0.59	0.76
	Total	8.04	8.96	10.83	13.21	16.22

Income from Plantation

SN	Item	3rdYear	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	6.00	10.00	15.00	20.00	20.00
2	Total Production in Kg	99102.0	165170	247755	330340	330340
3	Income from Plant	2973080	4955100	7432650	9910200	9910200
4	Total Income	29.73	49.55	74.33	99.10	99.10
5	Annual increment of income by 2% from 5th year onward	29.73	50.54	64.36	71.06	78.46

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	50.54	64.36	71.06	78.46
2	Cost of Operation as per Schedule B	0.00	8.96	10.83	13.21	16.22
3	Profit from Operations (A-B)	0.00	41.58	53.53	57.85	62.24
4	Less Interest on Term Loan	7.68	13.31	8.76	4.21	0.00
5	Total Interest	7.68	13.31	8.76	4.21	0.00
6	Profit after Interest	-7.68	28.27	44.77	53.64	62.24
7	Less Depreciation	0.00	7.90	6.63	5.57	4.68
8	Net Profit After Depreciation	-7.68	20.37	38.14	48.07	57.56
9	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
10	Net Profit Before Income Tax	-7.68	20.37	38.14	48.07	57.55
11	Less Income Tax	0.00	0.00	0.00	0.00	0.00
12	Net Profit after Income Tax	-7.68	20.37	38.14	48.07	57.55
13	Cash Profit	-7.68	28.27	44.77	53.64	62.24
14	Less Dividend	0.00	1.53	2.86	3.61	4.32
15	Less Dividend Tax (@ 10%)	0.00	0.15	0.29	0.36	0.43
16	Retained Profit	-7.68	18.69	34.99	44.10	52.81
17	Reserve & Surplus	-7.68	-3.00	143.44	345.76	593.06

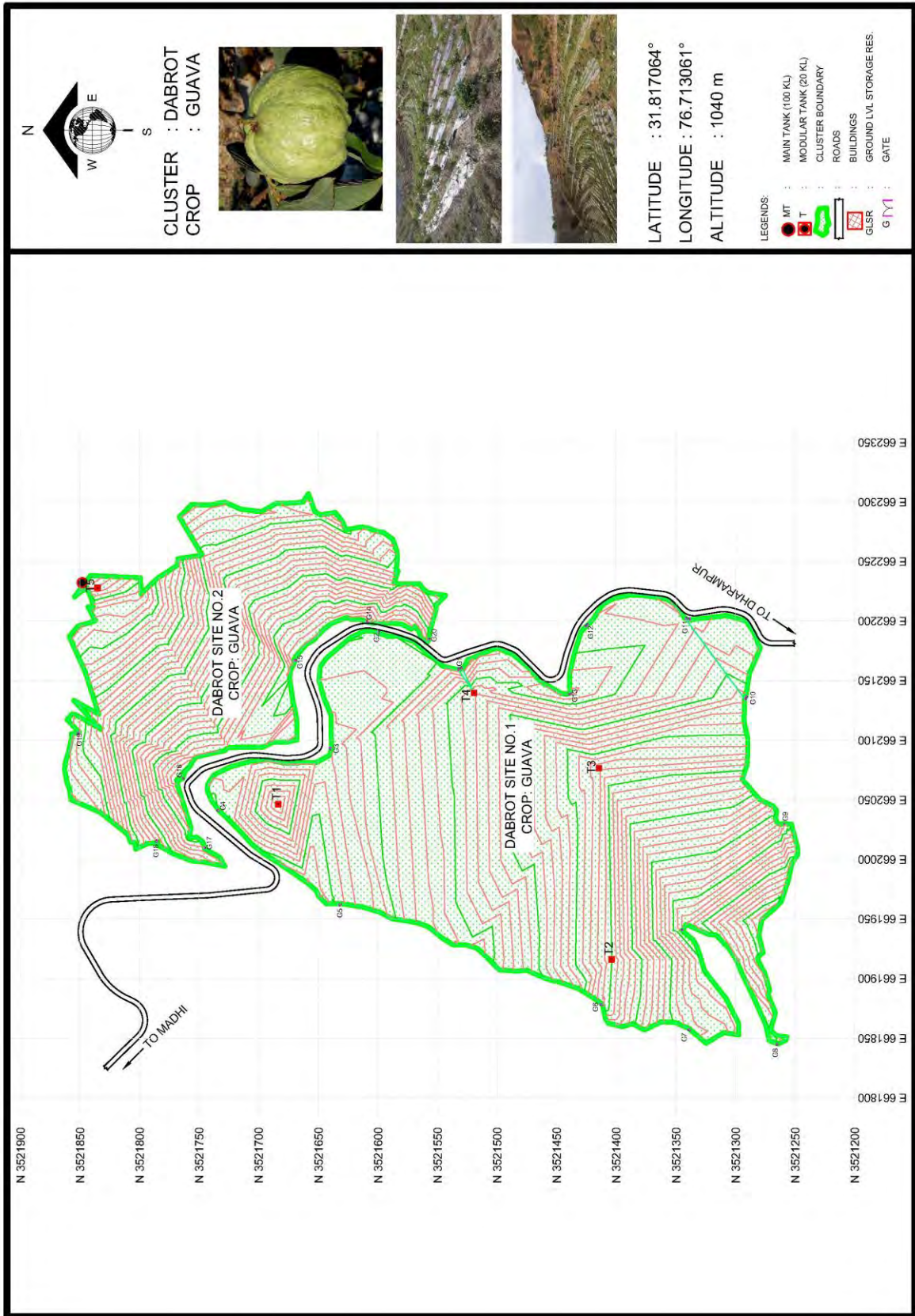
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
	Total :	318		206880.00
	Grand Total			206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of Guava assumed Rs 3000/- per Qtl. The Financial result are as under: -

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	5.97
2	Debt Service Coverage Ratio	1.27
3	Pay Back Period (Years)	18.00
4	Break Even Point (Years)	6.00
5	Cash Break Even Point (%age)	34.89
6	IRR (in %age)	17.48%
	ROI (Return of Investment)	12.09



Cluster : Dulhet

Dulhet is a small Village in Bilaspur District. As per the Census 2011, there are 65 families residing in the village with a population of 350. The main crop grown in the village are wheat, maize and seasonal vegetables. The Soil and climate are well suited for plantation of Citrus as well as Guava VNR varieties. The main job amongst the villager is government job and followed by agriculture and animal husbandry. The plantation started in 2020.

Plantation Detail in the Cluster

Variety	Total Plantation	Mortality	% age Mortality
Citrus-B.Red	6600	868	13.15
Jaffa	1500	238	15.87
-Valencia	2402	12	0.50
Guava-VNR	5500	0	0.00
	16002	1118	6.98

Horticulture Producer and their land Share in Project

	Total	SC	ST	OBC	Fem	Gen
Beneficiary	23	1	20	0	3	2
Land (ha)	17.66	0.20	17.0	0	2.30	0.64

Cost of Project and Means of Finance

Cost of Project and Means of Finance		
Sn	Particulars	Amount (Rs.) Lacs)
1	Land Cost	0.00
2	Investment on Capital	280.40
3	Equipment & Tools	1.57
4	Misc Fixed Assets	4.00
5	Furniture and Fixture	0.90
6	Preliminary and Pre-Operative	17.55
7	Contingencies and Escalations	2.92
8	Security Deposits	0.60
9	Working Capital Margins	0.00
	Total	307.93
	Means of Finance	
1	VGF/Budgetary Grant Govt of HP	46.32
2	Term Loan (ADB)	261.61
	Total	307.93
	USD (1 USD = INR 72)	427680.56

Irrigation Facilities

The project is provision of providing water to every plant for next 20-25 years. The total water requirement is calculated and accordingly perennial source identified. The main source of water is main source of water and connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000 liters capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is formulated for irrigation of plants. For better

Connectivity of the Cluster

1	Distance from District HQ (KM)	97
2	Distance from Block HQ (KM)	50
3	National Highway Connectivity (KM)	18
4	Nearest SH Connectivity (KM)	50
5	Nearest Railway Station (KM)	25
6	Nearest Airport (KM)	250
7	Nearest APMC (F& V Market) (KM)	25
8	Common Service Center (Lok Mitra)	7
9	Nearest Processing Unit (KM)	90
10	Nearest Bank Facilities (Commercial)	7

Land Holding of Farmers

Total	Marginal	Small	Medium	Large
23	1	1	10	11



return and value addition of the produce a Community Horticulture Producer Marketing Association is Proposed to run the business of the cluster

SN	Name of Member	Gender	Producer's Name	Member Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Kartar Singh	Male	Kartar Singh	Self	President	9459010384
2	Sanjay sharma	Male	Sanjay Sharma	Self	Vice- President	9459008411
3	Gurdyal Singh	Male	Gurdyal Singh	Self	Secretary	7973251045
4	Sumati devi	Female	Sumati Devi	Daughter in law	Joint secretary	8988629973
5	Roshan singh	Male	Roshan singh	self	Cashier	9418778302
Water User Association						
1	Shri Saward Singh	Male	Self	Self	President	9736731025
2	Shri Roshan Lal	Male	Self	Self	V. President	9418778302
3	Shri Gurmeet Singh	Male	Self	Self	Secretary	9459509791
4	Shri Sukharam	Male	Self	Self	J. Secretary	9736731025
5	Shri Kushal Singh	Male	Self	Self	Treasurer	9459123847
6	Shri Achhar Singh	Male	self	self	Member	9418207624
7	Gurdayal singh	Male	self	self	Member	9459800256

Financial Analysis of the Cluster

Capital Investment						
Sn	Item Description	Measurement	Unit Rate	Total Amount		
1	Solar Fencing Work (Running Meter)	4076.82	1150	4688343		
2	Field Preparation (Area in Ha)	15.56	254556	3960891.36		
3	Irrigation Scheme for the Cluster	Lump-Sum	10378835	10378835		
4	Drip Irrigation and Modular Tank	Lump-Sum	3960891	3960891		
5	Tools and Equipment's (as per Annexure)			1335578		
6	Chemical Fertilizer (per Ha)	15.56	77092	1199551.52		
7	Plantation	As per Cost		2515500		
	Total			2,80,39,589		
Income						
Sn	Item Description	Year 1	Year 5	Year 10	Year 15	Year 20
5	Total Plants	11795	0.00	0.00	0.00	0.00
6	Production per plant Citrus (in Kg)	0	23.40	31.50	31.50	31.50
7	Production per plant Guava (in Kg)	0	7.00	7.00	7.00	7.00
8	Total Production Citrus in Kg	0	228033	306967.5	306967.5	306967.5
9	Total Production Guava in Kg	0	14350	14350	14350	14350
10	Income from Citrus and Guava Plant	0	6994740	9567775	9567775	12709200
11	Total Income	0.00	70.09	95.82	95.82	127.24
12	Annual increment of income by 2% from 5th year onward	0.00	71.49	97.74	97.74	129.78
Cost of Operation						
Sn	Item Description	Year 1	Year 5	Year 10	Year 15	Year 20
1	Man Power	2.07	2.07	2.07	2.07	2.07
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07

3	Cost of FYM	1.30	1.30	1.30	1.30	1.30
4	Cost of Fertilizers	1.30	1.34	1.36	1.38	1.38
5	Manures & fertilizers application Irrigation	3.90	3.90	3.90	3.90	3.90
6	Plant protection measures	3.90	2.84	1.88	0.99	0.59
7	Appl. of plant protection Interculture	1.30	1.30	1.30	1.30	1.30
8	Harvesting	0.00	0.71	0.71	0.71	0.71
	Total	13.83	13.53	12.38	11.69	11.29
Profitability						
Sn	Details	Year 1	Year 5	Year 10	Year 15	Year 20
1	Income from Operations	0.00	71.49	97.74	97.74	97.74
2	Cost of Operation as per Schedule	0.00	13.53	12.38	11.69	11.29
3	Profit from Operations (A-B)	0.00	57.96	85.36	86.04	86.45
4	Less Interest on Term Loan	9.57	16.58	10.91	5.24	0.00
5	Less Interest on Working Capital	0.00	0	0	0	0
6	Total Interest	9.57	16.58	10.91	5.24	0.00
7	Profit after Interest	-9.57	41.38	74.44	80.80	86.45
8	Less Depreciation	0.00	9.86	8.29	6.97	5.86
9	Net Profit After Depreciation	-9.57	31.52	66.16	73.83	80.59
10	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
11	Net Profit Before Income Tax	-9.57	31.52	66.16	73.83	80.59
12	Less Income Tax	0.00	0.00	0.00	0.00	0.00
13	Net Profit after Income Tax	-9.57	31.52	66.16	73.83	80.59
14	Cash Profit	-9.57	41.38	74.44	80.80	86.45
15	Less Dividend	0.00	2.36	4.96	5.54	6.04
16	Less Dividend Tax (@ 10%)	0.00	0.24	0.50	0.55	0.60
17	Retained Profit	-9.57	28.92	60.70	67.74	73.94
18	Reserve & Surplus	-9.57	-25.75	259.36	584.19	942.42

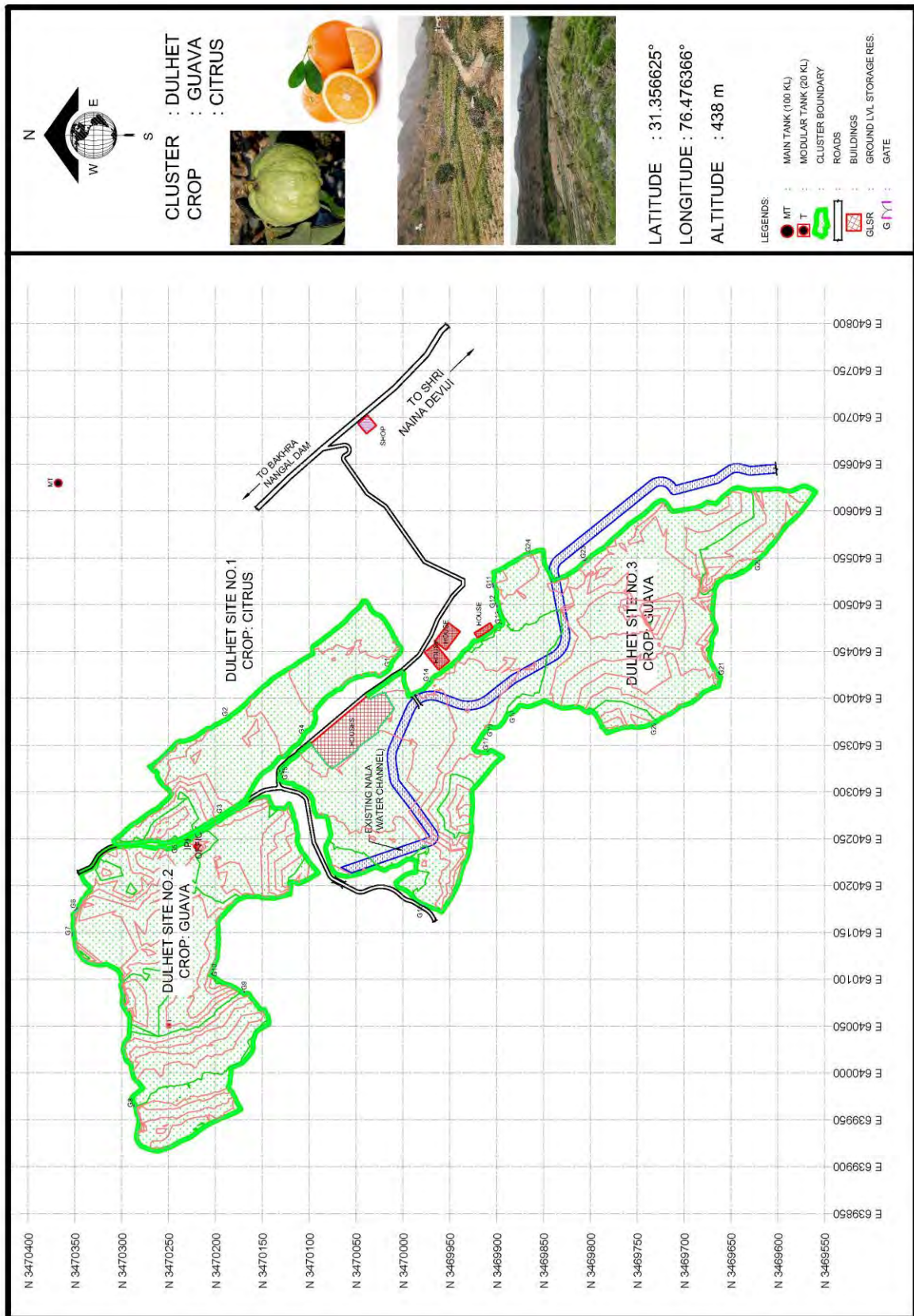
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Financial Project Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
	Total :	318		206880.00
	Grand Total			206880.00

The rate of interest for loan is assumed @ 6.5% per annum. The repayment started from the 5th year on ward in 60 equal installments. The average wholesale price of Sweet Orange is Rs 3000 per Qtl and Wholesale Price for Guava is Rs 25000/- per Qtls. The Financial result is as follows:-

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	5.65
2	Debt Service Coverage Ratio	1.43
3	Pay Back Period (Years)	18.00
4	Break Even Point Year	6.00
5	Cash Break Even Point (%age)	33.69
6	IRR (in %age)	19.92%
	ROI (Return of Investment)	15.30



DHANAG-GARTHOLI CLUSTER PROFILE

CROP: Litchi



Brief Descriptions of Gartholi-Dhanag

According to Census 2011 information the location code or village code of Ghartholi village is 012043. Ghartholi village is located in Baijnath Tehsil of Kangra district in Himachal Pradesh, India. It is situated 58km away from district headquarter Baijnath. Baijnath is the sub-district headquarter of Ghartholi village. As per 2009 stats, Phatahar is the gram panchayat of Ghartholi village.

The total geographical area of village is 97 hectares. Ghartholi has a total population of 1,956 peoples. There are about 439 houses in Ghartholi village. Palampur is nearest town to Ghartholi.

Litchi : Plantation Details				Cluster Connectivity		
Variety	Plants	Mortality	Percentage	Sn	Description	KM
Dehradun	7585	16	0.21	1	Distance from District HQ	75
Calcuttia	2775	52	1.87	2	Distance from Block HQ	5
Total	10360	68	2.08	3	National Highway Connectivity	6
Producer's Numbers and Land Parcels (ha)				4	Nearest State Highway Connectivity	0
				5	Nearest Railway Station	7
SC	ST	OBC	Gen	Total	Female	6
27	44	4	36	111	12	75
2.46	4.10	0.45	4.75	11.76	1.60	4
				8	Nearest Airport	4
				9	Nearest APMC (F & V Market)	4
				10	Common Service Center (Lok Mitra)	4
					Nearest Processing Unit	0
					Nearest Bank Facilities	6

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Rajinder Singh Rana	Male	Rajinder Singh Rana	Self	President	7876868799
2	Sunita	Female	Bihari Lal	Daughter-in-law	Vice President	9816715487

3	Govind Singh	Male	Govind Singh	Self	Secretary	9625021816
4	Piar Chand	Male	Piar Chand	Self	Vice Secretary	9816317647
5	Subhash	Male	Subhash	Self	treasurer	9805579454
Water User Association						
1	Surender Chandra Rana	Male	Self	Self	President	9958281694
2	Dumn Ram	Male	Self	Self	Vice President	8219633403
3	Kavita	Female	Surender	Wife	Secretary	8894288750
4	Sreshtha	Female	Raj Kumar	Wife	J.Secretary	7876873992
5	Naresha Devi	Female	Self	Self	Treasure	9625678898
7	Smt Neelam KuMARI	Female	Yaduveer Singh	Wife	Member	9218564172

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	2847	1150	3274050
2	Field Preparation (Area in Ha)	12.157	254556	3094637
3	Irrigation Scheme for the Cluster	1	9080521	9080521
4	Drip Irrigation and Modular Tank	12.157	200468	2437089
5	Tools and Equipment (as per Annexure)		Annexure	3189116
6	Chemical Fertilizer (per Ha)	12.157	77092	937207
7	Plantation	11020		551000
				2,25,63,620

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.20	2.42	2.68	2.95
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07
3	Cost of FYM	3.78	4.38	5.58	7.10	9.08
4	Soluble Potassium	0.41	0.47	0.60	0.77	0.98
5	Water Soluble Phosphorus	0.48	0.48	0.48	0.48	0.48
6	IPDM and growth hormones	0.16	0.11	0.07	0.04	0.02
7	Harvesting	0.79	0.91	1.16	1.48	1.90
8	Irrigation system maintenance	0.32	0.36	0.47	0.59	0.78
	Total	8.04	8.96	10.83	13.21	16.22

Income from Plantation

SN	Item	3rd Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	2.00	5.00	25.00	30.00	30.00
2	Total Production in Kg	20720.0	51800	259000	310800	310800
3	Income from Plant	1036000	2590000	12950000	15540000	15540000
4	Total Income (Rs in Lakhs)	10.36	25.90	129.50	155.40	155.40
5	Annual increment 2% onward 5th Year	10.36	26.42	72.89	80.48	88.85

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	26.42	72.89	80.48	88.85
2	Cost of Operation as per Schedule B	0.00	8.96	10.83	13.21	16.22
3	Profit from Operations (A-B)	0.00	17.45	62.06	67.27	72.64
4	Less Interest on Term Loan	7.68	13.31	8.76	4.21	0.00
5	Less Interest on Working Capital	0.00	0	0	0	0
6	Total Interest	7.68	13.31	8.76	4.21	0.00
7	Profit after Interest	-7.68	4.15	53.30	63.06	72.64
8	Less Depreciation	0.00	8.12	6.82	5.72	4.80
9	Net Profit After Depreciation	-7.68	-3.98	46.49	57.34	67.83
10	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
11	Net Profit Before Income Tax	-7.68	-3.98	46.48	57.34	67.83
12	Less Income Tax	0.00	0.00	0.00	0.00	0.00
13	Net Profit after Income Tax	-7.68	-3.98	46.48	57.34	67.83
14	Cash Profit	-7.68	4.15	53.30	63.06	72.64
15	Less Dividend	0.00	0.00	3.49	4.30	5.09
16	Less Dividend Tax (@ 10%)	0.00	0.00	0.35	0.43	0.51
17	Retained Profit	-7.68	-3.98	42.65	52.61	62.23
18	Reserve & Surplus	-7.68	-68.86	99.03	342.15	634.70

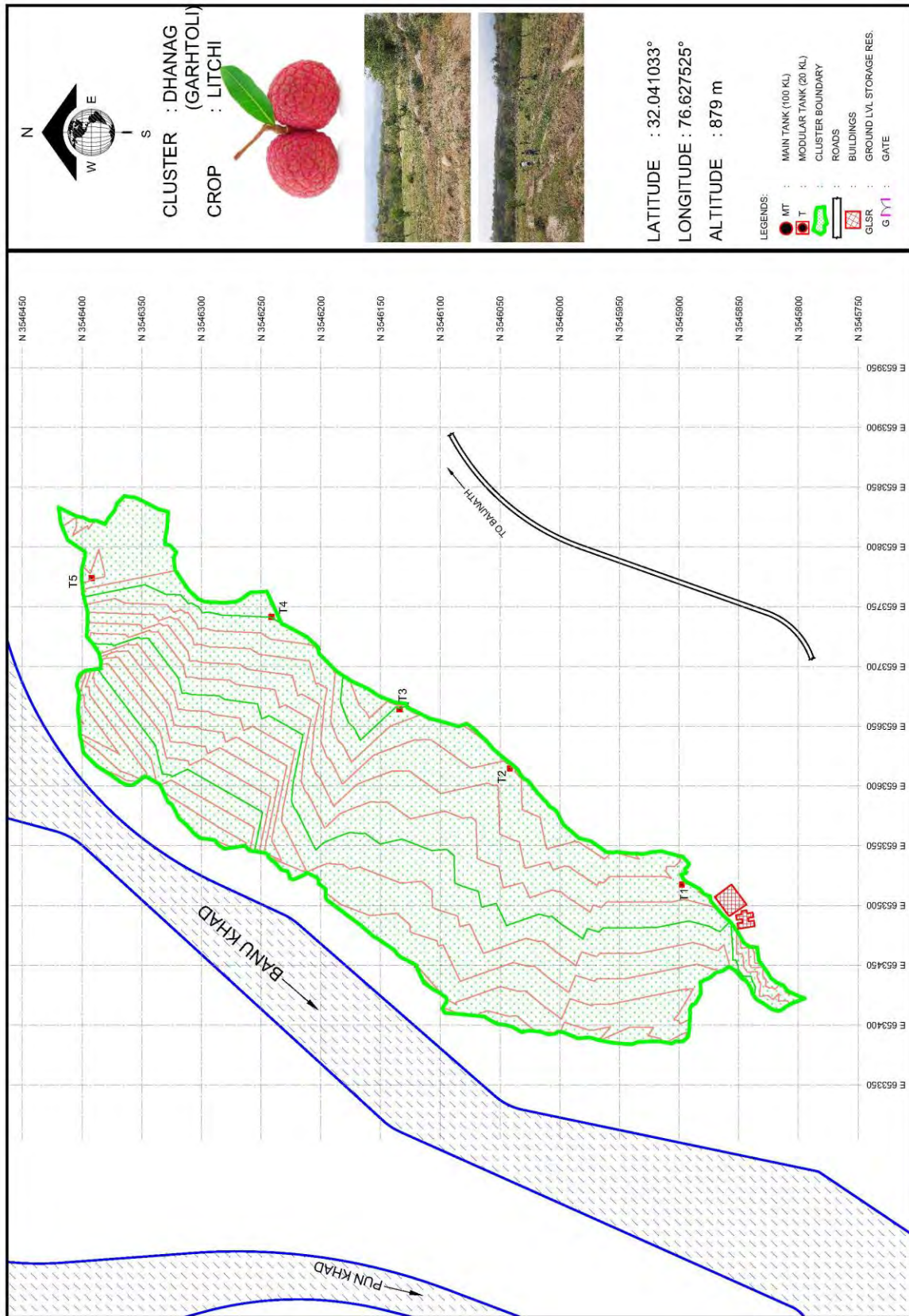
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
Total :		318		206880.00
Grand Total				206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of litchi assumed Rs 5000/- per Qtl. The Financial result are as under: -

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	5.08
2	Debt Service Coverage Ratio	1.16
3	Pay Back Period (Years)	18.00
4	Break Even Point (Years)	8.00
5	Cash Break Even Point (%age)	30.11
6	IRR (in %age)	15.27%
	ROI (Return of Investment)	12.63



DEHAN CLUSTER PROFILE

CROP: Litchi



Brief Descriptions of Ghraon Dehan

Dehan Khas is a small Village/hamlet in Bhawama Tehsil in Kangra District of Himachal Pradesh State, India. It comes under Dehan Khas Panchayath. It is located 27 KM towards East from District head quarters Dharamsala. 4 KM from Bhawama. 145 KM from State capital Shimla Chandropa (2 KM) , Rajpur (2 KM) , Saloh (2 KM) , Tanda (2 KM) , Chowki (3 KM) are the nearby Villages to Dehan Khas. Dehan Khas is surrounded by Panchrukhi Tehsil towards East , Gopalpur Tehsil towards North , Baijnath Tehsil towards East , Nagrota Bagwan Tehsil towards west .Dharamsala , Hamirpur , Mandi , Chamba are the near by Cities to Dehan Khas. This Place is in the border of the Kangra District and Hamirpur District. Hamirpur District Tira Sujanpur is South towards this place .

Litchi : Plantation Details						Cluster Connectivity		
Variety		Plants	Mortality	Percentage		Sn	Description	KM
Dehradun		6823	1525	22.35		1	Distance from District HQ	40
Calcuttia		4197	0	0.00		2	Distance from Block HQ	3
Total		11020	1525	22.35		3	National Highway Connectivity	3
Producer's Numbers and Land Parcels (ha)						4	Nearest State Highway Connectivity	0.5
SC	ST	OBC	Gen	Total	Female	5	Nearest Railway Station	2
12	1	9	39	61	8	6	Nearest Airport	40
2.180	0.002	0.722	7.324	10.28	0.95	7	Nearest APMC (F& V Market)	12
						8	Common Service Center (Lok Mitra)	0.5
						9	Nearest Processing Unit ¹	0
						10	Nearest Bank Facilities	3

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Kuldeep Singh Rana	Male	Chanderkanta devi	Son	President	7018059793
2	Rajesh Kumar	Male	Shakuntala devi	Son	Vice President	9816397884
3	Virender Singh	Male	Sudesh kumari	Son	Secretary	9816441699
4	Brij lal	Male	Self	Self	Treasurer	8894071081

5	Manju	Female	Chanderkanta devi	Daughter in law	Executive member	9805389630
Water User Association						
1	Shri kuldeep Singh rana	Male	Self	Self	President	7018059793
2	Shri Rajesh Kumar	Male	Self	Self	V. President	9816397884
3	Shri brijlal	Male	Self	Self	Treasurer	8894071081
4	Shri Veerendra Singh	Male	Self	Self	Secretary	9816441699
5	Smt.Babitadevi	Female	Lekhranj	Wife	J. Secretary	8351954296
6	Smt Manji Rana	Female	Rajesh Rana	Wife	Member	9805389630
7	Smt Neelam KuMARI	Female	Yaduveer Singh	Wife	Member	9218564172

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	2847	1150	3274050
2	Field Preparation (Area in Ha)	12.157	254556	3094637
3	Irrigation Scheme for the Cluster	1	9080521	9080521
4	Drip Irrigation and Modular Tank	12.157	200468	2437089
5	Tools and Equipment (as per Annexure)		As per Annexure	3189116
6	Chemical Fertilizer (per Ha)	12.157	77092	937207
7	Plantation	11020		551000
				2,25,63,620

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.20	2.42	2.88	2.95
2	Electricity & Water	0.08	0.07	0.07	0.07	0.07
3	Cost of FYM	3.78	4.38	5.58	7.10	9.08
4	Soluble Potassium	0.41	0.47	0.60	0.77	0.98
5	Water Soluble Phosphorus	0.48	0.48	0.48	0.48	0.48
6	IPDM and growth hormones	0.18	0.11	0.07	0.04	0.02
7	Harvesting	0.79	0.91	1.18	1.48	1.90
8	Irrigation system maintenance	0.32	0.38	0.47	0.59	0.78
	Total	8.04	8.98	10.83	13.21	16.22

Income from Plantation

SN	Item	3rd Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	2.00	5.00	25.00	30.00	30.00
2	Total Production in Kg	22040.0	55100	275500	330600	330600
3	Income from Plant	1102000	2755000	13775000	16530000	16530000
4	Total Income (Rs in Lakhs)	11.02	27.55	137.75	165.30	165.30
5	Annual increment 2% onward 5th Year	11.02	28.10	77.53	85.60	94.51

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	28.10	77.53	85.60	94.51
2	Cost of Operation as per Schedule B	0.00	8.96	10.83	13.21	16.22
3	Profit from Operations (A-B)	0.00	19.14	66.70	72.40	78.30
4	Less Interest on Term Loan	7.68	13.31	8.76	4.21	0.00
5	Less Interest on Working Capital	0.00	0	0	0	0
6	Total Interest	7.68	13.31	8.76	4.21	0.00
7	Profit after Interest	-7.68	5.83	57.94	68.19	78.30
8	Less Depreciation	0.00	8.10	6.80	5.71	4.79
9	Net Profit After Depreciation	-7.68	-2.27	51.15	62.48	73.50
10	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
11	Net Profit Before Income Tax	-7.68	-2.27	51.14	62.48	73.50
12	Less Income Tax	0.00	0.00	0.00	0.00	0.00
13	Net Profit after Income Tax	-7.68	-2.27	51.14	62.48	73.50
14	Cash Profit	-7.68	5.83	57.94	68.19	78.30
15	Less Dividend	0.00	0.00	3.84	4.69	5.51
16	Less Dividend Tax (@ 10%)	0.00	0.00	0.38	0.47	0.55
17	Retained Profit	-7.68	-2.27	46.92	57.32	67.44
18	Reserve & Surplus	-7.68	-65.45	128.80	394.61	712.19

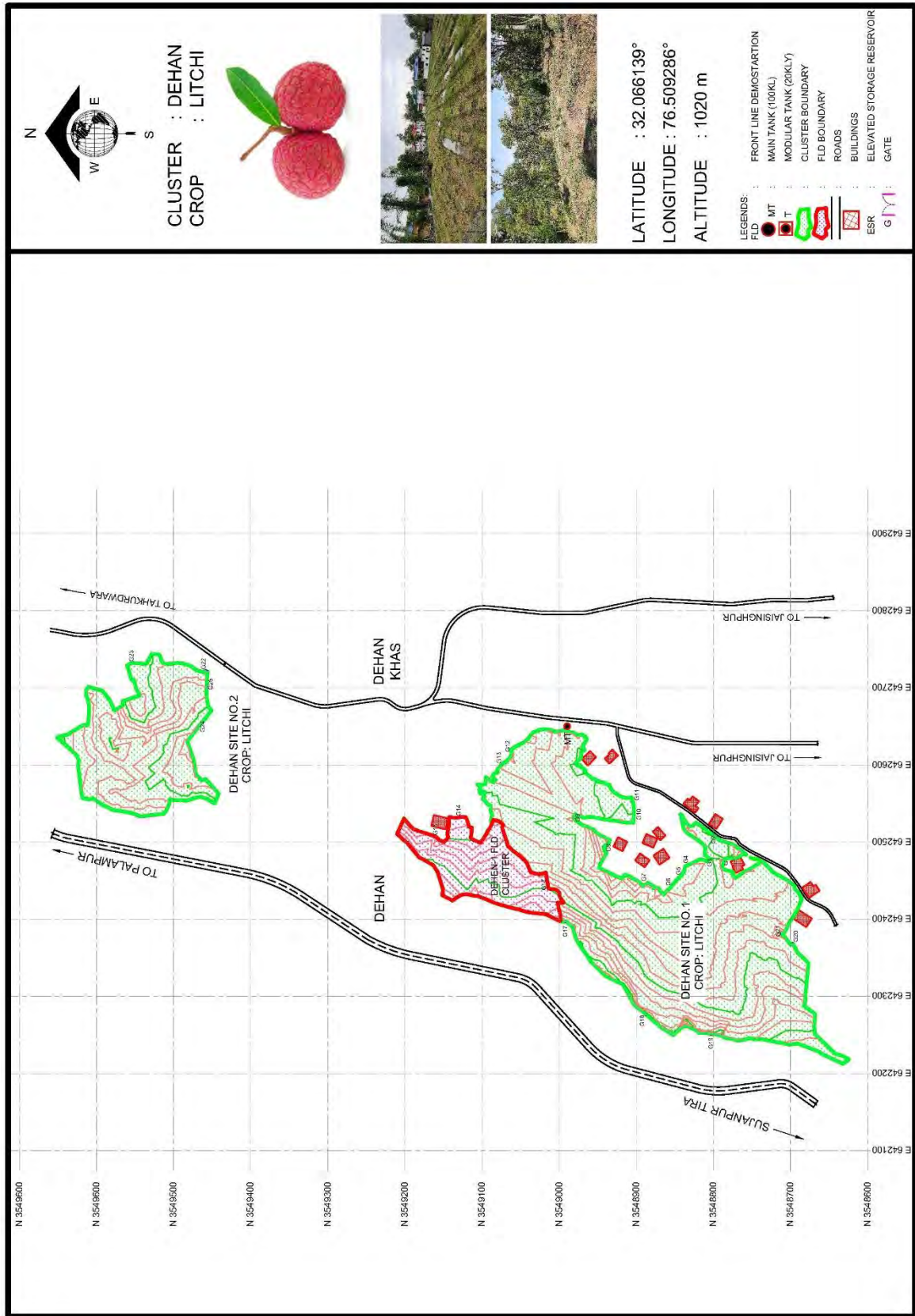
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
Total :		318		206880.00
Grand Total				206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of litchi assumed Rs 5000/- per Qtl. The Financial result are as under: -

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	5.14
2	Debt Service Coverage Ratio	1.22
3	Pay Back Period (Years)	18.00
4	Break Even Point (Years)	8.00
5	Cash Break Even Point (%age)	28.02
6	IRR (in %age)	16.35%
	ROI (Return of Investment)	14.19



KALAHOD CLUSTER PROFILE

CROP: GUAVA



Brief Descriptions of Kalahod

According to Census 2011 information the location code or village code of Kalahod village is 014230. Kalahod village is located in Sundarnagar Tehsil of Mandi district in Himachal Pradesh, India. It is situated 28km away from district headquarter Sundarnagar. Sundarnagar is the sub-district headquarter of Kalahod village. As per 2009 stats, Kalauhar Snr is the gram panchayat of Kalahod village.

The total geographical area of village is 277.41 hectares. Kalahod has a total population of 1,738 peoples. There are about 385 houses in Kalahod village.

Plantation Details : Guava				Cluster Connectivity		
Variety	Plants	Mortality	Percentage	Sn	Description	KM
Sweta	9944	430	4.32	1	Distance from District HQ	25
Lalit	10550	467	4.43	2	Distance from Block HQ	25
				3	National Highway Connectivity	2
				4	Nearest State Highway Connectivity	2
VNR Bini	9070	262	2.89	5	Nearest Railway Station	85
				6	Nearest Airport	175
Total	29564	1159	3.92	7	Nearest APMC (F& V Market)	25
				8	Common Service Center (Lok Mitra)	2
				9	Nearest Processing Unit	175
				10	Nearest Bank Facilities	3

The Beneficiary Details

Item	SC	ST	OBC	Gen	Total	Female
Number	0	0	0	22	22	6
Land (ha)	0	0	0	11.01	11.01	1.870

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Mr. Mahinder Singh Thakur	Male	Mr. Bhagat Ram	Son	Pradhan	7018987071
2	Mr. Ranjeet singh	Male	Mr. Ranjeet Singh	Self	Up-Pradhan	7018028498
3	Mr. Kushal Singh	Male	Mr. Kushal Singh	Self	Secretary	8219751534
4	Mr. Shar Singh	Male	Mr. Sher Singh	Self	Treasurer	8580474179
5	Smt. Reena Devi	Female	Mr. Narayan Singh	Wife	Vice- Secretary	9816973593
Water User Association						
1	Vandana Kumari	Female	Chaman singh	Wife	President	9015154769
2	Kanchana Devi	Female	Mahender thakur	Wife	V.President	9418047923
3	Urmila devi	Female	Dut Ram	Wife	Secretary	9459068144
4	Moti singh	Male	Self	Self	J.Secretary	9418635780
5	Hari Priya	Female	Raj kumar	Wife	Treasurer	9418635780
6	Bhajala Ram	Male	Self	Self	Member	8988146828
7	Kishan Singh	Male	Self	Self	Member	9418300312

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	2394	1150	2753100
2	Field Preparation (Area in Ha)	10.81	254556	2751750
3	Irrigation Scheme for the Cluster	1	9186570	9186570
4	Drip Irrigation and Modular Tank	10.81	200468	2167059
5	Tools and Equipment (as per Annexure)	As per Annexure		144960
6	Chemical Fertilizer (per Ha)	10.81	77092	833365
7	Plantation	29564		2956400
				2,07,93,204

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.20	2.42	2.88	2.95
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07
3	Cost of FYM	3.76	4.36	5.56	7.10	9.06
4	Soluble Potassium	0.41	0.47	0.60	0.77	0.98
5	Water Soluble Phosphorus	0.48	0.48	0.48	0.48	0.48
6	IPDM and growth hormones	0.16	0.11	0.07	0.04	0.02
7	Harvesting	0.79	0.91	1.16	1.48	1.90
8	Irrigation system maintenance	0.32	0.36	0.47	0.59	0.76
	Total	8.04	8.96	10.83	13.21	16.22

Income from Plantation

SN	Item	3rdYear	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	6.00	10.00	15.00	20.00	20.00
2	Total Production in Kg	170430.0	284050	426075	568100	568100
3	Income from Plant	5112900	8521500	12782250	17043000	17043000
4	Total Income	51.13	85.22	127.82	170.43	170.43
5	Annual increment of income by 2% from 5th year onward	51.13	86.92	110.69	122.21	134.93

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	86.92	110.89	122.21	134.93
2	Cost of Operation as per Schedule B	0.00	8.96	10.83	13.21	16.22
3	Profit from Operations (A-B)	0.00	77.96	99.86	109.00	118.71
4	Less Interest on Term Loan	7.68	13.31	8.76	4.21	0.00
5	Total Interest	7.68	13.31	8.76	4.21	0.00
6	Profit after Interest	-7.68	64.65	91.10	104.79	118.71
7	Less Depreciation	0.00	7.47	6.27	5.26	4.42
8	Net Profit After Depreciation	-7.68	57.18	84.83	99.53	114.29
9	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
10	Net Profit Before Income Tax	-7.68	57.18	84.83	99.52	114.29
11	Less Income Tax	0.00	0.00	0.00	0.00	0.00
12	Net Profit after Income Tax	-7.68	57.18	84.83	99.52	114.29
13	Cash Profit	-7.68	64.65	91.10	104.79	118.71
14	Less Dividend	0.00	4.29	6.36	7.46	8.57
15	Less Dividend Tax (@ 10%)	0.00	0.43	0.64	0.75	0.86
16	Retained Profit	-7.68	52.46	77.83	91.31	104.86
17	Reserve & Surplus	-7.68	78.74	435.38	864.84	1362.51

Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
Total :		318		206880.00
Grand Total				206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of Guava assumed Rs 3000/- per Qtl. The Financial result are as under: -

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	9.88
2	Debt Service Coverage Ratio	2.02
3	Pay Back Period (Years)	17.00
4	Break Even Point (Years)	4.00
5	Cash Break Even Point (%age)	18.73
6	IRR (in %age)	32.75%
	ROI (Return of Investment)	29.46



CLUSTER : KALAHOD
CROP : GUAVA



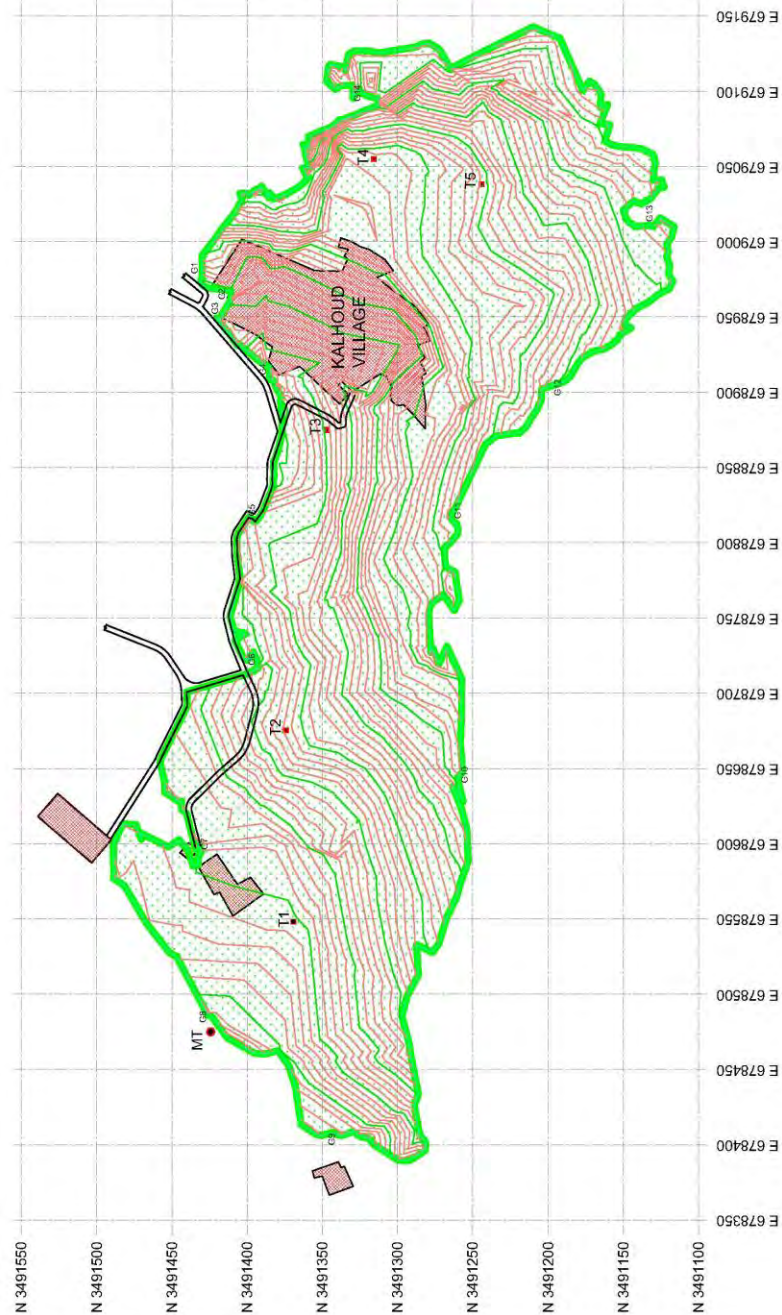
LATITUDE : 31.542769°

LONGITUDE : 76.884894°

ALTITUDE : 849 m

LEGENDS:

- MT : MAIN TANK (100 KL)
- T : MODULAR TANK (20 KL)
- Cluster Boundary
- ROADS
- BUILDINGS
- GLSR
- GROUND LVL STORAGE RES.
- GATE



GHAMDHAL CLUSTER PROFILE

CROP: GUAVA



Brief Descriptions of Kalswai-Ghamdhal

Kalswai village is located in Dharmpur Tehsil of Mandi district in Himachal Pradesh, India. It is situated 85km away from district headquarter Dharmpur. Dharmpur is the sub-district headquarter of Kalswai village. As per 2009 stats, Dharmpur Dpr is the gram panchayat of Kalswai village. The total geographical area of village is 87.82 hectares. Kalswai has a total population of 405 peoples. There are about 85 houses in Kalswai village.

Plantation Details				Cluster Connectivity		
Variety	Plants	Mortality	Percentage	Sn	Description	KM
Sweta	8734	874	10.01	1	Distance from District HQ	75
VNR	6330	1690	2.69	2	Distance from Block HQ	12
Lalit	5538	170	30.52	3	National Highway Connectivity	15
Total	20602	2734	13.27	4	Nearest State Highway Connectivity	47
				5	Nearest Railway Station	80
				6	Nearest Airport	80
				7	Nearest APMC (F& V Market)	75
				8	Common Service Center (Lok Mitra)	3
				9	Nearest Processing Unit ¹	75
				10	Nearest Bank Facilities	3

The Beneficiary Details

Item	SC	ST	OBC	Gen	Total	Female
Number	1	0	0	54	55	2
Land (ha)	0.013	0	0	7.703	7.716	0.530

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Member Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Om Chand Thakur	Male	Om Chand Thakur	Self	President	7807168432
2	Dharampal	Male	Dharampal	Self	Vice-President	7649945901
3	Desh Raj	Male	Desh Raj	Self	Treasurer	9817522368
4	Saroja Devi	Female	Rajesh	Wife	Secretary	9459859486
5	Bandana	Female	Hans Raj	Wife	Vice-Secretary	9459325871
Water User Association						
1	Amar Singh	Male	Self	Self	President	8626212384
2	Gyan Chandra	Male	Self	Self	Vice-President	9418805668
3	Sher Singh	Male	Self	Self	Secretary	9805232061
4	Saroja Kumari	Female	Rajesh	Wife	Jiont-Secretary	9459859486
5	Rajmal	Male	Self	Self	Treasurer	9459218659
6	Bhavana Devi	Female	Ramesh Chandra	Wife	Member	9459096568
7	Santoshi Devi	Female	Desh raj	Wife	Member	9857778932

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	3050	1150	3507500
2	Field Preparation (Area in Ha)	16.74	254556	4261267
3	Irrigation Scheme for the Cluster	1	9186570	9186570
4	Drip Irrigation and Modular Tank	16.74	200468	3355834
5	Tools and Equipment (as per Annexure)	as per Annexure		398639.45
6	Chemical Fertilizer (per Ha)	16.74	77092	1290520
7	Plantation	20602		2060200
				2,40,60,530

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.20	2.42	2.88	2.95
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07
3	Cost of FYM	3.76	4.36	5.56	7.10	9.06
4	Soluble Potassium	0.41	0.47	0.60	0.77	0.98
5	Water Soluble Phosphorus	0.48	0.48	0.48	0.48	0.48
6	IPDM and growth hormones	0.16	0.11	0.07	0.04	0.02
7	Harvesting	0.79	0.91	1.16	1.48	1.90
8	Irrigation system maintenance	0.32	0.36	0.47	0.59	0.76
	Total	8.04	8.96	10.83	13.21	16.22

Income from Plantation

SN	Item	3rd Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	6.00	14.00	14.00	14.00	14.00
2	Total Production in Kg	118518.0	276542	276542	276542	276542
3	Income from Plant	3555540	8296260	8296260	8296260	8296260
4	Total Income	35.56	82.96	82.96	82.96	82.96
5	Annual increment of income by 2% from 5th year onward	35.56	84.62	89.80	99.15	109.47

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	84.82	89.80	99.15	109.47
2	Cost of Operation as per Schedule B	0.00	8.96	10.83	13.21	16.22
3	Profit from Operations (A-B)	0.00	75.86	78.97	85.94	93.25
4	Less Interest on Term Loan	8.41	14.58	9.59	4.61	0.00
5	Total Interest	8.41	14.58	9.59	4.61	0.00
6	Profit after Interest	-8.41	61.08	69.38	81.33	93.25
7	Less Depreciation	0.00	8.65	7.26	6.09	5.12
8	Net Profit After Depreciation	-8.41	52.43	62.12	75.24	88.13
9	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
10	Net Profit Before Income Tax	-8.41	52.43	62.12	75.23	88.13
11	Less Income Tax	0.00	2.53	0.00	0.00	0.00
12	Net Profit after Income Tax	-8.41	49.90	62.12	75.23	88.13
13	Cash Profit	-8.41	58.55	69.38	81.33	93.25
14	Less Dividend	0.00	3.74	4.66	5.64	6.61
15	Less Dividend Tax (@ 10%)	0.00	0.37	0.47	0.56	0.66
16	Retained Profit	-8.41	45.78	56.99	69.03	80.86
17	Reserve & Surplus	-8.41	20.14	282.77	603.78	985.04

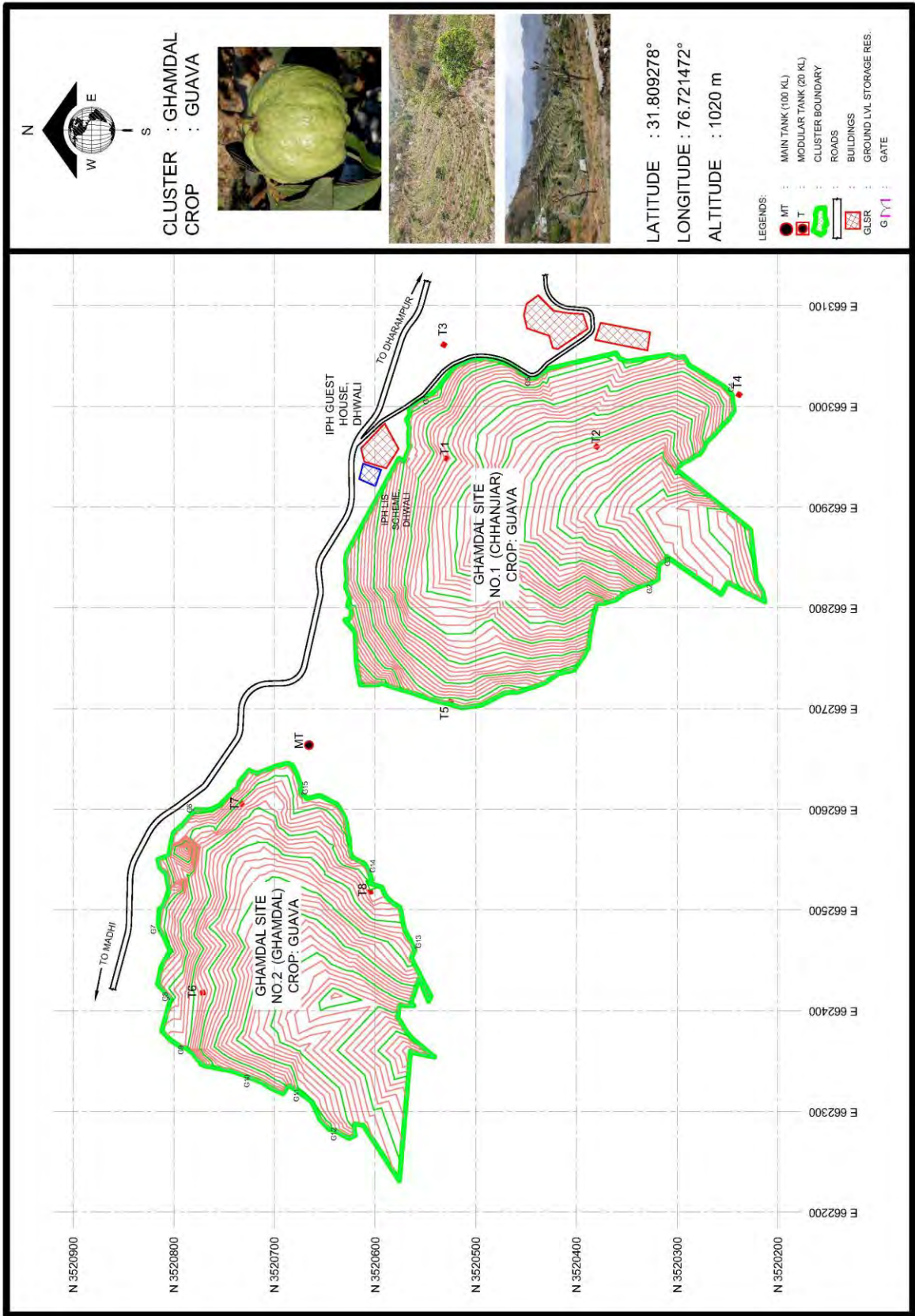
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
	Total :	318		206880.00
	Grand Total			206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of sweet orange assumed Rs 3000/- per Qtl. The Financial result are as under:

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	6.04
2	Debt Service Coverage Ratio	1.56
3	Pay Back Period (Years)	17.00
4	Break Even Point (Years)	5.00
5	Cash Break Even Point (%age)	25.17
6	IRR (in %age)	22.73%
	ROI (Return of Investment)	18.37



KEHDRU CLUSTER PROFILE

CROP: SWEET ORANGE & POMEGRANATE



Brief Descriptions of Kehdru:

It is situated 8 km away from Hamirpur. The total geographical area of village is 76.55 hectares. Kehdru has a total population of 691 peoples. There are about 148 houses in the village. Agriculture is the main occupation of the villager. This village is very highly educated and new technology adaptive. The retired defense personnel are in front role in crop change practices in the village. This village is selected for high density of sweet orange and pomegranate crop.

Sweet Orange : Plantation Details				Cluster Connectivity		
Variety	Plants	Mortality	Percentage	Sn	Description	KM
Valencia	2185	61	2.79	1	Distance from District HQ	8
Jaffa	2077	61	2.94	2	Distance from Block HQ	8
Natal	1253	30	2.39	3	National Highway Connectivity	30
Blood Red	1348	1	0.07	4	Nearest State Highway Connectivity	20
Pera	1100	25	2.27	5	Nearest Railway Station	80
Westin	1260	54	4.29	6	Nearest Airport	120
Mosambi	347	0	0.00	7	Nearest APMC (F& V Market)	8
Pomegranate	267	0	0.00	8	Common Service Center (Lok Mitra)	2
Total	9837			9	Nearest Processing Unit ¹	18
				10	Nearest Bank Facilities	2

The Beneficiary Details

Item	SC	ST	OBC	Gen	Total	Female
Number	3	0	0	53	56	4
Land (ha)	0.382	0	0	7.932	8.312	0.246

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Member Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Sh. Hari Singh	Male	Owner	Self	President	9318029383
2	Sh. Jagdish Chand	Male	Owner	Self	Vice-president	9817475785
3	Sh. Uttam Chand	Male	Owner	Self	Secretary	9625819044
4	Sh. Jai Pal	Male	Owner	Self	Vice-Secretary	6230497983
5	Smt. Sandia Devi	Female	Sh.Bhim Singh	husband	Treasurer	9816258742
Water User Association						
1	Kartar Chand	Male	Self	Self	President	9418676688
2	Anjana	Female	Prakash Chand	Daughter in law	V. President	9816393829
3	Ramesh	Male	Sail Ram	Son	Secretary	9816230040
4	Tilak Raj	Male	Self	Self	J. Secretary	8894052791
5	Kamlesh Kumar	Male	Sali Ram	Son	Treasurer	9816162950
6	Joginder Singh	Male	Sali Ram	Son	Member	9816790867
7	Radhika	Female	Desh Raj	Son	Member	9816505385

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	2676	1150	3077400
2	Field Preparation (Area in Ha)	12.35	254556	3143766.60
3	Irrigation Scheme for the Cluster	Lump-Sum	7496420	7496420
4	Drip Irrigation and Modular Tank	12.35	200468	2475779.8
5	Tools and Equipment (as per Annexure)			277389
6	Chemical Fertilizer (per Ha)	12.35	77092	952086.2
7	Plantation	As per Cost		2271317
				1,96,94,158

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.07	2.07	2.07	2.07
2	Electricity & Water	0.08	0.07	0.07	0.07	0.07
3	Cost of FYM	1.30	1.30	1.30	1.30	1.30
4	Soluble Potassium	1.30	1.34	1.36	1.36	1.36
5	Water Soluble Phosphorus	3.90	3.90	3.90	3.90	3.90
6	IPDM and growth hormones	3.90	2.84	1.68	0.99	0.59
7	Harvesting	1.30	1.30	1.30	1.30	1.30
8	Irrigation system maintenance	0.00	0.33	0.33	0.33	0.33
	Total	13.83	13.16	12.01	11.32	10.91

Income from Plantation

SN	Item	3rd Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	7.74	23.40	31.50	31.50	31.50
2	Total Production of Citrus in Kg	74071.8	223938	301455	301455	301455
3	Production per Plant Pomegranate	12.00	20.00	20.00	20.00	20.00
4	Total Production of Pomegranate	3204.0	5340.0	5340.0	5340.0	5340.0
5	Income from Plant Citrus Plant	1481436	5598450	7536375	7536375	7536375
6	Income from Pomegranate Plant	160200	267000	267000	267000	267000
7	Total Income	16.42	58.65	78.03	78.03	78.03
8	Annual increment of income by 2% from 5th year onward	16.42	59.83	79.59	79.59	79.59

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations	0.00	59.83	79.59	79.59	79.59
2	Total A	0.00	59.83	79.59	79.59	79.59
3	Cost of Operation as per Schedule	0.00	13.16	12.01	11.32	10.91
4	Total B	0.00	13.16	12.01	11.32	10.91
5	Profit from Operations (A-B)	0.00	46.67	67.59	68.27	68.68
6	Less Interest on Term Loan	6.62	11.47	7.55	3.63	0.00
7	Less Interest on Working Capital	0.00	0	0	0	0
8	Total Interest	6.62	11.47	7.55	3.63	0.00
9	Profit after Interest	-6.62	35.20	60.04	64.65	68.68
10	Less Depreciation	0.00	7.12	5.97	5.01	4.21
11	Net Profit After Depreciation	-6.62	28.08	54.07	59.64	64.47
12	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
13	Net Profit Before Income Tax	-6.62	28.08	54.06	59.63	64.47
14	Less Income Tax	0.00	0.00	0.00	0.00	0.00
15	Net Profit after Income Tax	-6.62	28.08	54.06	59.63	64.47
16	Cash Profit	-6.62	35.20	60.04	64.65	68.68
17	Less Dividend	0.00	2.11	4.05	4.47	4.84
18	Less Dividend Tax (@ 10%)	0.00	0.21	0.41	0.45	0.48
19	Retained Profit	-6.62	25.76	49.60	54.71	59.15
20	Reserve & Surplus	-6.62	-23.89	210.46	474.01	761.57

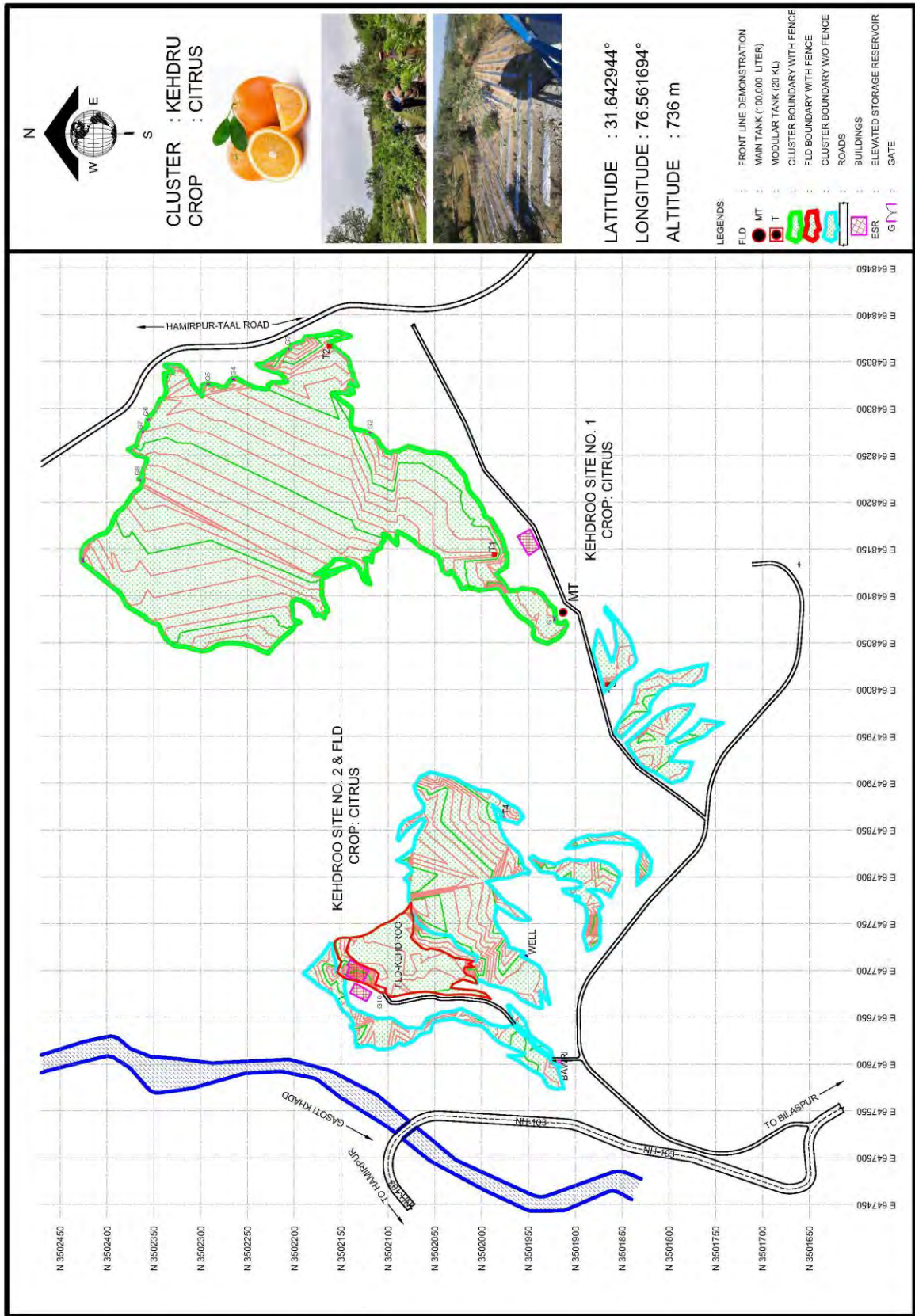
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
Total :		318		206880.00
Grand Total				206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of sweet orange assumed Rs 3000/- per Qtl and average wholesale price of pomegranate is Rs 5000/- per qtls. The Financial result are as under: -

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	4.89
2	Debt Service Coverage Ratio	1.54
3	Pay Back Period (Years)	18.00
4	Break Even Point (Years)	5.00
5	Cash Break Even Point (%age)	35.39
6	IRR (in %age)	21.54%
	ROI (Return of Investment)	17.34



LAHAT CLUSTER PROFILE

CROP: GUAVA



Brief Descriptions of Lahat

Lahat is a Village in Sulah Tehsil in Kangra District of Himachal Pradesh State, India. It is located 34 KM towards west from District head quarters Dharamsala. 180 KM from State capital Shimla Lahat Pin code is 176086 and postal head office is Khera .

Lahat is surrounded by Nagrota Surian Tehsil towards North , Fatehpur Tehsil towards west , Rait Tehsil towards East , Kangra Tehsil towards East . Dharamsala , Pathankot , Talwara , Mukerian are the near by Cities to Lahat.

Plantation Details : Guava				Cluster Connectivity		
Variety	Plants	Mortality	Percentage	Sn	Description	KM
Guava				1	Distance from District HQ	53
				2	Distance from Block HQ	30
				3	National Highway Connectivity	20
Sweta	6633	0	0.00	4	Nearest State Highway Connectivity	17
Lalit	12919	2010	15.56	5	Nearest Railway Station	22
VNR	5149	0	0.00	6	Nearest Airport	55
	24701	2010	8.14	7	Nearest APMC (F& V Market)	0
				8	Common Service Center (Lok Mitra)	3
				9	Nearest Processing Unit	0
				10	Nearest Bank Facilities	4.5

The Beneficiary Details

Item	SC	ST	OBC	Gen	Total	Female
Number	0	0	64	71	135	20
Land (ha)	0	0	4.10	9.667	13.767	1.401

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Devinder chand katoch	Male	Devinder chand katoch	Self	President	8219673562
2	Rangilu ram	Male	Rangilu ram	Self	Vice president	9805827604
3	Vishal Awasthi	Male	Sunka ram	Son	Secretary	9816355366
4	Ramesh chand	Male	Ramesh chand	Self	Treasurer	8091771356
5	Kanchan bala	Female	Pawan kumar	Wife	Executive member	9816010843
Water User Association						
1	Shri Vikram chand	Male	Self	Self	President	7807806352
2	Shri Kesar singh	Male	Self	Self	V. President	9816427106
3	Shri Ramesh dogra	Male	Self	Self	Treasurer	8091771356
4	Shri Shatish kumar	Male	Self	Self	Secretary	9816653693
5	Shri Bihari lal	Male	Self	Self	J. Secretary	9816429385
6	Smt Usha Devi	Female	Self	Self	Member	9805857672
7	Smt Kanchan Bala	Female	Self	Self	Member	9816010843

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	3445	1150	3961750
2	Field Preparation (Area in Ha)	12.163	254556	3096165
3	Irrigation Scheme for the Cluster	1	9080521	9080521
4	Drip Irrigation and Modular Tank	12.163	200468	2438292
5	Tools and Equipment (as per Annexure)	As per Annexure		772293
6	Chemical Fertilizer (per Ha)	12.163	77092	937670
7	Plantation	24701		2470100
				2,27,56,791

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.20	2.42	2.88	2.95
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07
3	Cost of FYM	3.78	4.38	5.58	7.10	9.08
4	Soluble Potassium	0.41	0.47	0.60	0.77	0.98
5	Water Soluble Phosphorus	0.48	0.48	0.48	0.48	0.48
6	IPDM and growth hormones	0.18	0.11	0.07	0.04	0.02
7	Harvesting	0.79	0.91	1.18	1.48	1.90
8	Irrigation system maintenance	0.32	0.38	0.47	0.59	0.78
	Total	8.04	8.98	10.83	13.21	18.22

Income from Plantation

SN	Item	3rd Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	8.00	10.00	15.00	20.00	20.00
2	Total Production in Kg	141252.0	235420	353130	470840	470840
3	Income from Plant	4237580	7082800	10593900	14125200	14125200
4	Total Income	42.38	70.63	105.94	141.25	141.25
5	Annual increment of income by 2% from 5th year onward	42.38	72.04	108.06	144.08	144.08

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	72.04	108.06	144.08	144.08
2	Cost of Operation as per Schedule B	0.00	8.96	10.83	13.21	16.22
3	Profit from Operations (A-B)	0.00	63.08	97.23	130.87	127.86
4	Less Interest on Term Loan	8.04	13.94	9.18	4.41	0.00
5	Total Interest	8.04	13.94	9.18	4.41	0.00
6	Profit after Interest	-8.04	49.13	88.05	126.46	127.86
7	Less Depreciation	0.00	8.38	7.02	5.89	4.94
8	Net Profit After Depreciation	-8.04	40.75	81.03	120.57	122.92
9	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
10	Net Profit Before Income Tax	-8.04	40.75	81.03	120.57	122.92
11	Less Income Tax	0.00	9.06	0.00	0.00	0.00
12	Net Profit after Income Tax	-8.04	31.69	81.03	120.57	122.92
13	Cash Profit	-8.04	40.07	88.05	126.46	127.86
14	Less Dividend	0.00	2.38	6.08	9.04	9.22
15	Less Dividend Tax (@ 10%)	0.00	0.24	0.61	0.90	0.92
16	Retained Profit	-8.04	29.08	74.34	110.62	112.78
17	Reserve & Surplus	-8.04	32.26	330.32	811.15	1371.71

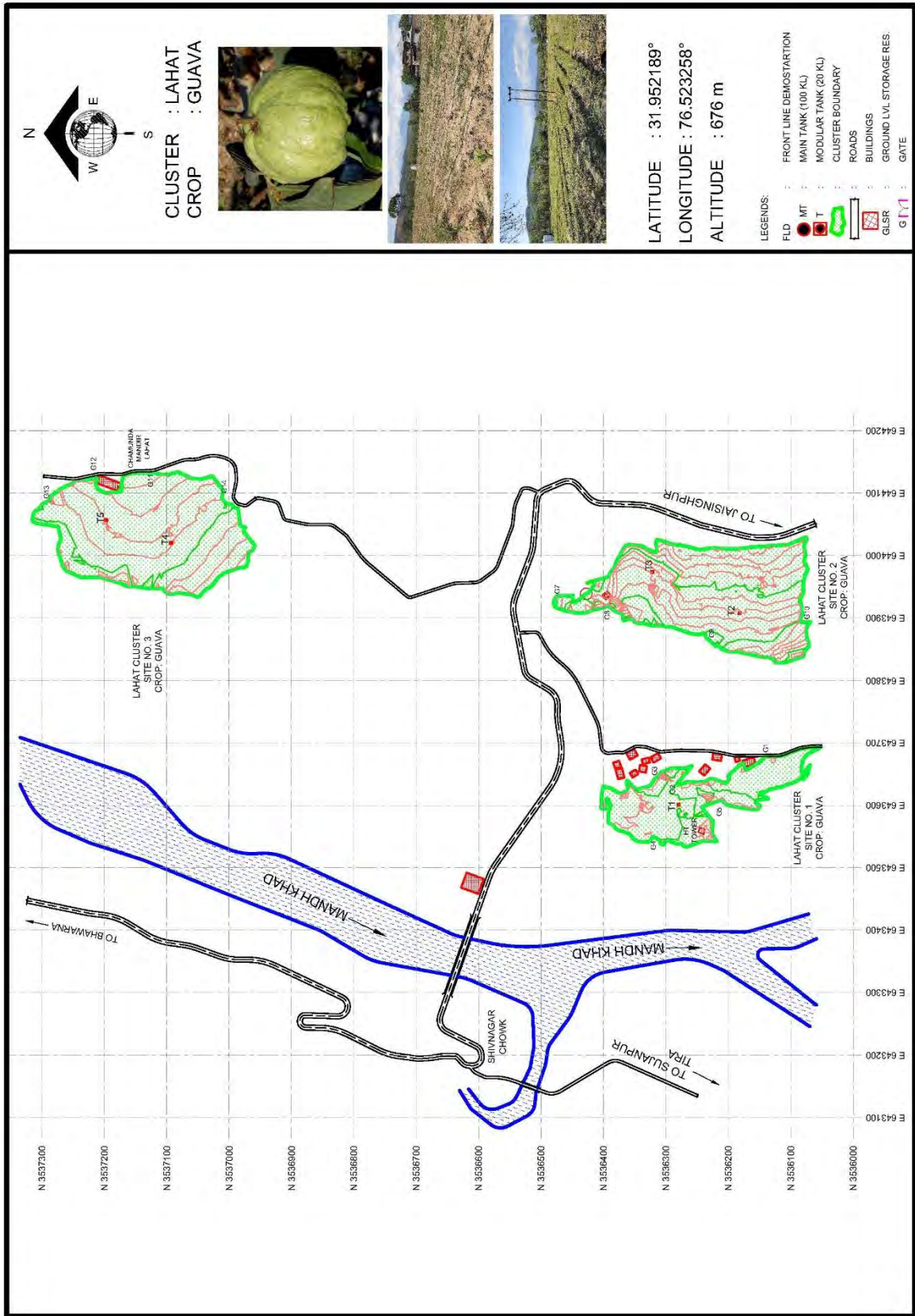
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
Total :		318		206880.00
Grand Total				206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of Guava assumed Rs 3000/- per Qtl. The Financial result are as under: -

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	5.78
2	Debt Service Coverage Ratio	1.73
3	Pay Back Period (Years)	18.00
4	Break Even Point (Years)	4.00
5	Cash Break Even Point (%age)	19.85
6	IRR (in %age)	26.76%
	ROI (Return of Investment)	26.58



LANJHTA CLUSTER PROFILE

CROP: Litchi



Brief Descriptions of Lanjhta:

Lanjhta village located in Bharari Tehsil of Bilaspur district with total 138 families and has population of 619 of which 290 are males while 329 are females as per Population Census 2011.

The main work of villager is agricultural cultivation. This cluster is selected for high density commercial plantation of Litchi. All producers belong to general caste.

Litchi : Plantation Details				Cluster Connectivity		
	Plants	Mortality	Percentage	Sn	Description	KM
Dehradun	8905	56	1.32	1	Distance from District HQ	42
Calcuttia	2760	0	0.00	2	Distance from Block HQ	16
Total	11665	76	0.66	3	National Highway Connectivity	4
				4	Nearest State Highway Connectivity	4
				5	Nearest Railway Station	115
				6	Nearest Airport	175
				7	Nearest APMC (F& V Market)	42
				8	Common Service Center (Lok Mitra)	4
				9	Nearest Processing Unit	42
				10	Nearest Bank Facilities	4

Producer's Numbers and Land Parcels (ha)					
SC	ST	OBC	Gen	Total	Female
0	0	0	52	52	7
0	0	0	15.742	15.742	1.662

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

Association	Member	Gender	Producer's Name	Relation with Producer	Designation	Phone
CHPMA	Ram Krishan Sharma	Male	Ram Krishan Sharma	Self	President	9817197197
CHPMA	Achhar Singh Chauhan	Male	Achhar Singh Chaunhan	Self	Vice President	9459580704
CHPMA	Onkar Singh	Male	Onkar Singh	Self	Secretary	7876754228
CHPMA	Abtar Singh	Male	Abtar Singh	Self	Executive member	9816228713
CHPMA	Achhari Devi	Female	Kashmir Singh	Wife	Executive member	8544763891
WUA	Banshi Ram Verma	Male	Self	Self	President	9459178260
WUA	Sharwan Ram	Male	Self	Self	V. President	9805070876
WUA	Krishan singh mohal	Male	Self	Self	Secretary	8278799040
WUA	Satish kumar	Male	Self	Self	J.Secretary	8894589663
WUA	Gian chand	Male	Self	Self	Treasurer	7018986380
WUA	Surender kumar	Male	self	Self	Member	9816691690
WUA	Jagan Nath Muhal	Male	self	Self	Member	9816363136

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	3446	1150	3962900
2	Field Preparation (Area in Ha)	12.163	254556	3096165
3	Irrigation Scheme for the Cluster	Lump-Sum	10378835	10378835
4	Drip Irrigation and Modular Tank	12.163	200468	2438294
5	Tools and Equipment (as per Annexure)		As per Tender	352406
6	Chemical Fertilizer (per Ha)	12.163	77092	937665
7	Plantation	11665	50	583250
8	Transportation Cost of Plantation	Lump-Sum		103653
				2,18,53,167

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.20	2.42	2.68	2.95
2	Electricity & Water	0.08	0.07	0.07	0.07	0.07
3	Cost of FYM	3.76	4.36	5.56	7.10	9.06
4	Soluble Potassium	0.41	0.47	0.60	0.77	0.98
5	Water Soluble Phosphorus	0.48	0.48	0.48	0.48	0.48
6	IPDM and growth hormones	0.16	0.11	0.07	0.04	0.02
7	Harvesting	0.79	0.91	1.16	1.48	1.90
8	Irrigation system maintenance	0.32	0.36	0.47	0.59	0.76
	Total	8.04	8.96	10.83	13.21	16.22

Income from Plantation

SN	Item	3rd Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	2.00	5.00	25.00	30.00	30.00
2	Total Production in Kg	20200.0	50500	252500	303000	303000
3	Income from Plant	1010000	2525000	12625000	15150000	15150000
4	Total Income (Rs in Lakhs)	10.10	25.25	126.25	151.50	151.50
5	Annual increment 2% onward 5th Year	10.10	25.76	71.06	78.46	86.62

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	25.76	71.06	78.46	86.62
2	Cost of Operation as per Schedule B	0.00	8.96	10.83	13.21	16.22
3	Profit from Operations (A-B)	0.00	16.79	60.23	65.25	70.41
4	Less Interest on Term Loan	7.50	12.99	8.55	4.11	0.00
5	Less Interest on Working Capital	0.00	0	0	0	0
6	Total Interest	7.50	12.99	8.55	4.11	0.00
7	Profit after Interest	-7.50	3.80	51.68	61.14	70.41
8	Less Depreciation	0.00	7.88	6.61	5.55	4.66
9	Net Profit After Depreciation	-7.50	-4.08	45.07	55.59	65.75
10	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
11	Net Profit Before Income Tax	-7.50	-4.08	45.07	55.59	65.74
12	Less Income Tax	0.00	0.00	0.00	0.00	0.00
13	Net Profit after Income Tax	-7.50	-4.08	45.07	55.59	65.74
14	Cash Profit	-7.50	3.80	51.68	61.14	70.41
15	Less Dividend	0.00	0.00	3.38	4.17	4.93
16	Less Dividend Tax (@ 10%)	0.00	0.00	0.34	0.42	0.49
17	Retained Profit	-7.50	-4.08	41.35	51.00	60.32
18	Reserve & Surplus	-7.50	-67.94	95.02	330.74	614.33

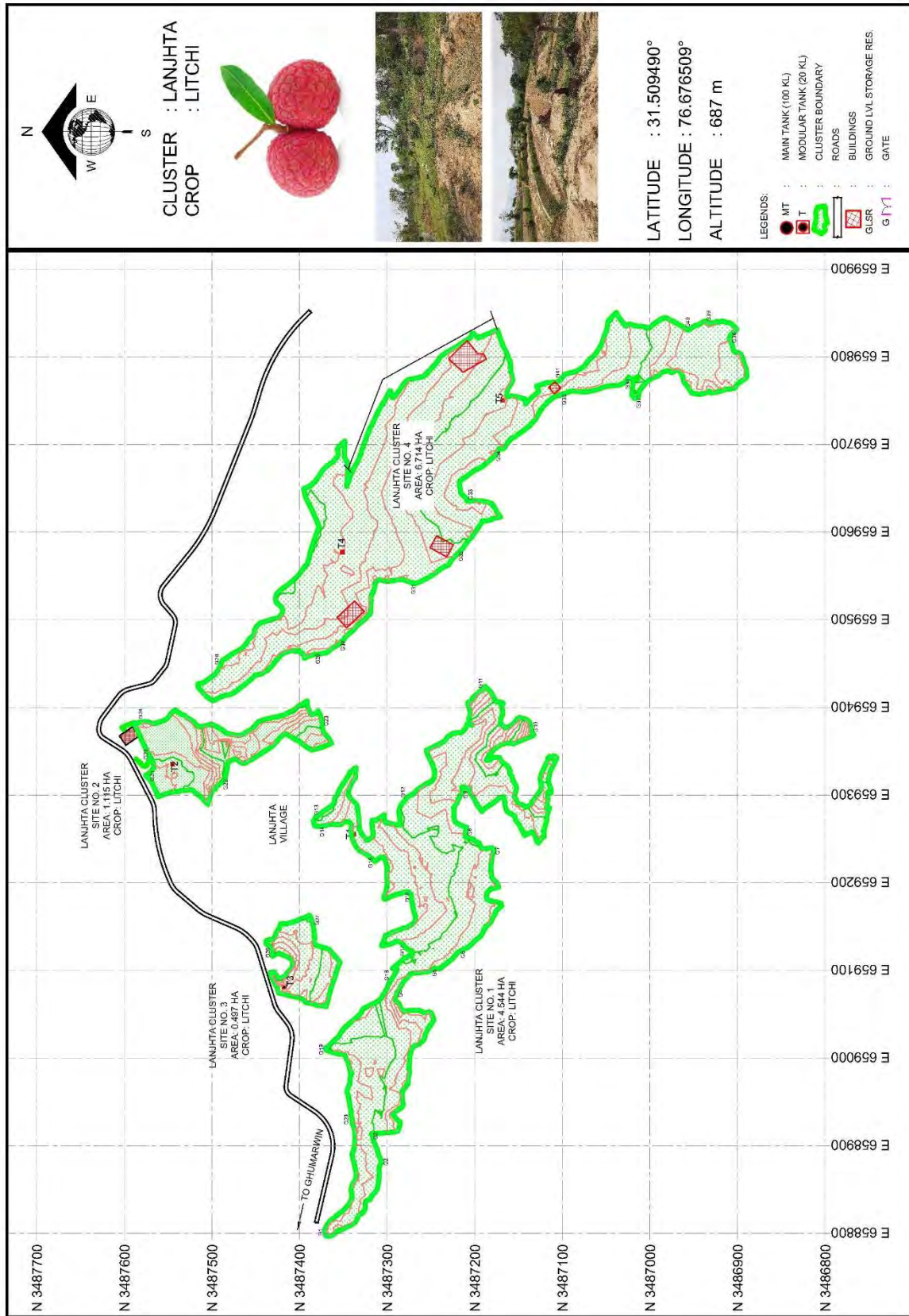
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
Total :		318		206880.00
Grand Total				206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of litchi assumed Rs 5000/- per Qtl. The Financial result are as under: -

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	5.29
2	Debt Service Coverage Ratio	1.16
3	Pay Back Period (Years)	18.00
4	Break Even Point (Years)	8.00
5	Cash Break Even Point (%age)	30.54
6	IRR (in %age)	15.27%
	ROI (Return of Investment)	12.60



Cluster Profile: Majher

Majher is a small Village in Bilaspur District. As per the Census 2011, there are 50 families residing in the village with a total population of 305. The total geographical area of the village is 86.95 hectares. Majher is 375 meters above Sea level. The main crops grown in the village are wheat, maize and seasonal vegetables. The Soil and climate are well suited for plantation of Blood Red, Hamlin, Valencia, Pera and Westin varieties of Citrus.

Connectivity of Majher Cluster

Sn	Description	KM
1	Distance from District HQ	25
2	Distance from Block HQ	20
3	National Highway Connectivity	25
4	Nearest State Highway Connectivity	15
5	Nearest Railway Station	80
6	Nearest Airport	150
7	Nearest APMC (F& V Market)	25
8	Common Service Center (Lok Mitra)	4
9	Nearest Processing Unit ¹	150
10	Nearest Bank Facilities (Commercial)	5

Plantation of Citrus and Mortality of Plant

Variety	Total Plantation	Mortality	% age Mortality
Pera	3208	112	3.49
Westin	2421	45	1.88
Valencia	1988	100	5.03
Blood Red	3750	0	0.00
Natal	1466	0	0.00
Hamlin	1839	119	6.47
	14672	376	2.58



Producer and their land Share in Project

	Total	SC	ST	OBC	Fem	Gen
Beneficiary	58	-	-	7	5	51
Land (ha)	18.2	-	-	1.61	0.434	16.6

Cost of Project and Means of Finance

Sn	Particulars	Amount (Rs. In Lacs)
1	Land Cost	0.00
2	Investment on Capital	293.95
3	Equipment & Tools	3.52
4	Misc. Fixed Assets	4.00
5	Furniture and Fixture	0.90
6	Preliminary and Pre-Operative	18.74
7	Contingencies and Escalations	3.06
8	Security Deposits	0.60
9	Working Capital Margins	0.00
	Total	324.77



The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the

produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 19689 in the cluster.

Details of Executive Members of CHPMA and Water User Association

CHPMA	Dhani	Male	Dhani Ram	Self	President	7807936118
CHPMA	Urmila Thakur	Female	Dev Raj	Wife	Vice President	8894895079
CHPMA	Ranjeet Singh	Male	Ranjeet Singh	Self	Treasurer	9817855005
CHPMA	Babu Ram	Male	Babu Ram	Self	Cashier	9817080762
CHPMA	Dharam Singh	Male	Dharam Singh	Self	Executive Member	8278755763
WUA	Shri Joginder Singh	Male	Self	Self	President	9817280975
WUA	Shri sonika devi	Female	Dharpal	Wife	V. President	7876111286
WUA	Shri Ranajeet Singh	Male	Self	Self	Secretary	9817855005
WUA	Shri Sukhram	Male	Self	Self	J. Secretary	7876596937
WUA	Shri Devendra Kumar	Male	Self	Self	Treasurer	9805866071
WUA	Shrimati Hardeyi	Female	Baldevraj	wife	Member	9805069066
WUA	Shri Bhuraram	Male	self	self	Member	9817330577

Financial Analysis of the Cluster

Capital Investment						
Sn	Item Description	Measurement	Unit Rate	Total Amount		
1	Solar Fencing Work (Running Meter)	4136	1150	4756400		
2	Field Preparation (Area in Ha)	18.45	254556	4695540		
3	Irrigation Scheme for the Cluster	Lump-Sum	10378835	10378835		
4	Drip Irrigation and Modular Tank	Lump-Sum	4695540	4695540		
5	Tools and Equipment's (as per Annexure)		As per Tender	352359		
6	Chemical Fertilizer (per Ha)	18.45	77092	1422031		
7	Plantation	14672	As per Tender	3094200		
				2,93,94,905		
Income & Expenditure						
Sn	Item Description	Year 1	Year 5	Year 10	Year 15	Year 20
1	Total Plants	14672	0.00	0.00	0.00	0.00
2	Production per plant (in Kg)	0	15.00	30.00	30.00	30.00
3	Total Production in Kg	0	220080	440160	440160	440160
4	Income from Plant (@ Rs 30/- per Kg)	0	6602400	13204800	13204800	13204800
5	Total Income (in Rs Lakhs)	0.00	66.02	132.05	132.05	132.05
6	Annual increment of income by 2% from 5th year onward	0.00	67.34	134.69	134.69	134.69
Cost of Operation						
Sn	Item Description	Year 1	Year 5	Year 10	Year 15	Year 20
1	Man Power	2.07	2.07	2.07	2.07	2.07
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07
3	Cost of FYM	1.30	1.30	1.30	1.30	1.30
4	Cost of Fertilizers	1.30	1.34	1.36	1.36	1.36
5	Manures & fertilizers application Irrigation	3.90	3.90	3.90	3.90	3.90
6	Plant protection measures	3.90	2.84	1.68	0.99	0.59
7	Appl. of plant protection Interculture	1.30	1.30	1.30	1.30	1.30
8	Harvesting	0.00	0.44	0.44	0.44	0.44
	Total	13.83	13.26	13.80	11.42	11.02

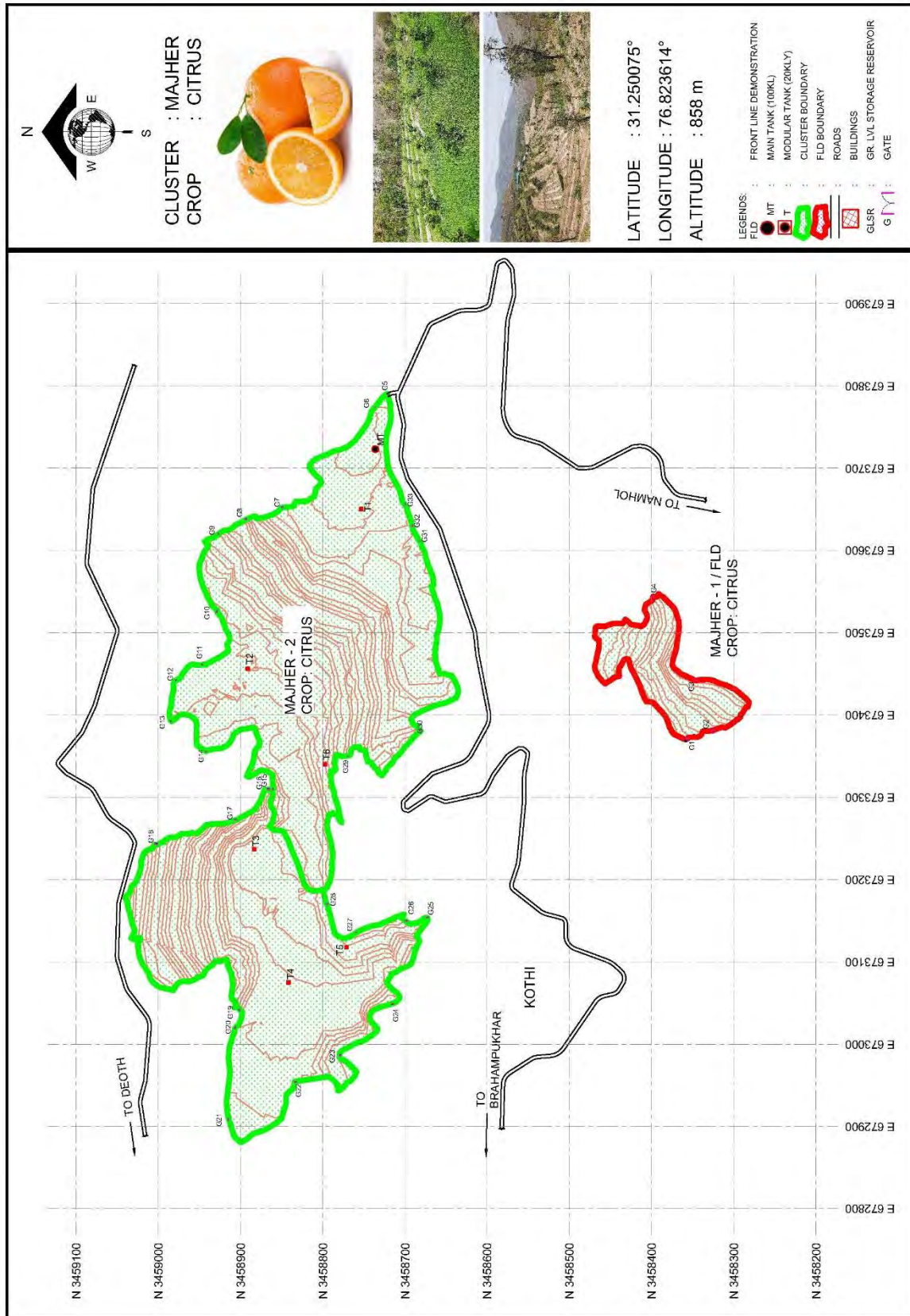
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
	Total :	318		206880.00
	Grand Total			206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of sweet orange assumed Rs 3000/- per Qtl. The Financial result are as under: -

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	6.25
2	Debt Service Coverage Ratio	1.45
3	Pay Back Period (Years)	17.00
4	Break Even Point (Years)	7.00
5	Cash Break Even Point (%age)	24.07
6	IRR (in %age)	20.91%
	ROI (Return of Investment)	19.55



RIT-TREHLA CLUSTER PROFILE

CROP: SWEET ORANGE



Brief Descriptions of Rit Trehla:

According to Census 2011 information the location code or village code of Rit village is 011286. Rit village is located in Jaisinghpur Tehsil of Kangra district in Himachal Pradesh, India. It is situated 50km away from district headquarter Jaisinghpur. Jaisinghpur is the sub-district headquarter of Rit village. As per 2009 stats, Rit Gugga is the gram panchayat of Rit village. The total geographical area of village is 80.05 hectares. Rit has a total population of 595 peoples. There are about 154 houses in Rit village.

Sweet Orange : Plantation Details				Cluster Connectivity		
	Plants	Mortality	Percentage	Sn	Description	KM
Blood Red	3800	486	12.79	1	Distance from District HQ	50
Pera	1200	162	13.50	2	Distance from Block HQ	23.5
Valencia	2889	432	14.95	3	National Highway Connectivity	20
Westin	2040	62	3.04	4	Nearest State Highway Connectivity	15
Total	9929	1142	11.50	5	Nearest Railway Station	NA
Producer's Numbers and Land Parcels (ha)				6	Nearest Airport	NA
SC	ST	OBC	Gen	7	Nearest APMC (F& V Market)	30
0	0	0	54	8	Common Service Center (Lok Mitra)	6
0.170	0	0	9.40	9	Nearest Processing Unit ¹	NA
			9.40	10	Nearest Bank Facilities	5

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 19689 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Subhash chand	Male	Rasil singh	Son	President	8580649571
2	Sarwan kumar	Male	Sarwan kumar	Self	Vice president	8219633638
3	Ranjit Singh	Male	Ranjit Singh	Self	Secretary	8894852824
4	Udham singh	Male	Udham singh	Self	Treasurer	9816705539
5	Subhash chand	Male	Rasil singh	Son	President	8580649571
Water User Association						
1	Shri subhash chand	Male	Self	Self	President	979304491
2	Shri sarwan kumar	Male	Self	Self	V. President	8219633638
3	Shri udham singh	Male	Self	Self	Treasurer	9816705539
4	Shri ranjeet singh	Male	Self	Self	Secretary	8894852824
5	Smt.anita devi	Female	Late darshan singh	Wife	J. Secretary	9816114410
6	Shri Amar Singh	male	self	self	Member	8894536827
7	Shri Puni Chand	male.	Self	self	Member	9816048974

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	1717	1150	1974550
2	Field Preparation (Area in Ha)	9.40	254556	2392826
3	Irrigation Scheme for the Cluster	Lump-Sum	9080521	9080521
4	Drip Irrigation and Modular Tank	Lump-Sum	2392826	2392826
5	Tools and Equipment (as per Annexure)			352359
6	Chemical Fertilizer (per Ha)	9.40	77092	724660.7348
7	Plantation	9929		1982250
				1,88,99,993

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.07	2.07	2.07	2.07
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07
3	Cost of FYM	1.30	1.30	1.30	1.30	1.30
4	Soluble Potassium	1.30	1.34	1.36	1.36	1.36
5	Water Soluble Phosphorus	3.90	3.90	3.90	3.90	3.90
6	IPDM and growth hormones	3.90	2.84	1.68	0.99	0.59
7	Harvesting	1.30	1.30	1.30	1.30	1.30
8	Irrigation system maintenance	0.00	0.38	0.38	0.38	0.38
	Total	13.83	13.20	12.05	11.36	10.96

Income from Plantation

SN	Item	3rdYear	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	5.00	15.00	30.00	30.00	30.00
2	Total Production in Kg	50160.0	150480	300960	300960	300960
3	Income from Plant	1003200	4514400	9028800	9028800	9028800
4	Total Income (Rs in Lakhs)	10.03	45.14	90.29	90.29	90.29
5	Annual increment 2% onward 5th Year	10.03	46.05	92.09	92.09	92.09

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	45.57	91.15	91.15	91.15
2	Cost of Operation as per Schedule B	0.00	13.20	12.05	11.36	10.96
3	Profit from Operations (A-B)	0.00	32.37	79.10	79.78	80.19
4	Less Interest on Term Loan	6.58	11.41	7.51	9.59	0.00
5	Less Interest on Working Capital	0.00	0	0	0	0
6	Total Interest	6.58	11.41	7.51	9.59	0.00
7	Profit after Interest	-6.58	20.96	71.59	70.19	80.19
8	Less Depreciation	0.00	6.90	5.78	4.85	4.07
9	Net Profit After Depreciation	-6.58	14.07	65.81	65.34	76.12
10	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
11	Net Profit Before Income Tax	-6.58	14.06	65.80	65.34	76.12
12	Less Income Tax	0.00	0.00	0.00	0.00	0.00
13	Net Profit after Income Tax	-6.58	14.06	65.80	65.34	76.12
14	Cash Profit	-6.58	20.96	71.59	70.19	80.19
15	Less Dividend	0.00	1.05	4.94	4.90	5.71
16	Less Dividend Tax (@ 10%)	0.00	0.11	0.49	0.49	0.57
17	Retained Profit	-6.58	12.90	60.37	59.95	69.84
18	Reserve & Surplus	-6.58	-53.97	156.35	455.95	767.90

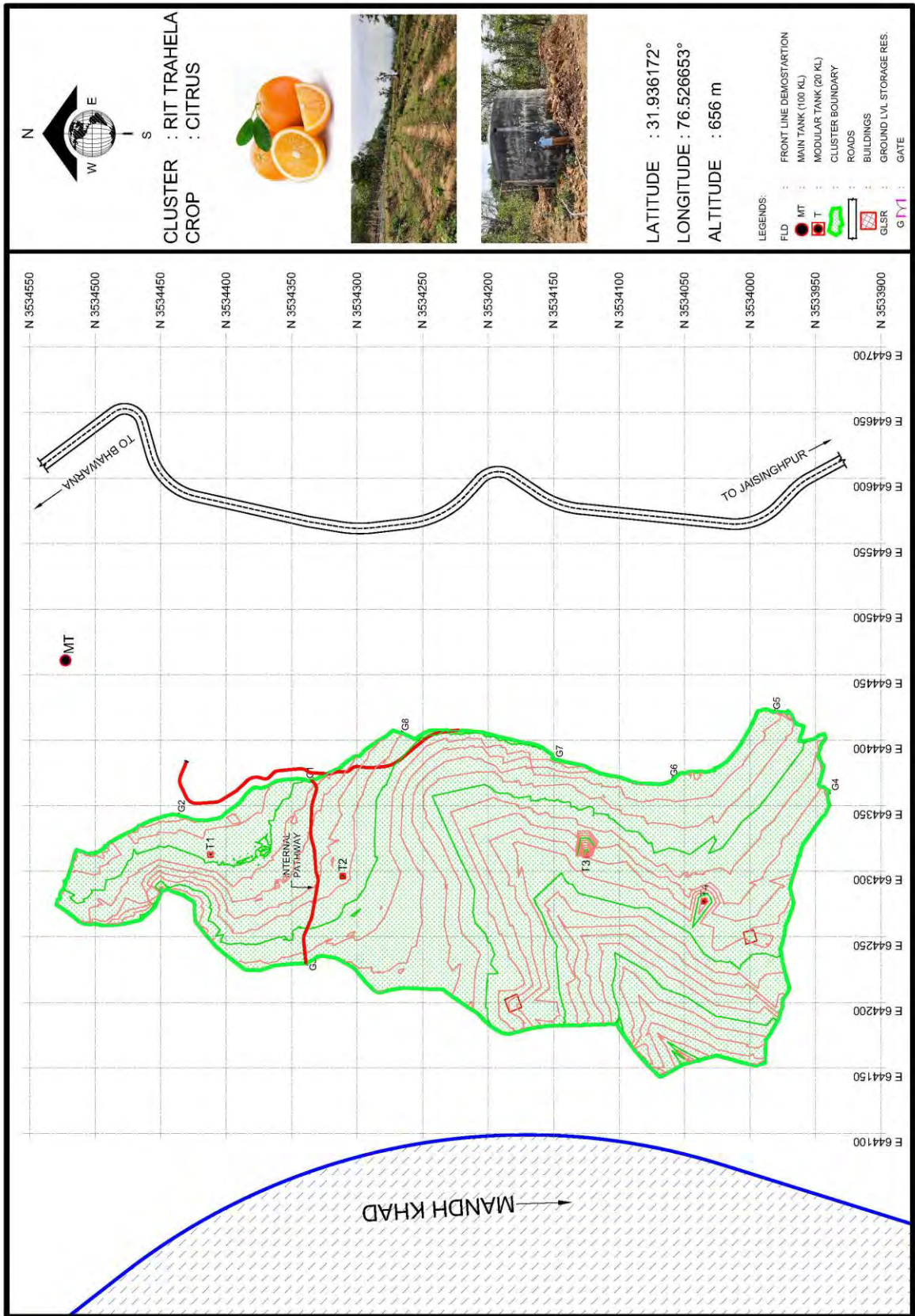
Assumptions and Conclusions

The gestation period of the project is 3years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
Total :		318		206880.00
Grand Total				206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of sweet orange assumed Rs 3000/- per Qtl. The Financial result are as under:

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	5.58
2	Debt Service Coverage Ratio	1.40
3	Pay Back Period (Years)	18.00
4	Break Even Point (Years)	7.00
5	Cash Break Even Point (%age)	30.00
6	IRR (in %age)	20.37%
	ROI (Return of Investment)	18.09



NERI (SANDHOLE) CLUSTER PROFILE

CROP: LITCHI



Brief Descriptions of Sandhole-Neri

According to Census 2011 information the location code or village code of Neri village is 013593. Neri village is located in Sandhol Tehsil of Mandi district in Himachal Pradesh, India. It is situated 100km away from district headquarter Sandhol. Sandhol is the sub-district headquarter of Neri village. As per 2009 stats, Neri Dpr is the gram panchayat of Neri village. The total geographical area of village is 65.56 hectares. Neri has a total population of 615 peoples. There are about 160 houses in Neri village.

Plantation Details : Litchi				Cluster Connectivity		
Variety	Plants	Mortality	Percentage	Sn	Description	KM
Culcuttia	200	0	0	1	Distance from District HQ	160
				2	Distance from Block HQ	32
Dehradun	1856	368	19.83	3	National Highway Connectivity	32
				4	Nearest State Highway Connectivity	3
Total	2056	368	19.82	5	Nearest Railway Station	90
				6	Nearest Airport	260
				7	Nearest APMC (F& V Market)	32
				8	Common Service Center (Lok Mitra)	3
				9	Nearest Processing Unit ¹	270
				10	Nearest Bank Facilities	3

The Beneficiary Details

Item	SC	ST	OBC	Gen	Total	Female
Number	0	0	0	45	45	10
Land (ha)	0	0	0	7.78	7.78	1.96

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Member Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Mr. Pratap Chand	Male	Mr. Pratap Chand	-	Pradhan	8219333726
2	Mrs. Saroj kumari	Female	Mr. Tara Chand	Wife	Up-Pradhan	9882119505
3	Mr. Ramesh Kumar	Male	Mr. Ramesh Kumar	-	Secretary	9899784690
4	Mr. Rohit Rana	Male	Mr. Ramesh	Son	Vice-Secretary	8628861238
5	Mr. Gopal Singh Rana	Male	Mr. Gopal Singh Rana	-	Treasurer	9816126240
Water User Association						
1	Saidas rana	Male	Self	Self	President	8920388479
2	Baldev thakur	Male	Self	Self	Vice- President	9805908369
3	Basant Singh	Male	Self	Self	Secretary	9817259117
4	Sanno Devi	Female	Self	Self	Joint- secretary	8894960532
5	Ranjeet Singh	Male	Self	Self	Treasurer	7807242433
6	Vyasdev	Male	Self	Self	Member	9857426123
7	Beena Devi	Female	Sanjay	Wife	Member	9877314932

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	1474	1150	1695100
2	Field Preparation (Area in Ha)	7.78	254556	1980446
3	Irrigation Scheme for the Cluster	1	9186569	9186569
4	Drip Irrigation and Modular Tank	7.78	200468	1559641.04
5	Tools and Equipment (as per Annexure)	As per Annexure		246431.66
6	Chemical Fertilizer (per Ha)	7.78	77092	599775.76
7	Plantation	2056		102800
				1,53,70,763

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.20	2.42	2.68	2.95
2	Electricity & Water	0.08	0.07	0.07	0.07	0.07
3	Cost of FYM	3.76	4.36	5.56	7.10	9.06
4	Soluble Potassium	0.41	0.47	0.60	0.77	0.98
5	Water Soluble Phosphorus	0.48	0.48	0.48	0.48	0.48
6	IPDM and growth hormones	0.16	0.11	0.07	0.04	0.02
7	Harvesting	0.79	0.91	1.18	1.48	1.90
8	Irrigation system maintenance	0.32	0.36	0.47	0.59	0.76
	Total	8.04	8.96	10.83	13.21	16.22

Income from Plantation

SN	Item	3rd Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	2.50	10.00	25.00	25.00	25.00
2	Total Production in Kg	5140.0	20560	51400	51400	51400
3	Income from Plant	411200	1644800	4112000	4112000	4112000
4	Total Income	4.11	16.45	41.12	41.12	41.12
5	Annual increment of income by 2% from 5th year onward	4.11	16.78	44.51	49.14	54.26

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	16.78	44.51	49.14	54.26
2	Cost of Operation as per Schedule B	0.00	8.96	10.83	13.21	16.22
3	Profit from Operations (A-B)	0.00	7.81	33.68	35.93	38.04
4	Less Interest on Term Loan	5.34	9.25	6.09	2.93	0.00
5	Less Interest on Working Capital	0.00	0	0	0	0
6	Total Interest	5.34	9.25	6.09	2.93	0.00
7	Profit after Interest	-5.34	-1.44	27.59	33.01	38.04
8	Less Depreciation	0.00	5.67	4.75	3.98	3.34
9	Net Profit After Depreciation	-5.34	-7.11	22.84	29.03	34.70
10	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
11	Net Profit Before Income Tax	-5.34	-7.11	22.84	29.02	34.70
12	Less Income Tax	0.00	0.00	0.00	0.00	0.00
13	Net Profit after Income Tax	-5.34	-7.11	22.84	29.02	34.70
14	Cash Profit	-5.34	-1.44	27.59	33.01	38.04
15	Less Dividend	0.00	0.00	1.71	2.18	2.60
16	Less Dividend Tax (@ 10%)	0.00	0.00	0.17	0.22	0.26
17	Retained Profit	-5.34	-7.11	20.95	26.63	31.84
18	Reserve & Surplus	-5.34	-65.57	20.56	138.78	288.10

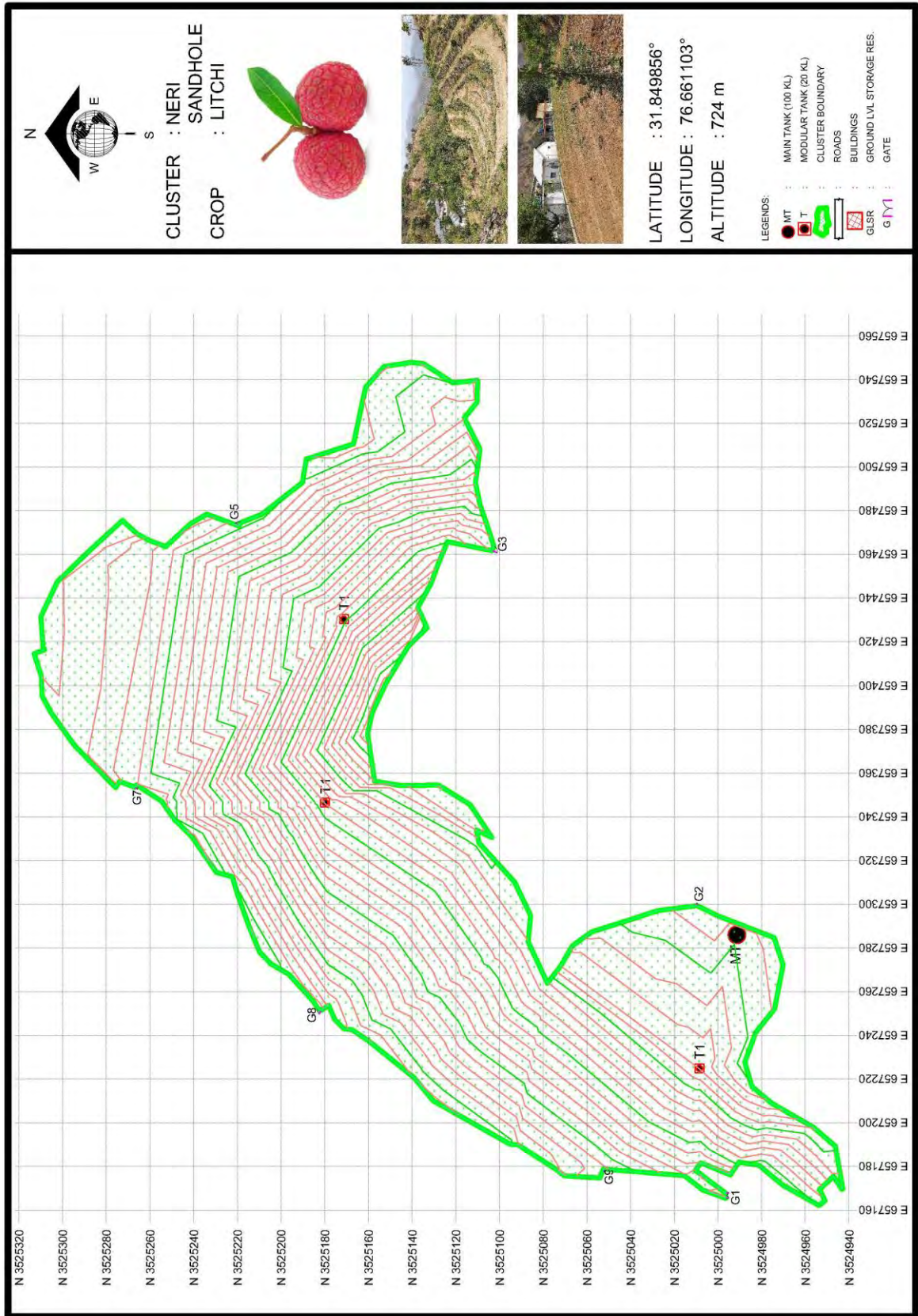
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
	Total :	318		206880.00
	Grand Total			206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of Litchi price assumed Rs 8000/- per Qtl. The Financial result are as under: -

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	5.34
2	Debt Service Coverage Ratio	0.97
3	Pay Back Period (Years)	18.00
4	Break Even Point (Years)	10.00
5	Cash Break Even Point (%age)	44.20
6	IRR (in %age)	11.75%
	ROI (Return of Investment)	8.31



SEHAL CLUSTER PROFILE

CROP: GUAVA



Brief Descriptions of Sehal

According to Census 2011 information the location code or village code of Sahal village is 012073. Sahal village is located in Baijnath Tehsil of Kangra district in Himachal Pradesh, India. It is situated 60km away from district headquarter Baijnath. Baijnath is the sub-district headquarter of Sahal village. As per 2009 stats, Sehal is the gram panchayat of Sahal village.

The total geographical area of village is 83.01 hectares. Sahal has a total population of 584 peoples. There are about 153 houses in Sahal village. Palampur is nearest town to Sahal.

Plantation Details : Guava				Cluster Connectivity		
Variety	Plants	Mortality	Percentage	Sn	Description	KM
Guava				1	Distance from District HQ	55
				2	Distance from Block HQ	5
Sweta	400	61	15.25	3	National Highway Connectivity	3
Lalit	4050	747	18.44	4	Nearest State Highway Connectivity	80
VNR	7300	557	7.63	5	Nearest Railway Station	6
	11750	1365	11.62	6	Nearest Airport	60
				7	Nearest APMC (F& V Market)	5
				8	Common Service Center (Lok Mitra)	0.2
				9	Nearest Processing Unit ¹	0
				10	Nearest Bank Facilities	3

The Beneficiary Details

Item	SC	ST	OBC	Gen	Total	Female
Number	7	3	7	20	37	1
Land (ha)	0.789	0.329	0.651	6.06	7.829	0.030

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Tilak Raj Kapoor	Male	Tilak Raj Kapoor	Self	President	9418462809
2	Dhruv Raj Sharma	Male	Dhruv Raj Sharma	Self	Vice President	9805772037
3	Rajinder Kumar	Male	Rajinder Kumar	Self	Secretary	9418968749
4	Suresh Kumar	Male	Suresh Kumar	Self	Joint Secretary	862700724
5	Vinod Kumar	Male	Vinod Kumar	Self	Treasurer	9418280524
Water User Association						
1	Tilak Raj Kapoor	Male	Self	Self	President	9418462809
2	Dhruv Raj Sharma	Male	Self	Self	Vice President	9805772037
3	Rajinder Kumar	Male	Self	Self	Secretary	9418968749
4	Sharda Devi	Female	Jatnder Kumar	Wife	J.Secretary	8580615433
5	Vinod Sharma	Male	Self	Self	Treasure	7018135448
6	Suresh Kumar	Male	Self	Self	Member	8627007824
7	Bheem Sen	Male	Self	Self	Member	9805145084

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	1867	1150	2147050
2	Field Preparation (Area in Ha)	7.829	254556	1992919
3	Irrigation Scheme for the Cluster	1	9080521	9080521
4	Drip Irrigation and Modular Tank	7.829	200468	1569464
5	Tools and Equipment (as per Annexure)	As per Annexure		277426
6	Chemical Fertilizer (per Ha)	7.829	77092	603553
7	Plantation	11750		1175000
				1,68,45,933

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.20	2.42	2.68	2.95
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07
3	Cost of FYM	3.76	4.36	5.56	7.10	9.06
4	Soluble Potassium	0.41	0.47	0.60	0.77	0.98
5	Water Soluble Phosphorus	0.48	0.48	0.48	0.48	0.48
6	IPDM and growth hormones	0.16	0.11	0.07	0.04	0.02
7	Harvesting	0.79	0.91	1.16	1.48	1.90
8	Irrigation system maintenance	0.32	0.36	0.47	0.59	0.76
	Total	8.04	8.96	10.83	13.21	16.22

Income from Plantation

SN	Item	3rd Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	6.00	10.00	15.00	20.00	20.00
2	Total Production in Kg	70500.0	117500	176250	235000	235000
3	Income from Plant	2115000	3525000	5287500	7050000	7050000
4	Total Income	21.15	35.25	52.88	70.50	70.50
5	Annual increment of income by 2% from 5th year onward	21.15	35.96	53.93	71.91	71.91

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	35.96	53.93	71.91	71.91
2	Cost of Operation as per Schedule B	0.00	8.96	10.83	13.21	16.22
3	Profit from Operations (A-B)	0.00	26.99	43.10	58.70	55.69
4	Less Interest on Term Loan	6.22	10.77	7.09	3.41	0.00
5	Total Interest	6.22	10.77	7.09	3.41	0.00
6	Profit after Interest	-6.22	16.22	36.01	55.29	55.69
7	Less Depreciation	0.00	6.20	5.19	4.36	3.65
8	Net Profit After Depreciation	-6.22	10.02	30.82	50.94	52.04
9	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00
10	Net Profit Before Income Tax	-6.22	10.02	30.81	50.94	52.04
11	Less Income Tax	0.00	0.00	0.00	0.00	0.00
12	Net Profit after Income Tax	-6.22	10.02	30.81	50.94	52.04
13	Cash Profit	-6.22	16.22	36.01	55.29	55.69
14	Less Dividend	0.00	0.75	2.31	3.82	3.90
15	Less Dividend Tax (@ 10%)	0.00	0.08	0.23	0.38	0.39
16	Retained Profit	-6.22	9.19	28.27	46.73	47.74
17	Reserve & Surplus	-6.22	-19.09	82.85	279.86	517.37

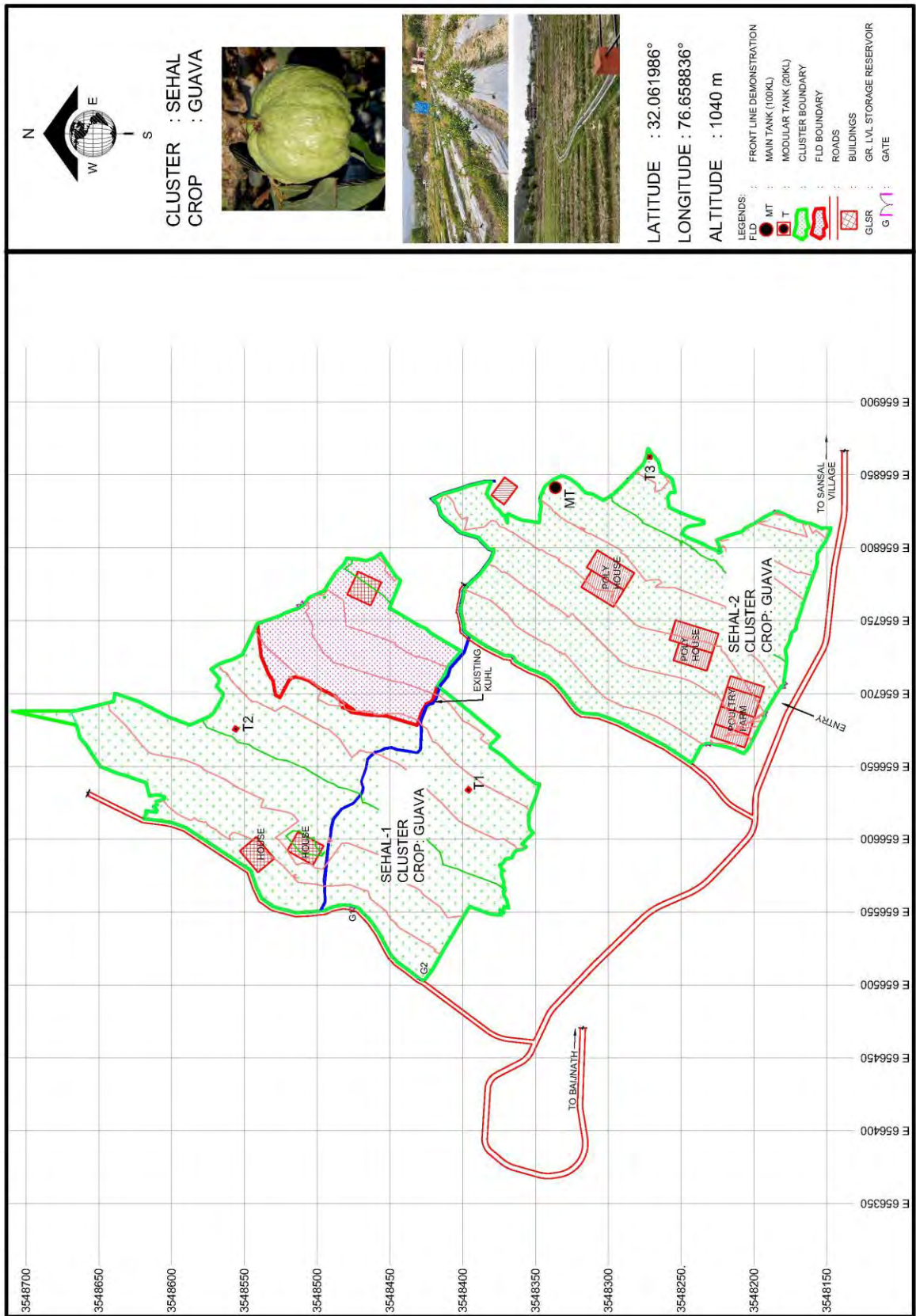
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will started. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
	Total :	318		206880.00
	Grand Total			206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of Guava assumed Rs 3000/- per Qtl. The Financial result are as under: -

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	8.45
2	Debt Service Coverage Ratio	1.14
3	Pay Back Period (Years)	17.00
4	Break Even Point (Years)	7.00
5	Cash Break Even Point (%age)	37.85
6	IRR (in %age)	17.17%
	ROI (Return of Investment)	13.61



TALWARA CLUSTER PROFILE

CROP: SWEET ORANGE



Brief Descriptions of Talwara:

Total geographical area of village Talwara is 181.34 hectares and its total population is 748. There are about 175 houses in the village. Agriculture is the main profession of this village. Majority of the farmers are small and marginal. This cluster is selected under HPSHIVA for high density plantation of Sweet Orange.

Sweet Orange : Plantation Details				Cluster Connectivity		
	Plants	Mortality	Percentage	Sn	Description	KM
Blood Red	4252	56	1.32	1	Distance from District HQ	45
Westin	1096	0	0.00	2	Distance from Block HQ	26
Pera	3197	7	0.22	3	National Highway Connectivity	80
Valencia	2590	13	0.50	4	Nearest State Highway Connectivity	23
Jaffa	451	0	0.00	5	Nearest Railway Station	130
Total	11586	76	0.66	6	Nearest Airport	180
Producer's Numbers and Land Parcels (ha)				7	Nearest APMC (F& V Market)	45
SC	ST	OBC	Gen	Total	Female	
5	0	0	47	52	3	
0.170	0	0	10.754	10.924	0.305	
				10	Nearest Bank Facilities	8

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 19689 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

Association	Member	Gender	Producer's Name	Relation with Producer	Designation	Phone
CHPMA	Bansi Ram Verma	Male	Bansi Ram Verma	Self	President	9459178260
CHPMA	Sarwan Ram	Male	Sarwan Ram	Self	Vice President	9805070876
CHPMA	Gain chand	Male	Gain chand	Self	Secretary	7018986380
CHPMA	Ashok kumar	Male	Bharmi	Son in law	Executive member	9817055366
CHPMA	Krishan singh	Male	Krishan singh	Self	Executive member	9418961688

WUA	Shri Ramkrashn Sharma	Male	Self	Self	President	9817197197
WUA	Shri AchharSingh	Male	Self	Self	V. President	9459580704
WUA	Shri Okar Singh	Male	Self	Self	Secretary	97876754228
WUA	Smt Suraksha Devi	Female		Wife	J. Secretary	9812440085
WUA	Shri Avtar Singh	Male	Self	Self	Treasurer	9816228713
WUA	Shri Daleep Singh	Male	Self	Self	Member	9352775820
WUA	Shri Rajendra	Male	Self	self	Member	9805979401

Financial Analysis

Capital Investment				
SN	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	2366	1150	2720900
2	Field Preparation (Area in Ha)	11.38	254556	2896084
3	Irrigation Scheme for the Cluster	Lump-Sum	10378835	10378835
4	Drip Irrigation and Modular Tank	Lump-Sum	2896084	2896084
5	Tools and Equipment (as per Annexure)		As per Tender	352359
6	Chemical Fertilizer (per Ha)	11.38	77092	877070.7638
7	Plantation	11.38		2151600
				2,22,72,932

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.07	2.07	2.07	2.07
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07
3	Cost of FYM	1.30	1.30	1.30	1.30	1.30
4	Soluble Potassium	1.30	1.34	1.36	1.36	1.36
5	Water Soluble Phosphorus	3.90	3.90	3.90	3.90	3.90
6	IPDM and growth hormones	3.90	2.84	1.68	0.99	0.59
7	Harvesting	1.30	1.30	1.30	1.30	1.30
8	Irrigation system maintenance	0.00	0.44	0.44	0.44	0.44
	Total	13.83	13.26	12.11	11.42	11.02

Income from Plantation

SN	Item	3rd Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	5.00	15.00	30.00	30.00	30.00
2	Total Production in Kg	50160.0	150480	300960	300960	300960
3	Income from Plant	1003200	4514400	9028800	9028800	9028800
4	Total Income (Rs in Lakhs)	10.03	45.14	90.29	90.29	90.29
5	Annual increment 2% onward 5th Year	10.03	46.05	92.09	92.09	92.09

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations -A	0.00	46.05	92.09	92.09	92.09
2	Cost of Operation as per Schedule B	0.00	13.26	12.11	11.42	11.02
3	Profit from Operations (A-B)	0.00	32.78	79.98	80.67	81.08
4	Less Interest on Term Loan	7.71	13.37	8.80	9.59	0.00
5	Less Interest on Working Capital	0.00	0	0	0	0
6	Total Interest	7.71	13.37	8.80	9.59	0.00
7	Profit after Interest	-7.71	19.42	71.19	71.08	81.08
8	Less Depreciation	0.00	8.03	6.73	5.65	4.75
9	Net Profit After Depreciation	-7.71	11.39	64.45	65.43	76.33
10	Less Preliminary Expenses of Written off	0.00	0.00	0.00	0.00	0.00

11	Net Profit Before Income Tax	-7.71	11.39	64.45	65.42	76.33
12	Less Income Tax	0.00	0.00	0.00	0.00	0.00
13	Net Profit after Income Tax	-7.71	11.39	64.45	65.42	76.33
14	Cash Profit	-7.71	19.42	71.19	71.08	81.08
15	Less Dividend	0.00	0.85	4.83	4.91	5.72
16	Less Dividend Tax (@ 10%)	0.00	0.09	0.48	0.49	0.57
17	Retained Profit	-7.71	10.45	59.13	60.03	70.03
18	Reserve & Surplus	-7.71	-65.64	144.01	442.67	755.35

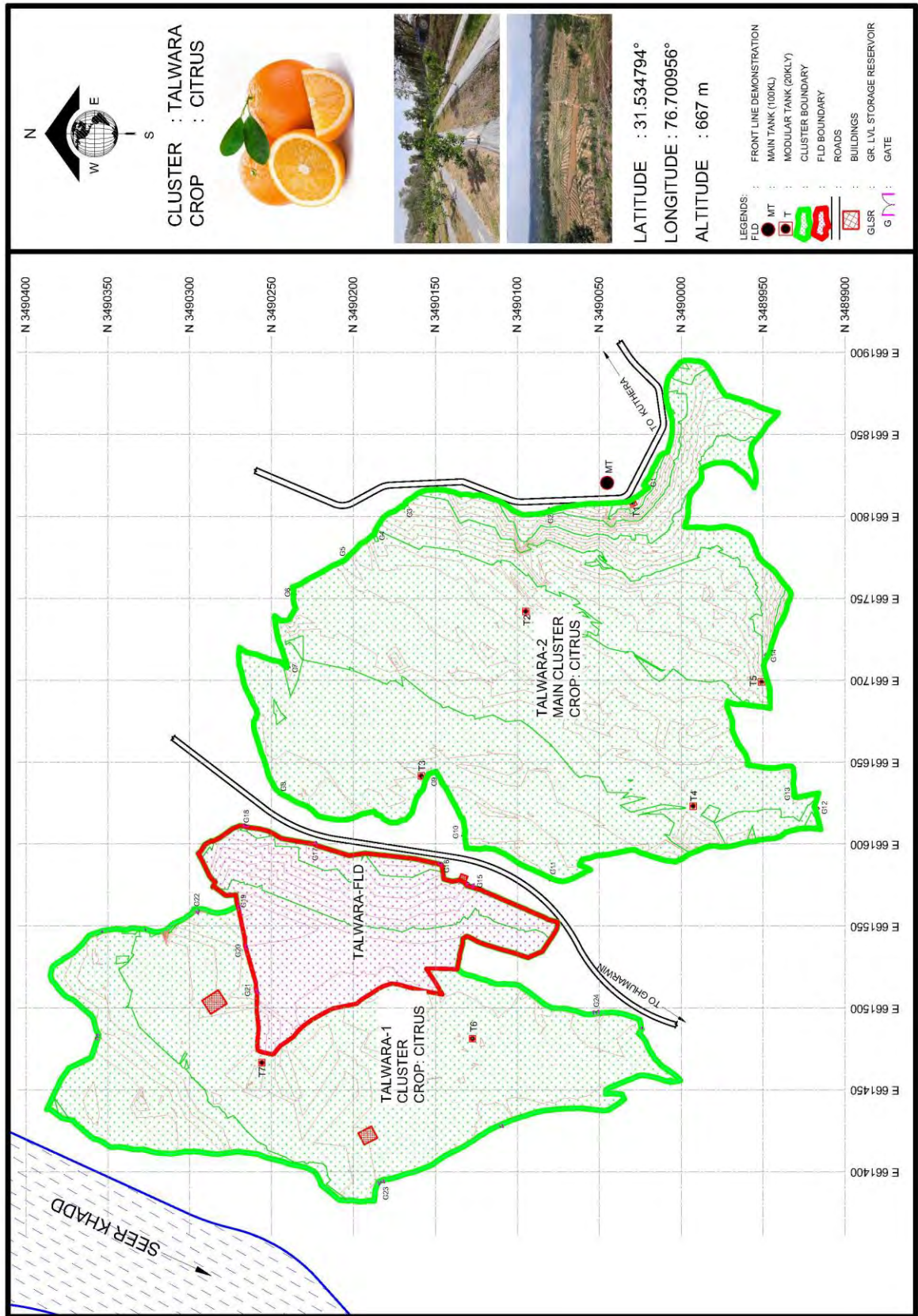
Assumptions and Conclusions

The gestation period of the project is 3 years. The production shall start in the 3rd year and on 5th year commercial production will start. The income from the project is based on wholesale marketing of produce through existing marketing system (Regulated Markets). Income may be more in the due course of time with Value Chain Infrastructure. The Assumption for skilled manpower requirement for the cluster development, day to day operation and marketing is as under:-

Himachal Pradesh Sub Tropical Horticulture Production, Irrigation and Value Addition				
Manpower in the Cluster (per Year)				
S.No.	Positions	Man-days	Unit Rate	Total Amount (Rs)
1	Cluster Incharge	84	900	75600.00
2	Cashier	84	670	56280.00
3	Assistant	150	500	75000.00
4	Farm Labour	441	250	110250.00
Total :		318		206880.00
Grand Total				206880.00

The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of sweet orange assumed Rs 3000/- per Qtl. The Financial result are as under:-

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	5.63
2	Debt Service Coverage Ratio	1.27
3	Pay Back Period (Years)	18.00
4	Break Even Point (Years)	8.00
5	Cash Break Even Point (%age)	32.05
6	IRR (in %age)	18.08%
	ROI (Return of Investment)	15.21



TANDA-MATOUR CLUSTER PROFILE

CROP: GUAVA & POMEGRANATE



Brief Descriptions of Tanda Matur

According to Census 2011 information the location code or village code of Matour Tanda village is 014108. Matour Tanda village is located in Baldwara Tehsil of Mandi district in Himachal Pradesh, India. It is situated 48km away from district headquarter Mandi. As per 2009 stats, Khudla Gpr is the gram panchayat of Matour Tanda village. The total geographical area of village is 86.94 hectares. Matour Tanda has a total population of 163 peoples. There are about 34 houses in Matour Tanda village.

Plantation Details : Guava & Pomegranate				Cluster Connectivity		
Variety	Plants	Mortality	Percentage	Sn	Description	KM
Guava				1	Distance from District HQ	62
				2	Distance from Block HQ	62
				3	National Highway Connectivity	30
				4	Nearest State Highway Connectivity	20
Pomegranate				5	Nearest Railway Station	115
				6	Nearest Airport	80
				7	Nearest APMC (F& V Market)	62
				8	Common Service Center (Lok Mitra)	3
				9	Nearest Processing Unit ¹	62
				10	Nearest Bank Facilities	3
Lalit	3347	881	26.32			
Bhagva	17564	1320	07.51			
Total	20911	2201	10.52			

The Beneficiary Details

Item	SC	ST	OBC	Gen	Total	Female
Number	11	0	0	93	104	4
Land (ha)	NA	NA	NA	NA	13.48	NA

The main source of water in the cluster is a perennial source. The main source of water is connected to a 1 lakh liter capacity of reservoir tank which is further linked with 20,000-liter capacity tanks for each 2-ha parcel of lands for drip irrigation system. For better management of irrigation, a water user group association is registered under Society Act for operation and maintenance of irrigation infrastructure. For better returns for the produce a Community Horticulture Produce Marketing Association is also registered under HP Cooperative Act 1968 in the cluster.

The Details of Executive Members of CHPMA and Water User Associations

SN	Name of Member	Gender	Producer's Name	Relation with Producer	Position in the Executive	Phone No.
CHPMA -Executive						
1	Vijay kumar chandel	Male	Kanshi Ram Chandel	Son	Chairmen	8219418929
2	Prathama	Female	Narain Singh	Wife	Vice Chairmen	9418161937
3	Ramesh Chand Thakur	Male	Pohlo Ram	Son	Treasurer	8988678479
4	Basant Singh Verma	Male	Sunder Singh	Son	Secretary	9418016221
5	Lalita Devi	Female	Balbir Singh	Wife	Joint Secretary	9625018870
Water User Association						
1	Man singh	Male	Self	Self	President	7018038965
2	Ranjeet singh	Male	self	self	V. President	
3	Jai gopalrajan	Male	Self	Self	Secretary	9418038400
4	Tara chand thakur	Male	Self	Self	J.Secretary	9816950912
5	Amar singh	Male	Self	Self	Treasurer	9817758329
6	Nirmaladevi	Female	Hem Raj	Wife	Member	7870788115
7	Satishthakur	Male	Self	Self	Member	-

Financial Analysis

Capital Investment				
Sn	Item Description	Measurement	Unit Rate	Amount (in Rs)
1	Solar Fencing Work (Running Meter)	3307	1150	3803050
2	Field Preparation (Area in Ha)	13.48	254556	3431414.88
3	Irrigation Scheme for the Cluster	Lump-Sum	9186570	9186570
4	Drip Irrigation and Modular Tank	13.48	200468	2702308.64
5	Tools and Equipment (as per Annexure)			277389
6	Chemical Fertilizer (per Ha)	13.48	77092	1039200.16
7	Plantation	20911		1397814
				2,18,37,747

Year wise Cost of Operation (Rs in Lakh)

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Manpower (Farm Labor/Tech)	2.07	2.07	2.07	2.07	2.07
2	Electricity & Water	0.06	0.07	0.07	0.07	0.07
3	Cost of FYM	1.30	1.30	1.30	1.30	1.30
4	Soluble Potassium	1.30	1.34	1.36	1.36	1.36
5	Water Soluble Phosphorus	3.90	3.90	3.90	3.90	3.90
6	IPDM and growth hormones	3.90	2.84	1.68	0.99	0.59
7	Harvesting	1.30	1.30	1.30	1.30	1.30
8	Irrigation system maintenance	0.00	0.33	0.33	0.33	0.33
	Total	13.83	13.16	12.01	11.32	10.91

Income from Plantation

SN	Item	3rd Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Production per plant (in Kg)	6.00	10.00	15.00	20.00	20.00
2	Total Production of Guava in Kg	20082.0	33470.0	50205.0	66940.0	66940.0
3	Production of Pomegranate per Ha (Kg)	5,000	25,000	30,000	30,000	15000.0
4	Total Production of Pomegranate (8 ha)	40,000	2,00,000	2,40,000	2,40,000	1,20,000
5	Income from Guava Plant	602460	1004100	1506150	2008200	2008200
6	Income from Plant Pomegranate Plant	2000000	10000000	12000000	12000000	6000000
7	Total Income	26.02	110.04	135.06	140.08	80.08

Profit and Loss Statement

SN	Item	1st Year	5 th Year	10 th Year	15 th Year	20 th Year
1	Income from Operations	0.00	112.24	137.76	142.88	81.68
2	Total A	0.00	112.24	137.76	142.88	81.68
3	Cost of Operation as per Schedule	0.00	13.16	12.01	11.32	10.91
4	Total B	0.00	13.16	12.01	11.32	10.91
5	Profit from Operations (A-B)	0.00	99.08	125.76	131.56	70.77
6	Less Interest on Term Loan	7.68	13.31	8.76	4.21	0.00
7	Less Interest on Working Capital	0.00	0	0	0	0
8	Total Interest	7.68	13.31	8.76	4.21	0.00
9	Profit after Interest	-7.68	85.77	117.00	127.35	70.77
10	Less Depreciation	0.00	7.85	6.59	5.53	4.65
11	Net Profit After Depreciation	-7.68	77.92	110.41	121.82	66.12
12	Net Profit Before Income Tax	-7.68	77.92	110.40	121.82	66.12
13	Less Income Tax	0.00	15.17	0.00	0.00	0.00
14	Net Profit after Income Tax	-7.68	62.75	110.40	121.82	66.12
15	Cash Profit	-7.68	70.61	117.00	127.35	70.77
16	Less Dividend	0.00	4.71	8.28	9.14	4.96
17	Less Dividend Tax (@ 10%)	0.00	0.47	0.83	0.91	0.50
18	Retained Profit	-7.68	57.57	101.30	111.77	60.67
19	Reserve & Surplus	-7.68	34.11	518.69	1056.79	1508.01

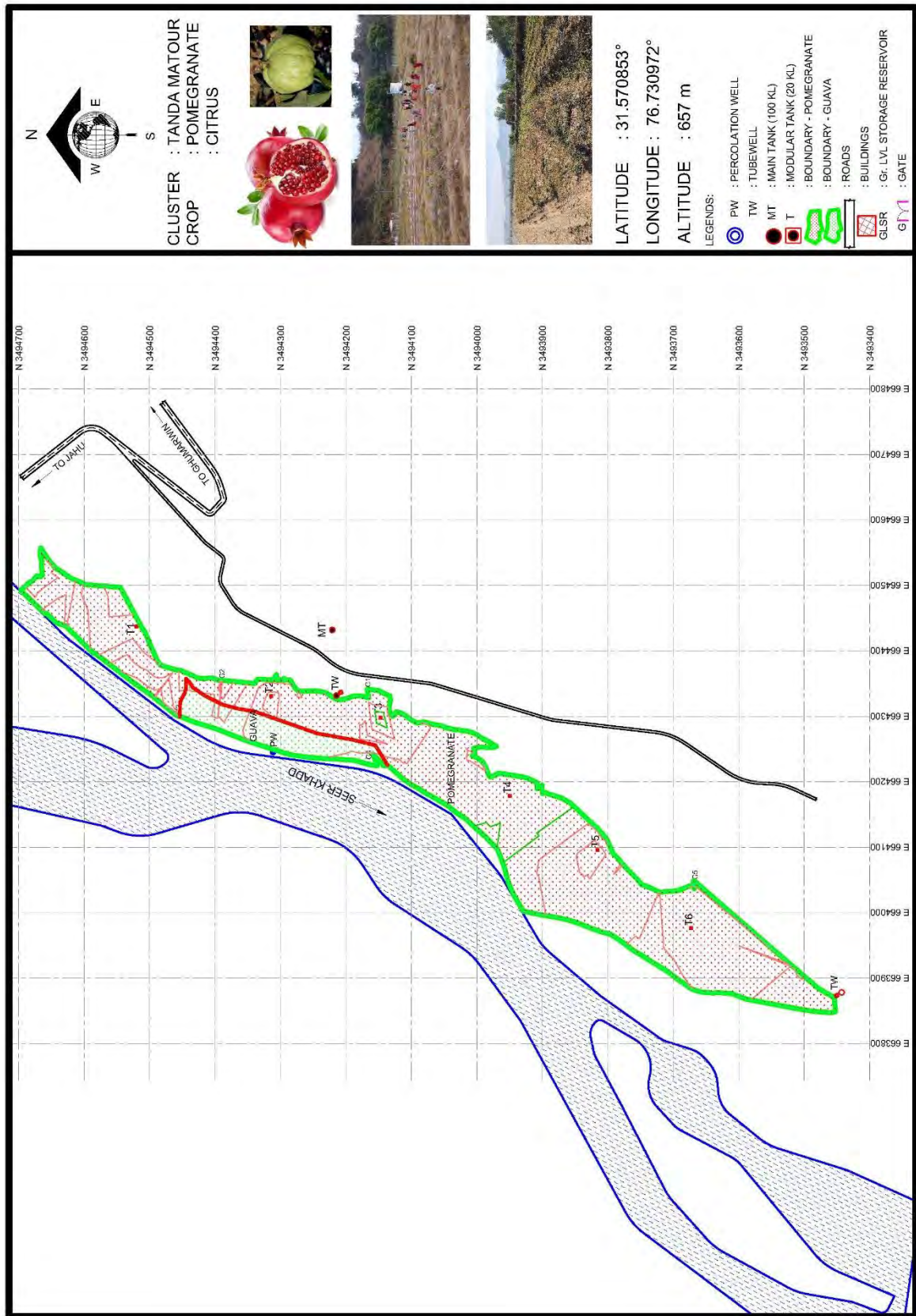
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The rate of interest for loan is assumed @ 6.5% per annual. The repayment started from the 5th year on ward in 60 equal installments. The wholesale average price of Guava assumed Rs 3000/- per Qtl and .Wholesale price of Pomegranate is Rs 5000/- per Qtl. The Financial result are as under: -

Financial Parameters of the Project		
Sn	Particulars	Value
1	Debt Equity Ratio	6.34
2	Debt Service Coverage Ratio	2.29
3	Pay Back Period (Years)	17.00
4	Break Even Point (Years)	4.00
5	Cash Break Even Point (%age)	20.05
6	IRR (in %age)	33.46%
	ROI (Return of Investment)	31.01



Picture Gallery

ADB Missions



Field Preparation work in HPSHIVA Clusters



Fencing of HPSHIVA Cluster Area



Project interventions in the field



Plantation Drive under HPSHIVA Project



Demonstration on Training/Pruning Practices



Training and Capacity Building of HPSHIVA Project Team



Community Mobilization and CHPMA Formation



Training & Capacity Building of Farmers



Women Participation in HPSHIVA Project Activities



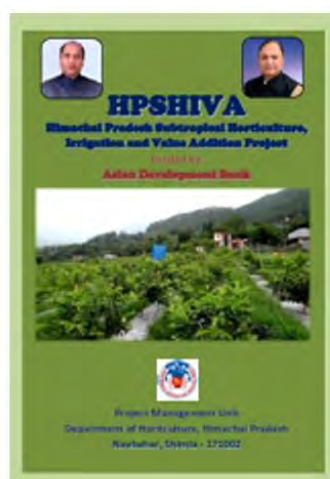
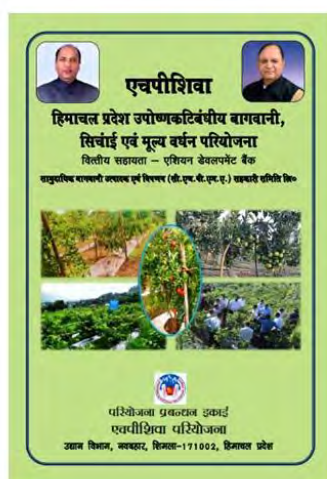
Field Interaction with CHPMA Farmers



Stakeholder Consultation Workshop at Ghumarwin, Bilaspur on 27.11.2021



Preparation of Information, Education & Communication (IEC) Material



ANNEXURE - 1

• G1 : Planting Material

The department issued tender for supply of planting material for four crops, details of which are given below:

Sr. No	Fruit Crop	Type of Planting Material	Rootstock Used	Quality Parameters			
				Height of Bud/ Graft union, in cms	Plant Girth, in cms	Plant Height, in cms	Others
1	Guava (<i>Psidium guajava</i>)	Layered/ Grafted		15 - 20	> 1.50	> 50	Plants should be raised in polytubes/polybag /containers on moderate to dwarf vigour rootstocks free from suckers having good tolerance to pests and diseases.
							Preference will be given to disease resistant rootstocks like <i>Friedrich sthalianum</i> or <i>P. Malle x P. guajava</i> etc.
							In case of layered plants root length should not be less than 15-20 cm and root numbers shall not be less than 20.
2	Litchi (<i>Litchi chinensis</i>)	Air Layered	–	–	> 1.25	>45	Plants should be raised in polytubes/ polybags/ containers with good tolerance to pests and diseases and free from suckers.
							The root length should not be less than 15-20 cm and root numbers shall not be less than 20.
3	Pomegranate (<i>Punica granatum</i>)	Tissue Culture / Rooted Cuttings/ Layered	-	-	>0.75	>30 for tissue culture plants	Plants should be raised in polytubes/ polybags /containers on moderate to dwarf vigour with good tolerance to pests and diseases and free from suckers. Plants should be free from any insect pest and disease like bacterial wilt, nematodes etc.
						>45	Tissue cultured plants, if available, will be preferred to avoid bacterial wilt.
						for other plants	In case of layered plants root length should not be less than 15-20 cm and root numbers shall not be less than 20.
4	Citrus -Sweet orange (<i>Citrus sinensis</i>)	Budded / Grafted		15 – 20	> 1.25	> 55	Plants should be raised in polytubes/ polybags / containers on moderate to dwarf vigour with good tolerance to pests and diseases and free from suckers. Details of rootstock should be mentioned.
							Preference will be given for plants budded / grafted on Rangpur Lime and Carrizo rootstocks which are resistant to biotic and abiotic stresses like <i>Phytophthora parasitica</i> , tristeza virus, nematodes, cold, drought etc.
							Root length should not be less than 15-20 cm and root numbers shall not be less than 20.

• G2 : Computer Software

Under this package, computer software was procured for GIS and Computer Aided Designing (CAD). Since these are proprietary products, single source procurement was done.

● G3 : Supply of Horticulture Input

Fertilisers and Pesticides with following specifications were procured:

S. No.	Item	Specifications	Desired Commodity Packaging
Fertilizers			
1	Urea	Should contain 46% Nitrogen	45 Kg bag
2	Single Super Phosphate	Should contain 16% P ₂ O ₅	50 Kg bag
3	Water Soluble phosphorus	Should contain phosphorus minimum 44% in granular/crystal formulation, water soluble	25 Kg bag
4	Water Soluble Potassium	Should contain minimum 50% potassium in granular/crystal formulation, water soluble	25 Kg bag
5	Micro Nutrients	Zn 2.0, Cu 0.5, Mn 0.5, B 1.0, Mo 0.2, Ca 1.0, all contents in %/wt. The product should be conforming to the standards laid down in FCO 1985 and amended from time to time, water soluble	1 L pack
Pesticides			
1	Neem Powder	1. Moisture - not more than 10% 2. pH - 4.5 to 6.5 3. Conductivity - Less than 4% 4. Nitrogen - More than 1.5% 5. Phosphorus - More than 0.15 % 6. Potash - More than 0.5% 7. Carbon - Minimum 20%	25 Kg bag
2	Copper Oxchloride (COC)	Should contain 50% a.i. copper oxchloride in wettable powder form	500 gm

● G4 : Supply of Farm Equipment

Farm equipment with following specifications were procured for the project activities.

S. No.	Item	Specifications	Unit
1	Power sprayer	Engine 2 stroke, output 12 liter/ min, pressure 5-40 bar, suction 13-26 liter/min., with brass metal pump, three piston, 2 -2.5 hp motor with 100mtr long hose, Min. 3 mtr suction hose and spray gun with 2 ft spray lance	Nos
2	Knapsack sprayer	Battery operated and manual (2 in 1) type, plastic body having 15-16 litre tank capacity	Nos
3	Power Weeder	Self-propelled walk behind power Weeder min 2 hp motor, power operated, blade dia 20-25cm, working width 25-30cm, cultivation depth 5-6 cm	Nos
4	pH meter	Pen type, digital, having range of measuring 0-14 ph. with +/-0.1pH accuracy, battery life 700-800 hrs	Nos
5	Electrical Conductivity (EC) meter	Pen type, digital, measuring range of 0 to 20 m S/cm with accuracy of +/-1% of range	Nos
6	Thermometer and hygrometer	Digital type for measurement of temperature and humidity	Nos
7	Soil moisture Tensiometer	Length 24", heavy walled butyrate tubing with screw cap, body tube dia 22mm gauge sealed in a stainless steel case/ thermoplastic rubber, replaceable ceramic tip.	Nos
8	Post hole digger	Manually operated which can dig up to 2 feet deep with 6 to 8" diameter	Nos
9	Secateurs	Revolving toughened steel handle, stainless steel blade, cutting performance up to 25mm dia., 56-60 HRC	Nos
10	Pruning saw	Manual Foldable saw with 6 to 8" blade, depth of teeth 6.5mm, hard chrome treated, carbon steel, polish finish	Nos
11	Hand hoe	6" long head with handle 18 to 20"	Nos
12	Spade	9"x12" head with 30" to 33" long handle	Nos
13	Garden rake	Hardened steel Rake head 18 to 20" , 12 tooth, Shaft length 48"-54"	Nos
14	Vermicompost bed / vermibed	UV stabilized, HDPE heat sealed, woven, foldable, 340 - 450 GSM size 12'x4'x2, IS 15907:2010	Nos
15	HDPE drum	Capacity 200 litre with lid, material HDPE, colour black/green, diameter 22", Height 33"	Nos
16	Basket	Material polypropylene, upper diameter minimum 440 mm, bottom diameter minimum 160mm, height minimum 214mm with inbuilt handle, colour blue/ green	Nos
17	Digital Electric Fence Tester	Should read RMS value of AC current, measure AC/DC voltage up to 220 volts	Nos
18	Digital Fault Meter	IS 13779; AC single phase, two wired solid state fully electronic energy meter, accuracy class 1.0, current rating 5-30amp with display	Nos
19	Vermicompost bed / Vermibed	UV stabilized, HDPE heat sealed, woven, foldable, 340 - 450 GSM size 12'x4'x2, IS 15907:2010	Nos
20	HDPE drum	Capacity 200 litre with lid, material HDPE, colour black/green, diameter 22", Height 33"	Nos

- G5 : Office Equipment**

Specification for various office equipment is given below:

Laptop A

S. No.	Item	Purchaser's Required Specifications
1	Operating System	Window10 or latest (Licenced)
2	Processor	Core i7 (4.7 GHz Processor) 10th Gen or Equivalent
3	Memory	8GB DDR4 (2x4GB) or more
4	Display & Graphics	14" FHD, Backlit, 1920x1080, multitouch enable, IPS
5	Ports	1 Superspeed USB type c, display port 1.4, 2 superspeed USB type a5Gbps, 1HDMI 2.0, 1AC smartpin, head phone/ mic combo
6	Hard Drive	HDD 512GB and 1TB SSD
7	Network Interface	Intel Wi-Fi6Ax201(2x2) & Bluetooth 5 combo
8	Software	MS Office 2019 or latest preferrably with key, pre installed (Licenced)
9	Keyboard	Backlit, English(India)
10	Webcam	Wide vision 720p HD with integrated dual array digital microphones
11	Battery	Li-ion Fast charging upto 8 hrs
12	Wireless connectivity	Wifi & bluetooth combo
13	Warranty	3 Year
		For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
14	Bag	bag to carry laptop
15	Installation Support and Demonstration of Commissioning	Required at Delivery Site/s

Laptop B

S. No.	Item	Purchaser's Required Specifications
1	Operating System	64-bit Microsoft Window10 or latest (Licenced)
2	Processor	11th Gen Core i5 (4.2 GHz Processor) or Equivalent
3	Memory	16GB DDR4 (2x8GB)
4	Display & Graphics	15.6" Full HD, Anti-Glare, Backlit, 1920x1080,NVIDIA GeForce MX450(2GB GDDR5)
5	Ports	1Superspeed USB type- C, 1-2 Superspeed USB Type-A; HDMI 2.0: 1 Headphone/ microphone Combo
6	Hard Drive	HDD 512GB and 1TB SSD
7	Network Interface	Intel Wi-Fi6Ax201(2x2) & Bluetooth 5 combo
8	Software	MS Office 2019 or latest preferrably with key, pre installed (Licensed)
9	Keyboard & Mouse	Backlit, English(India) with mouse track pad
10	Camera	Integrated HD Camera with Mic
11	Battery	Li-ion Fast charging upto 8 hrs
12	Warranty	3 Year
		For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
14	Bag	bag to carry laptop
15	Installation Support and Demonstration of Commissioning	Required at Delivery Site/s

Laptop C

S. No.	Item	Purchaser's Required Specifications
1	Operating System	64 -bit Microsoft Window10 or latest (Licensed)
2	Processor	11th Gen Core i5(4.2 GHz Processor) or Equivalent
3	Memory	8GB DDR4 Expandable upto 16 GB
4	Display & Graphics	15.6" Full HD, Antiglare, Backlit, 1920x1080
5	Ports	1Superspeed USB type- C, 1-2 Superspeed USB Type-A; HDMI 2.0; 1 Headphone/ microphone Combo
6	Hard drive	At least 512GB SSD
7	Network Interface	Intel Wi-Fi6Ax201(2x2) & Bluetooth 5 combo
8	Software	MS Office 2019 or latest preferably with key, pre installed (Licensed)
9	Keyboard & Mouse	Backlit, English(India) with mouse track pad
10	Camera	Integrated HD Camera with Mic
11	Battery	Li-ion Fast charging upto 8 hrs
12	Warranty	3 Year For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
14	Bag	bag to carry laptop
15	Installation Support and Demonstration of Commissioning	Required at Delivery Site/s

Desktops (All in One)

S. No.	Item	Purchaser's Required Specifications
1	Operating System	64 -bit Microsoft Window10 or latest (Licensed)
2	Processor	Core i5 10th Gen. or Higher , 2.0 GHz or Equivalent
3	Memory	8GB DDR4 Expandable upto 32 GB
4	Display & Graphics	23.8" with 1440x900 FHD resolution or higher with Intel Graphic integrated
5	Ports	1 Superspeed USB type a5Gbps, 1 Headphone/ microphone Combo, HDMI Port
6	Expansion Slot	2M.2(1 for SSD, 1 for WLAN)
7	Minimum 2M. 2Slots	1M.2 for Wi-Fi, 1M2 for PCIeSSD
8	Internal Bays	1x3.5 Bay, 1x2.5 Bay
9	External Bays	1x Slim ODD
10	Hard drive	512 GB SSD and 1TB HDD or more
11	Keyboard & Mouse	Wireless
12	Software	MS Office 2019 or latest preferably with key, pre installed (Lincensed)
13	Wireless	Wifi and bluetooth combo
14	Webcam	Camera with integrated dual array digital microphones
15	Warranty	3 years For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
16	Installation Support and Demonstration of Commissioning	Required at Delivery Site/s

UPS Hardware for Desktops

S.No	Item	Purchaser's Required Specifications
1	Capacity	600 VA Offline
2	Certifications	1) CE/Equivalent Certificate. 2) Should be EU RoHS / WEEE/ ISO 14001 Compliant
3	Input Voltage Range	160 V AC - 270V AC
4	Nominal Output Voltage	220/230/240 VAC +/- 3%
5	Output Voltage regulation	230+/- 3 % (on Battery)
6	Output Load capacity	600 VA (Minimum 20 Minutes battery backup)
7	Overload capacity	At 120% load minimum 1 Min
8	Storage/Operating Temp.	0 – 45 °C
9	Short Circuit	Electronic current limit on inverter mode/ MCB protection on Mains mode
10	Surge / Spikes	Through Line Filters
11	DC under voltage	Yes
12	Overload	Yes
13	ALARMS	Mains failure, Fault conditions, Low battery, Overload
14	Warranty	Minimum 2 year For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
15	Installation Support and Demonstration of Commissioning	Required at Delivery Site/s

Printer Scanner Copier (Black & White)

S. No.	Item	Purchaser's Required Specifications
1	Product Type	Laser Print, Scan, Copy- Black & White
2	Print Speed & Time	upto 20 pages per minute Black(A4), 7.6 Sec
3	Memory	64MB
4	Duty Cycle	Upto 20,000 Pages under normal busy office environment
5	Automatic paper Sensor	Yes
6	Processor speed	500 MHz
7	Top Key feature	Scan to PDF, ID copy, 150 sheet Input tray, LCD control panel
8	Yield	2500 pages
9	Connectivity	Hi seed USB2.0 Built in Wi-Fi802.11
10	Scan resolution & Type	Flat Bed, 600ppi
11	Media size custom	Media sizes supported:A6,A5, A4, Letter ,4.13x5.85 to 8.5x11.69"
12	Print quality	Min. 600x600x2dpi
13	Copier specification	Upto 99 copies,25-400%, Light/dark option
14	System requirement	Window OS, Apple OS, Mac OS
15	Warranty	Minimum 1 year For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
16	Installation Support and Demonstration of Commissioning	Required at Delivery Site/s

Printer Scanner Copier (Colour)

S. No.	Item	Purchaser's Required Specifications
1	Product Type	Inkjet Color Print, Scan, Copy, ADF & Wireless
2	Print speed & Time	11-5ppm/Black- Color(A4,ISO), 76 Sec., 14-22cpm/Color-Black (Draft) & 2-10cpm/ Color-Black(ISO)
3	Memory	256MB
4	Duty Cycle	Upto 1000 Pages
5	Processor speed	1.2 GHz
6	Top Key feature	Scan to PDF, 35 pages ADF, 2.2" Touch screen
7	Yield	6000 Black, 8000 Color Pages
8	Connectivity	Dual Band Wi-Fi
9	Scan resolution	1200ppi
10	Media size custom	7.62x10.16 to 21.59x35.56
11	Print quality	Min. 1200x1200dpi
12	Copier specification	Upto 99 copies, 25-400%
13	System requirement	Window OS, Mac OS
14	Warranty	Minimum 1 year
		For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
15	Installation Support and Demonstration of Commissioning	Required at Delivery Site/s

Tablet

S. No.	Item	Purchaser's Required Specifications
1	Display	10 inch or above TFT
2	Camera	8MP Main, 5 MP Front, FHD(1920x1080)
	SIM	Yes (Micro/ Nano)
3	Processor	Octacore 2GHz, 1.8GHz
4	RAM	3GB or more
5	ROM	32GB
6	External Memory Support	Micro SD upto 1TB
7	Operating system	Android 9.0 or preferably latest version
8	Connectivity	USB 2.0, GPS, 4G, 802.11a/b/g/n/ac 2.4G+5GHz, Wi-Fi direct, Bluetooth 5.0
9	Sensors	Accelerometer, Gyro sensor, Geomagnetic, Hall, Light sensor
10	Battery	Min. 7000mAh
11	Colour	Gold/Silver/Black/ Grey
12	Warranty	Minimum 1 year
		For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
13	Installation Support and Demonstration of Commissioning	Required at Delivery Site/s

Hand Held GPS Devices

S. No.	Purchaser's Required Specifications
1	High sensitivity GPS, GLONASS, other receiver with quad helix antenna
2	8MP or more autofocus camera with automatic geotagging
3	Wireless connectivity via bluetooth
4	SIM Module for data transfer
5	Sunlight readable color screen
6	Custom attribute collection capabilities
7	Supports computer based PC software for data processing
8	Rechargeable NiMH pack or Lithium battery pack
9	Hi speed USB & NMEA 0183 compatible interface
10	Memory 8GB or more- micro SD support
11	waypoint/location 5000 or more
12	Custom map & satellite imagery support
13	High sensitivity GPS, GLONASS, other receiver with quad helix antenna
	Minimum 1 year
14	For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
15	Installation Support and Demonstration of Commissioning required at deliver site/s

Photostat Machine

S.No	Item	Purchaser's Required Specifications
1	Warm-Up Time (Time from device power on, until copy ready)	Approximately 13s
2	Recovery from sleep mode	Approximately 4.3s
3	First Copy Time (A4)	Approximately 7.4s
4	Memory	512 MB
5	Power Supply	220 to 240 V AC, 50/60 Hz, 2.7 A
6	Power Consumption	
7	Maximum Power Consumption:	1.5 kWh
8	When the machine is in the Sleep mode:	2W
9	Toner Yield (A4, 6% coverage)	10000 sheets (A4, 6% coverage) or more
10	Drum Yield	65 000 sheets or more
11	Copy/Print Speed A4	22 ppm (Minimum)
12	Copy/Print Speed A3	11 ppm (Minimum)
13	Print Resolution	600 x 600 dpi
14	Page Description Language(s)	UFR II LT (Standard), PCL6 (Optional)
15	Print OS Compatibility	Windows 10/8.1/7, Windows Server 2008/2008 R2/2012/2012 R2/2016, Mac OS X 10.9.5
16	Interface	
17	Network	Ethernet 100Base-Tx/10Base-T (IEEE 802.3 compliant), WLAN IEEE 802.11b/g/n
18	Others (Local Print/Scan)	USB2.0 x 1
19	Network Protocol	TCP/IP (IPv4/IPv6), USB
20		Frame type: Ethernet II
		Print applications: LPD/Raw/IPP/IPPS/WSD/Mopria /Google Cloud Print/AirPrint/Windows10 Mobile Print
21	Copy Resolution	600 x 600 dpi
22	Multiple Copies/Prints	999 copies
23	Magnification	25% -400% (1% increment)
24	Destination	Scan to Email (SMTP), network folders (SMB)
25	Scan Speed (Simplex, A4, 200dpi)	BW: 13 sheets/min (Minimum)
		Colour: 6 sheets/min (Minimum)
27	SEND Resolution	BW/Colour 300 x 300 dpi
28	SEND File Format	PDF/Compact PDF/JPEG/ TIFF
29	Destination	MF Scan Utility, application compatible with TWAIN/WIA
30	Supported Protocol	TCP/IP, USB
31	Scan Speed (Simplex, A4, 300 dpi)	BW: 23 sheets/min (Minimum)
		Colour: 12 sheets/min (Minimum)
32	Scan Resolution	BW: 600 x 600 dpi
		CL: 300 x 600 dpi
33	Scan File Format	TIFF/JPEG/PNG/PDF(Compact, Searchable)/PDF(Divided into Single-Page Files)
34	Scan OS Compatibility	Windows 10/8.1/7, Windows Server2008/2008 R2/2012/2012 R2/2016, Mac OS X 10.9.5
35	Network	Standard: IP/Mac Address Filtering, TLS Encrypted Communication, SNMP V3.0, IEEE 802.1X, IPv6, SMTP Authentication, POP Authentication before SMTP
	Paper Sizes	
36	Cassette 1	A3,B4,A4R,A4,B5,B5R,A5R,India-LGL, FOOLSCAP
37	Cassette 2	A3,B4,A4R,A4,A5,B5,B5R
38	Multi Purpose Tray	A3,B4,A4R,A4,B5,B5R,A5,A5R,India-LGL,
39		FOOLSCAP, Envelope (COM 10, Monarch, ISO-C5, DL)
	Paper Input Capacity (Standard)	
40	Cassette 1	250 sheets (80g/m ²)
41	Cassette 2 (Optional)	250 sheets (80g/m ²)
42	Multi Purpose Tray	80 sheets (80g/m ²)
43	Warranty	3 year For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
	Installation Support and Demonstration of Commissioning	Required at Delivery Site/s

Room based End Point Video Conference System

S. No.	Description	Specification Parameter
1	Package	Full HD 1080p60 PTZ Camera, Codec, Microphone Array, Cables and Wireless Remote Control/Touch Panel
2	Video Standards and Resolutions	It should support H.323 & SIP standards for communications. It should support interoperability and bandwidth saving using video compression H.261, H.263, H.264 AVC, H.264 SVC, H.264 High Profile/H.265 It should support 1080p 60 fps, 1080p 30 fps, 720p 60 fps, 720p 30fps & 4CIF.
3	Content Standards and Resolutions	It should support content sharing using standard based H.239 & BFCP. It should also support audio from PC used for content sharing. It should transmit both people and content both simultaneously to the far end location at 1080p 30fps
4	Audio Standards and Features	It should support G.711, G.728, G.729A, G.722, G.722.1, G.722.1 Annex C, G.719, AAC-LD or better It should support 20kHz or better bandwidth with crystal clear audio and stereo sound. Automatic Gain Control and Automatic Noise Suppression Keyboard noise reduction and instant adaptation echo cancellation
5	Video and Audio Inputs	1 x HDMI/HDCI input for connecting main FHD camera 1 x HDMI/DVI input to share FHD content from PC/Laptop/Document camera. 1 x VGA input for content sharing through PC/Laptop alongwith audio. 1 x Microphone Input or more with support for minimum 4 mics. The bidder needs to quote 1 microphone with 360 degree coverage from day one with mute/unmute button on the microphone. 1 x RCA/3.5mm stereo line-in
6	Video and Audio Outputs	2 x HDMI output for connecting primary & secondary FHD display. 1 x RCA/3.5 mm stereo line-out
7	Other Interfaces	1 x 10/100/1000 Ethernet port 2 x USB for software upgrade and connecting external devices 1 x RS-232 interface to integrate the system with external room controller
8	Camera	1/2.33" CMOS Sensor or better The camera should support minimum 10x optical zoom, PAN +/-100°, Tilt +20/-30° & minimum 10 camera presets. The camera system should be future upgradable (via additional system) for advanced voice & face-recognition technology such that it automatically scans the room and seamlessly commands the main camera to appropriately frame the users/speaker during a call without any manual intervention. Video Conference Camera and Codec should be controlled using same remote control/touch panel.
9	Network Features	H.323 and SIP bandwidth support from 64 kbps to 6 Mbps or more Must support IPv4 and IPv6 from day one on both H.323 and SIP. Auto Gatekeeper Discovery, Auto SIP Registrar Discovery, IP Precedence, Diffserv & QoS with support for H.323 based lost packet recovery.
10	Multisite Feature	It should support inbuilt multiparty feature with support for 1+5 sites at HD resolution with all sites encryption in future via adding software license.
11	Security	Media Encryption (H.323, SIP): AES-128, AES-256 Authenticated access to admin menus, web interface and telnet API Local account password policy configuration Local and LDAP Directory support
12	Other features	H.460.18, H.460.19, SSL, TLS, HTTP, HTTPS, H.235.6 support
13	Compatibility	End Point should be compatible and configurable with the polycom real presence clariti MCU
14	Others	The proposed system must support PAL/equivalent with PTZ camera. The codec must be based on ITU standards & hardware based. No software based solution will be accepted. All components of the VC system like Codec, Camera, Microphones and Wireless Remote Control/Touch Control Panel should be from the same OEM.
15	Warranty	The complete solution should be from the same OEM with minimum 1 year of warranty For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
16	Installation Support and Demonstration of Commissioning	Required at Delivery Site/s

TV Screen for Video Conference System

S.No	Parameter	Minimum Specification
1	Size	55" Backlit Display or higher
2	Resolution	4K UHD or higher
3	Brightness	500cd/m ³
4	Response time	8 ms or less
5	Connectivity	HDMI in, VGA in, USB 2.0
6	View Angle	176 Degree(H) & 176 Degree (V)
7	Audio	20 Watts
8	Operating Voltage	AC 110 ~ 220V, 50/60 HZ
9	Accessories	Power Cord, IR Remote Control (With battery), Wall mount and Stand kit
10	Warranty	3 Years Comprehensive For Warranty purposes, the Supplier is responsible for collection and delivery of the equipment from the Purchaser's premises
11	Installation Support and Demonstration of Commissioning	Required at Delivery Site/s

• G6 : Hiring of Vehicles

Following were the Specifications/ Requirements of the vehicle to be hired

S. No.	Name of vehicle	Seating capacity	Minimum feature requirement
1	Innova Crysta or equivalent	6+1 seaters (Captain seats)	AC, heater, Power Windows, adequate legroom, all front facing seats
2	Scorpio or equivalent	6+1 seaters (Captain seats)	AC, heater, Power Windows, adequate legroom, all front facing seats, 4 wheel drive
3	Bolero or equivalent	6+1 seater	AC, heater, Power Windows, adequate legroom, all front facing seats, 4 wheel drive

- **CW01 to CW04 : Irrigation Scheme Mandi / Hamirpur / Bilaspur / Kangra**

The package CW01 to CW 04 deals with execution of civil works for Providing Irrigation Facility under HP SHIVA PRF Project with following details:

Specifications

Item No.	Particulars
SECTION – I	
1 to 1.4.5	CIVIL WORKS AND PUMPS :- Design Submission & Design standards, Design life, Design loading, Dead loads, Live Loads, Wind load, Earth quake load, Dynamic load.
1.5 to 1.10	Joints, Design Conditions for Underground or Partly Underground Liquid Retaining Structures, Foundations, Design requirements, Material in General, Samples and Tests of materials
1.11	Buildings and Structures
2.0 to 2.7	Earth work, Applicable codes, fill back filing, site grading, plinth fillings, sand filling, dewatering, Rain water drainage.
3 to 3.5	Concrete, applicable codes for materials, testing , storage, concrete mix design, concrete testing, equipments, codes of practice, construction safety, cement, aggregates, water, reinforcement, admixture, wastage, samples and tests, storage of materials, concrete grades, Design mix, Batching and mixing of concrete, nominal mix.
3.6 to 3.14	Form work, reinforcement workman ship, mass concrete, curing, construction joints & keys, foundation bedding, finishes, liquid retaining structures, testing for leakage.
4 to 5	Structural steel work, applicable codes & specifications, painting of steel work, workmanship, anchor bolts & foundations, painting.
6 to 6.1	Buildings, applicable codes, specifications.
6.2 to 6.3.2	Brick work, materials, workmanship, Un-coursed Random Rubble Masonry, materials and specifications.
6.4 to 6.23.2	Coursed Rubble masonry, materials & workman ship, Concrete block Masonry, materials, work-man ship, DPC, woodwork, steel work, aluminium work, steel rolling shutters, rubble sub-base, terrazzo tile work, chequered tiles, in-situ terrazzo work, Shahabad / Tandur/ Kota Stone Slab Work, CARBORUNDUM / Glazed tile work, C. Concrete floor topping, Granolithic concrete floor , floor hardener topping, floor hardner topping, PVC sheet/Tile flooring, Acid resisting brick/ tile work, Epoxy lining work,
6.24 to 6.34.2	Water proofing, modified bituminous membrane, Water proofing of Roofs/ Terraces, Rainwater Down Pipes, cement plastering work, cement pointing, water proofing admixtures, painting of Concrete/Masonry/Plastered surfaces, colour washing, oil bound painting, painting and polishing, painting on steel work, ceiling, fibre glasses, POP, Timber/Metal frame work, Fire stopping etc.
7 to 7.7.6	RCC collection tank, Main Balancing Reservoir, storage tank, Applicable IS code, General specifications , foundations, requirement of auxiliary works.
8 to 8.17	RCC elevated service reservoir, general specifications, structural concrete, Mix design, slump test, compaction of concrete, initial and final curing, measurement,
9 to 9.2	Intake RCC structures, Site selection, design criteria,

10 to 10.10	Water Transmission mains, Design of pipe lines, transient analysis, transmission mains appurtenance.
11 to 11.3	Water distribution system, G/mains, conveyance mains, water supply appurtenance,
12 to 12.14	Horizontal split casing centrifugal pumps, applicable codes, specific requirement, general requirement, construction features, specifications of pump etc.
13 to 13.9.2	Drive motors for HSCF pump, design requirement, performance and characteristics, Type of Tests,
14 to 15.9	Submerged centrifugal pumps, submerged VT pumps, design features, Insulations, Auto coupling, Drive motors submerged pumps, motor cooling, protection, cables, shaft & bearings, materials of construction, Type of tests
16 to 17.4	Horizontal mono submersible pump set, General, brief specifications, materials of construction, specific requirement.
18 to 18.6	Submersible Dredging Pump with All Accessories, pump design, agitator, shaft and bearing design, general recommendation, ,
19 to 21.5	Submersible dredging pump for cleaning jack / intake well, Vertical pump for desilting, applicable codes & standards, Design features, Handling, marking, induction motor, codes & standards, driving equipments, performance ,insulation, temperature rise, construction features, motor cooling, protection, accessories, table showing various items to be provided by vendors, painting, Table data sheet, Tests and inspections, HDPE pipes & specifications.
	SECTION-II VALVES
1 to 8.1	General , applicable codes, types of valves, materials of construction, jointing material, ball, orifice, valve flanges, inspection and testing,
9 to 10.3	Zero velocity valves (if applicable), construction materials, Dim tolerance, material of construction for principal parts, inspection and testing, Air cushion valves for surge protection (if applicable), tests and method of measurement.
	SECTION-III
1 to 1.9	Pipes, pipe specials, accessories, scope, specifications, laying of pipes, MS flanges, MS specials, jointing materials, expansion bellows, materials of construction etc.
	SECTION-IV Miscellaneous
1 to 3.1	Electrically Operated Overhead Travelling Crane (If Applicable), Design, Steel, Brakes, Bearings, coupling, operation, power, crab, hoist, rope drum, bottom block, limit switch, Wheels, Bridge Girders, Trolley Track, End Stoppers For Cross Travel Trolley, Platform, M S chequered plate / anti-skid plate, End Carriages, Long Travel Mechanism, Paintings,HOT Crane, Scope, Codes And Standards: Design Requirements: Features Of Construction: Gears, Bearings, Rotating Shafts, Lubrication, Wheel: Hooks: Brakes, Tests and Test Certificates, Accessories to be Provided with E.O.T. /H.O.T. Crane, Information to be Provided After the Contract Award , Manually Operated Chain Pulley Block, General Requirements & Specification.
4 to 6	Sluice Gate Design Requirement and Construction Features, Frame, Seating Faces , Wedging Devices, Lifting Mechanism, Wall Thimbles, Lifting Lugs, Flush bottom seal Material of Construction, Specific requirement, Electric Actuator - If Applicable standard feature for valve actuators, Reversing Contactor starters for valve Actuators, Hydraulic Actuator - If Applicable, butterfly valve actuator, hydraulically operated mechanism , The hydraulic system

- **CW6 : Installation of water storage tank**

Drip irrigation systems and modular water storage tanks were installed in 17 sub project sites in 4 districts. Items wise detail of specifications w.r.t. drip irrigation system and modular water storage tanks are elaborated below:

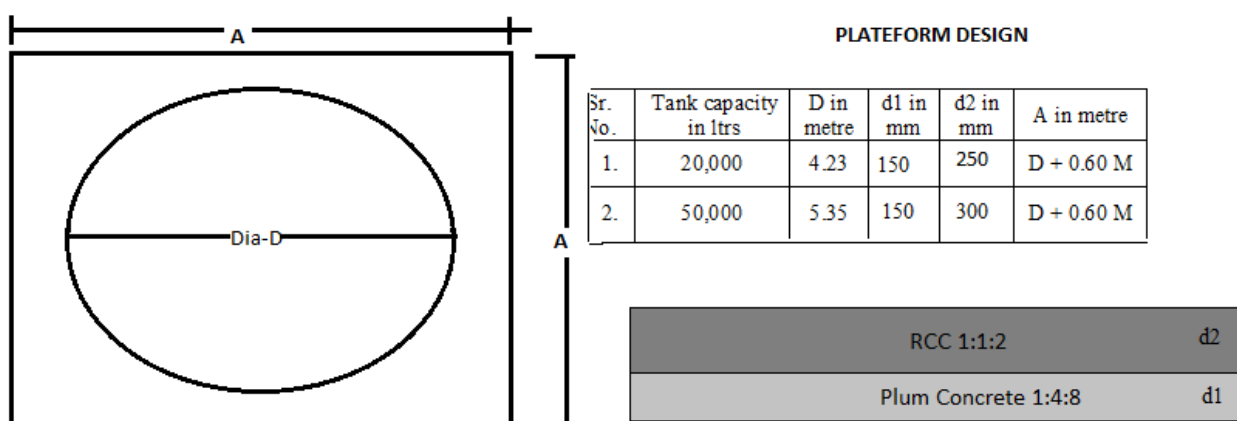
Specifications for Lot-I
Lot-I: Modular Tank Specifications:

Sr. No.	Item / Particulars	Specifications
A	Basic Details	
	Type	High Tensile Steel Sheet
	Standard	ISO standards / AWWA-D103 / AS 2304-2011
	Wall Sheet tensile strength	550 MPA
	Design Life	Minimum 25 years with anti-algal property
	Temperature range	-10°C to 50°C
	Storage capacities	20KL, 50KL
B	Tank Wall	
	Shape	Circular
	Wind Load Bearing of Empty Tank	80km per minute
	MOC of Tank Sheets	High Tensile Steel Sheet
	Composition of Coating	High tensile strength over 550MPA of steel sheet, zinc and aluminium alloy
	Coating thickness	0.20 mm
	Colour of Sheets	Cream/silver/white Colour
	Thickness of wall sheets	BMT 1.00mm and TCT 1.20mm for single sheet
	Bottom Shell	Based on Capacity: Between base and liner is a Geo Textile/ polypropylene (Non-woven).
	Middle Shell	Based on Capacity
	Top Shell	Based on Capacity
	Sheet Dimensions (Wall & roof)	Based on capacity:
	Sheet Corrugation	corrugated
C	Roof Sheet	
	MOC of Roof Sheet	Corrugated sheet with Roof Trusses High tensile mild steel 5mm thickness tube sections
	Thickness of Roof Sheet	0.65mm
	Load Bearing Capacity of Roof	300kg/Sq.m
	Roof Sheet tensile strength	550MPA
	Colour of Sheets	Cream/silver/white Colour

D	Liner	
	Standards	ISO standards / AS4020 or NSF61
	MOC of Liner	Engineered Plastic/ PVC
	Thickness of liner	0.5 to 0.75mm
	Liner Tear strength	300(N)
	Breaking Strength	1380-1500 (N/50mm)
	pH Range	4 to 11
	Water Proofing Test	Air Test and Spark Test
	Methods adopted for liner	Cytotoxic Activity of Water Extract
	Liner Life	Minimum 25 years
	Temperature Range	-10°C to 50°C
	Bottom protection of liner	Geo Textile/ polypropylene (Non-woven)
E	Tank Accessories	
	Ladder – Outside	Caged Ladder with top of Lockable manhole with working Platform with aluminium handrail for safety purpose
	Internal Ladder	HDG monkey ladder provided with a safety cage.
	Level Indicator	Floating ball mechanical type with level points outside the tank to measure water level. ▽
	Nut and bolts	HDG galvanized, 10.9 mm grade, temper proof plastic caps to avoid rust.
	Intermediate Tank Bracing /Reinforcement	3MM thickness channel at every circumferential Joint from Top to Bottom
	Designing, foundation and installation	Unit based (as per capacity)

Drawings for Lot-I

An indicative drawing for the foundation of modular water storage tank is mentioned below:-



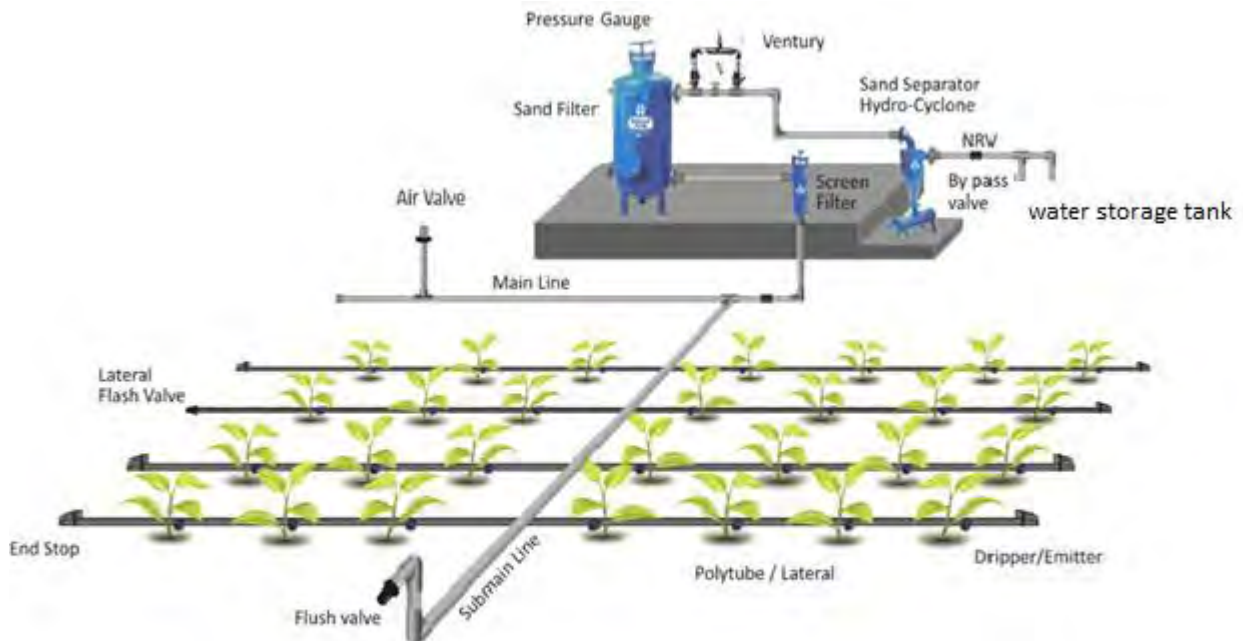
Specifications for Lot-II

Lot-II: Drip irrigation system specifications

S. No.	Item	Size	Unit
1	Screen filter	20/25 CuM/hr as per IS specification	Nos.
2	Sand filter IS:14606	20/25 CuM/hr as per IS specification	Nos.
3	Fertigation tank with assembly	30L as per IS specification	Nos.
4	Ventury and manifold	2"	No.
5	Pipes		
a	Main and pipe HDPE	90,75,63,50mm-4kg/cm ²	Mtr.
b	Sub main pipe HDPE	75,63,50,40mm-4kg/cm ²	Mtr.
c	Lateral LLDP	12mm-2.5 kg/cm ²	Mtr.
d	Drippers (Online, PC)	4 LPH	Nos.
6	Fitting and accessories		
a	Air release valve	1"	No.
b	Control valve	90,75,63,50mm	Nos.
c	Non- return valve	1.5",2"	Nos.
d	Throttle valve	1.5",2"	Nos.
e	Flush valve	63,50,40mm	Nos.
f	Pressure gauge		Nos.
g	Bye-pass assembly	1.5",2"	Nos.
h	Fittings, accessories etc.	5%	
7	Water pump with electric motor	2-3hp	No.
8	Survey, planning, designing and installation including trench work for mains and sub-mains	Per Ha.	Lump sum

Drawings for Lot-II

An indicative drawing for drip irrigation system is mentioned below:-



• CW7 : Field Preparation and Land Levelling

Invitation for Bids was issued for **Procurement of Field preparation including Layout Planning, Land Levelling, Pit Digging, Plastic Mulch Supply.**

Specifications

1. Field preparation

a. Layout of the planting plan

Planting plan to be laid out on the specified site under square or rectangular system of planting with appropriate linearity. Position of the plant is to be specified on ground specifically at i) point where plant to be planted and ii) at the mid of the rows on two sides (These corresponding two points may also be fixed with the help of a planting board), with the help of wooden pegs of height 60cm and bearing different color code (Red color paint tag on pegs indicating the plant position and green color paint tag for corresponding points of the plant at mid of the row). For maintaining the linearity of the planting rows on both axis suitable surveying equipment should be used. Orientation of the rows perpendicular to the slope, preferably North to South, if feasible. Under undulating situations, the deviation in dimensions to a level of 1% is acceptable, in no case the overall appearance of the rows on both axes should be tarnished. The detailed specification of planting plans for citrus, guava, pomegranate and litchi with respect to each site is given in the table below.

b. Land development

- I. Land levelling and terracing:- Removal of bushes, bunds and stubbles supplemented by levelling, smoothing and shaping the field surface with minimal earth movement to provide a slope back towards the hill (upto 2%)

which supports effective water drainage and prevent soil erosion. The Sub projects wise details are given in the table

- II. Dressing cum bed making:- width 1.20m and height 0.25m above natural ground level by way of excavating the top orchard soil along the pits in the planting row, banking, breaking clods, ramming and dressing ground for the purpose of making raised bed along the plant rows. Removal of rubbish and surplus earth, if any, with all leads and lifts. The Sub projects wise details are given in the table below.

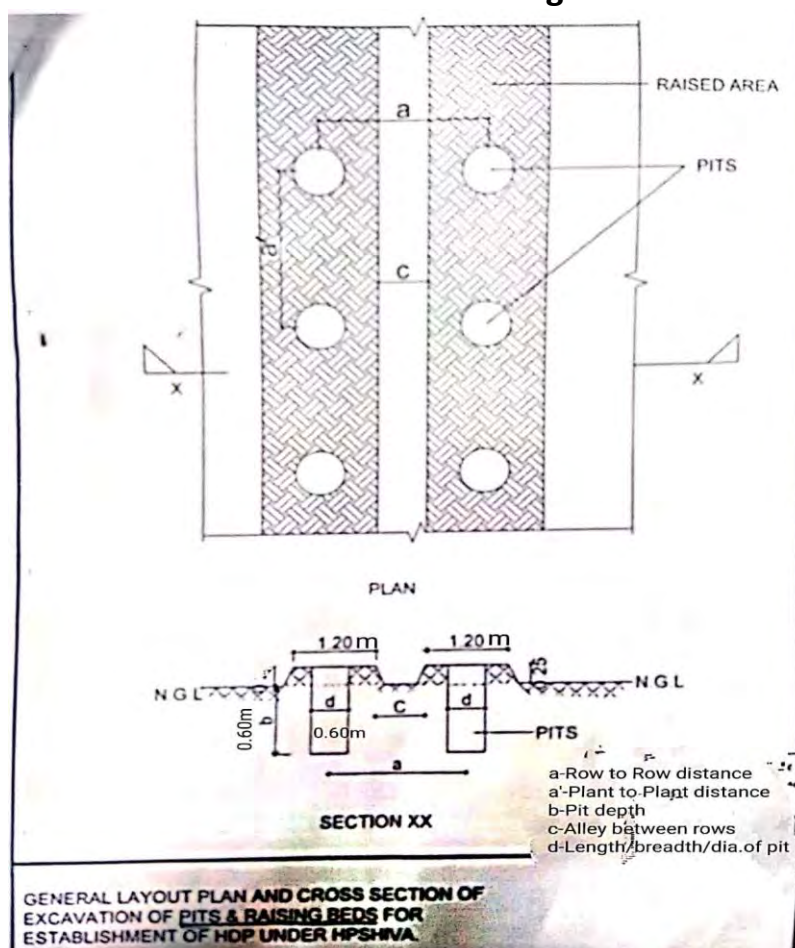
c. **Pit digging**

Digging of pits at the planting site having ordinary soil type as per dimensions of 0.60m x 0.60m x 0.60m. The Sub projects wise requirements are given in the table below.

d. **Plastic mulch supply**

The mulch sheet should be of width 2.0 meter wide, 100 micron thick and 90-100 gsm, with a life of at least five years. Sheet color can be silver on black or white on black and to be supplied to 17 cluster sites as per details given in the table below.

Drawings



- CW8 : Animal proof fencing and installation**

Specifications

Animal Proof fencing is an interlink wire with solar powered fencing system. The description of the item wise specifications is mentioned below:-

Sr. No.	Description of Items	Unit
1	Clearing of area 1 meter wide strip on the periphery of subproject selected sites including uprooting of rank vegetation, grass, brush wood, saplings etc.	Sqm
2	Energizer conforming to BIS 302-2-76 Standard of safety with built in alarm: Input Voltage: 12V DC, Input Current: 500MA, Output Voltage: 6.0KV -10.0 KV, Pulse Interval: 1.20second, Pulse Duration: 0.3Milli Second, Output energy: 2.50 Joules.	No's
3	Solar Panel post of 3.00 mtrs high , with PV module-100Wp with stand , housing box (Confirm to IP66 specification) equipped with solar panel M.N.R.E approved &12 volt 100 AH battery Solar Tubular type with charge controller (Exide, Sukom or equivalent), digital voltmeter, Cut out switch, Xenon flash, Neon tester, Hooter-118DB & lighting diverter system(electronic-V-shape) complete in all respect .	No's
4	Corner posts - GI, 50mm Round Pipe (medium Class) of Indian Standard, Covered from Top (Top Cap) with two angle for anchorage (at bottom) of ISA 35 x 35 x 5 mm 6 inches each., 2.80m Length with PP Insulator riveting. Including Gates (complete frame)	No's
5	Support Posts - GI, Round Pipe-32mm Diameter (medium Class) of Indian Standard, with two angle for anchorage (at bottom) of ISA 35 x 35 x 5 mm 6 inches each. 2.80m length with PP Insulator riveting. Must include brackets & fasteners for necessary connections complete in all respect. Two on corner posts , or as required for lateral supports.	No's
6	Intermediate posts - GI, 40mm Round Pipe (medium Class) of Indian Standard, Covered from Top (Top Cap) with two angle for anchorage (at bottom) of ISA 35 x 35 x 5 mm 6 inches each. , 2.50m Length with PP Insulator riveting.	No's
7	Excavation in earth work and disposal of all excavated earth upto a lead of 20 meter and lift upto 1.5 meter disposed earth to be levelled and neatly dressed in p.j.w 50% each Posts must be grouted in P.C.C. in 1:2:4 cement sand & stone ballast. 20mm nominal size of aggregates. 1).For corner Posts 0.45x0.45x0.70 size Total Qty= 0.14x35=4.90cum 2). For Intermediate posts & Support posts 0.45x0.45x0.45mm Total Qty= 0.091x380=34.58 cum Grand Total = +36.4 = 43.40 Cum	Cum
8	Providing High tensile(HT) wire- ACSR Conductor wire, ISI marked, Coated with Zinc+ Aluminium, 2.59 mm (12 gauge), TATA / Equivalent reputed make-05 No's through each post supported through Polypropylene(PP) insulators on each post.1000*5=5000+5% extra	meter
a	PP Reel Insulator (UV Stabilized) with riveting 5 for every post	No's

समझौता ज्ञापन

हिमाचल प्रदेश सरकार
उद्यान विभाग
एवं
लाभार्थी किसान

हिमाचल प्रदेश उपोष्णकटिबंधीय बागवानी, सिंचाई और मूल्य संवर्धन परियोजना
(एचपीशिवा)

Himachal Pradesh Subtropical Horticulture, Irrigation and Value Addition Project (HPSHIVA)

I. परिचय और सामान्य निर्देश

1. यह समझौता ज्ञापन हिमाचल प्रदेश राज्य सरकार के उद्यान विभाग, हिमाचल प्रदेश (Department of Horticulture) द्वारा संचालित हिमाचल प्रदेश उपोष्णकटिबंधीय बागवानी, सिंचाई और मूल्य संवर्धन परियोजना (HPSHIVA) के लाभार्थी किसानों के संयुक्त हितों को औपचारिक रूप से मान्यता देता है। इसका उद्देश्य हिमाचल प्रदेश में सिंचित, उच्च घनत्व उपोष्णकटिबंधीय बागवानी का सतत विकास करना है। यह समझौता ज्ञापन तब से प्रभावी होगा जब लाभार्थी अपनी भूमि पर एचपीशिवा परियोजना उपोष्णकटिबंधीय बागवानी को लागू करने के लिए सहमत होते हैं और परियोजना की अवधि के बाद समाप्त हो जाएगा या उस समय से पहले लिखित रूप में सभी पक्षों द्वारा बढ़ाया या समाप्त नहीं किया जाता है।
2. इस समझौता ज्ञापन का उद्देश्य उद्यान विभाग और लाभार्थियों के बीच स्पष्ट और मजबूत समन्वय और सहयोग बनाना है ताकि हिमाचल प्रदेश में एक जलवायु अनुकूल उपोष्णकटिबंधीय बागवानी उत्पादन क्षेत्र स्थापित किया जा सके। इसमें फलों के उत्पादन और उत्पादकता में वृद्धि और विपणन में सुधार के माध्यम से कृषि घरेलू आय में सुधार एवं उपोष्णकटिबंधीय फल और उनका मूल्यवर्धन हो सके। इस परियोजना के मुख्य उद्देश्य निम्नलिखित माध्यम से हासिल किये जायेंगे:—
 - 2.1 एचपीशिवा द्वारा लाभार्थियों को उन्नत किस्म के फलदार पौधे, बगीचे भूमि की तैयारी, ड्रिप सिंचाई और उर्वरक उपकरण, फसल स्थापना और उद्यान सामग्री और बाड़ लगाने के साथ सुनिश्चित सिंचाई की सुविधा होगी ।

- 2.2 जल उपयोगकर्ता संघों (WUA) और सामुदायिक बागवानी उत्पादन और विपणन संघ (CHPMA) सहित लाभार्थी संघों के एचपीशिवा तकनीकी समर्थन के साथ विकास करना ।
 - 2.3 लाभार्थी द्वारा बगीचे की स्थापना, प्रबंधन, विकास व घरेलू श्रम हेतु आवश्यक कृषि भूमि उपलब्ध कराने के लिए सहमतो देना। (शेड्यूल 1 देखें)
 - 2.4 लाभार्थी को बाजार पहुंच और अंतिम खुदरा मूल्य के हिस्से में सुधार के लिए सार्वजनिक-निजी-सामुदायिक भागीदारी के निर्माण के लिए एचपीशिवा तकनीकी और अनुदान सहायता उपलब्ध करवाना।
3. इस समझौते के लिए कोई भी पक्ष अन्य पार्टियों से पूर्व समझौते (लिखित रूप में पुष्टि) प्राप्त किए बिना एकल या संयुक्त अन्य पार्टियों की ओर से किसी भी परियोजना सेवाओं को प्रस्तुत या पेश नहीं करेगा।
 4. सरकार द्वारा किसानों से कोई भी भूमि अधिग्रहित या विनियोजित नहीं की जाएगी, और इस पर किसानों का ही अधिकार रहेगा।
 5. क्लस्टर में सम्मिलित सभी किसान, परियोजना के लिए 100% प्रतिबद्धता देंगे और एमओयू पर हस्ताक्षर करने के उपरान्त तुरंत सीएचपीएमए का गठन कर उसके सदस्य बनेंगे।
 6. फसल खराब होने की स्थिति में किसानों द्वारा उनकी इच्छा अनुसार लागू सरकारी फसल बीमा योजनाओं के माध्यम से क्षति पूर्ति कवर किया जा सकता है।
 7. किसी भी पक्ष के पास इस समझौते के संबंध में किसी अन्य पक्ष को अनुबंध, आशय पत्र या उपक्रम द्वारा अन्य पक्ष के पूर्व अनुमोदन के बिना इस समझौते के अतिरिक्त भागीदार के रूप में कानूनी रूप से या समान रूप से बाध्य करने का कोई अधिकार नहीं होगा।
 8. इस समझौता ज्ञापन द्वारा कोई भी पक्ष कानूनी भागीदारी इकाई नहीं बनाएगा न तो एक पक्ष का दूसरे के एजेंट के रूप में, या किसी अन्य पार्टी के रूप में गठित करने के लिए कार्य करेगा। इसके लिए कोई भी पक्ष दूसरे पक्ष के एजेंट या भागीदार के रूप में स्वयं का प्रतिनिधित्व नहीं करेगा।
 9. संबंधित पक्ष आपसी संपर्क के लिए और समझौते के किसी भी अनुवर्ती कार्रवाई के लिए जिम्मेदार एक समन्वयक को नामित करेंगे। उद्यान विभाग के मामले में, समन्वयक एचपी-शिवा परियोजना प्रबंधन इकाई (बाद में पीएमयू कहा जाएगा), निदेशक या उसका नामित व्यक्ति होगा। लाभार्थियों के मामले में, समन्वयक सीएचपीएमए का अध्यक्ष होगा।

10. संबंधित पक्ष जिला समन्वय समितियां (बाद में डीसीसी कहलाती हैं) का गठन करेंगी जो कार्यक्रम की प्रगति की समीक्षा के लिए वांछित बैठक करेंगी। डीसीसी में संबंधित पक्षों द्वारा नियुक्त समन्वयक शामिल होंगे।
11. इस समझौता ज्ञापन के पक्ष यह सुनिश्चित करने का प्रयास करेंगे कि निर्धारित और सहमत शेड्यूल सभी समय पर पूरे हों और उन कार्यक्रमों में बताई गई सभी सेवाएं समय पर और पूर्ण रूप से वितरित की गई हैं।
12. प्रत्येक पक्ष कार्यक्रम के कार्यान्वयन, निगरानी परिणामों और सामाजिक और तकनीकी सर्वेक्षणों और अध्ययनों से संबंधित सभी प्रासंगिक सूचनाओं आर दस्तावेजों का आदान-प्रदान करने के लिए सहमत हैं।
13. क्लस्टर स्थल पर पौधरोपण के तुरंत बाद पौधों की देखभाल करने की पूरी जिम्मेदारी लाभार्थी किसानों की होगी। जंगली जानवरों, मानवीय हस्तक्षेप आदि के कारण पौधों को होने वाले नुकसान और लापरवाही के कारण यदि ऐसा होता है, तो देयता लाभार्थी किसान पर होगी।
14. क्लस्टर क्षेत्र के बीच जल भंडारण टैंकों की स्थापना/ड्रिप सिंचाई तथा लाइन बिछाने/ सोलर बाड आदि कार्यों की सहमति लाभार्थी किसानों के लिए अनिवार्य होगी।
15. यदि परियोजना अवधि के दौरान भू-स्वामित्व या किसी भी बागवानी गतिविधियों से संबंधित कोई विवाद होता है, तो जिम्मेदारी संबंधित लाभार्थियों की होगी।
16. समझौता ज्ञापन पर क्लस्टर के प्रत्येक लाभार्थी द्वारा हस्ताक्षर किए जाने अनिवार्य हैं।
17. वसूली (यदि कोई हो) एचपी पब्लिक मनी रिकवरी (बकाया की वसूली) अधिनियम, 1973 के अनुसार की जाएगी, जो कि क्लस्टर किसानों को दिए गए बुनियादी ढांचे और कृषि सामग्री के दुरुपयोग से सम्बन्धित हो।
18. HPSHIVA परियोजना में वही लोग लाभार्थी होंगे जिनके नाम पर राजस्व विभाग में कृषि योग्य भूमि दर्ज है। उन्हीं बागवानों को CHPMA की सदस्यता प्राप्त करने का अधिकार होगा।

II. पार्टियों के कर्तव्य और जिम्मेदारियां

उपरोक्त उद्देश्यों को पूरा करने के लिए, उद्यान विभाग और लाभार्थियों के कर्तव्यों और जिम्मेदारियों का विवरण नीचे दिया गया है:

उद्यान विभाग (Department of Horticulture):

1. परियोजना क्षेत्रों में एचपी-शिवा उपोष्णकटिबंधीय बागवानी विकास गतिविधियों के कार्यान्वयन का प्रबंधन करना ।
2. सीएचपीएमए को संस्थागत और संगठनात्मक सहायता प्रदान करने के लिए जिम्मेदार फर्म या गैर-सरकारी संगठन का चयन और पर्यवेक्षण करना।
3. सार्वजनिक और निजी बागवानी विपणन और मूल्यवर्धन संगठनों और उद्यमों के साथ संबंध बनाने के लिए सीएचपीएमए की सहायता करना।
4. किसानों के क्षमता निर्माण और वैज्ञानिक और निगरानी गतिविधियों का विकास करने सहित एचपी-शिवा गतिविधियों का विकास करना।
5. एचपी-शिवा तथा सीएचपीएमए गतिविधियों के कार्यान्वयन की प्रगति की समीक्षा करने के लिए समय-समय पर हितधारकों की परामर्श बैठकों और कार्यशालाओं का आयोजन और नेतृत्व करना।
6. योजनाओं के कार्यान्वयन के लिए एचपी-शिवा द्वारा सीएचपीएमए विकास बजट का प्रबंधन करना।

लाभार्थी किसानों की :-

1. सिंचित उपोष्णकटिबंधीय बागवानी उद्यान विकास के लिए निजी भूमि उपलब्ध कराना।
2. सभी किसानों के पास भूमि उपयोग या स्वामित्व के कानूनी कागजात होने चाहिए।
3. पौधरोपण योजना के अनुसार पंक्ति से पंक्ति और पौधे से पौधे की दूरी की योजना का पालन करना।
4. अनुसूची 1 के अनुसार एचपी-शिवा समर्थित उपोष्णकटिबंधीय बागीचों के विकास के लिए आवश्यक श्रम/ आर्थिक अदान प्रदान करना।
5. अनुपस्थित जमींदारों की स्थिति में भूमि के वास्तविक जोतने वाले के पास लंबी अवधि के लिए कानूनी पट्टे के दस्तावेज होने चाहिए जो परियोजना की अवधि तक मान्य हों।
6. भूमि हस्तांतरण के मामले में, समझौता ज्ञापन की भावना को बनाए रखा जाएगा और भूमि के उपयोग पैटर्न को बदला नहीं जा सकता है। नए मालिक/उपयोगकर्ता के पास कानूनी जमीन के दस्तावेज होने चाहिए।

7. क्लस्टर भूमि में किसी भी प्रकार के निर्माण कार्य की अनुमति नहीं होगी
8. सीएचपीएमए की स्थापना एवं आव"यक लेख तैयार करना, जिसमें महिला किसानों की सदस्यता कम से कम 30% होगी, और अध्यक्ष और उपाध्यक्ष पदों पर नियुक्तियां सीएचपीएमए समिति के चुनाव सहित लैंगिक न्यायसंगत होंगी।
9. पुरुष किसानों के परिवार की महिला सदस्य **WUA/CHPMA** की सदस्य बनने के लिए पात्र होंगी
10. सीएचपीएमए के साथ, जिला स्तर तक व्यक्तिगत और समेकित स्तरों पर बागवानी उत्पाद मूल्यवर्धन के लिए निवेश योजनाएं विकसित करना।
11. सीएचपीएमए द्वारा किसान संगठन के प्रतिनिधियों, सार्वजनिक मंडियों के प्रबंधकों, निजी क्षेत्र के प्रतिनिधियों (व्यापारी, प्रोसेसर, सामग्री आपूर्तिकर्ताओं, निवेशकों, वित्त संस्थानों) और सरकारी अधिकारियों (नगरपालिका प्रशासन, अनुसंधान, विस्तार) सहित प्रमुख हितधारकों के साथ बातचीत। नवाचार को बढ़ावा देने और संभावित मूल्य श्रृंखला हितधारकों के बीच व्यापार और वित्तीय समझौतों को लागू करने के लिए एक अनुकूल वातावरण व स्थान प्रदान करना।

III. निधियों का प्रवाह

एचपीशिवा परियोजना के तहत, पीएमयू सीएचपीएमए सदस्य के खेतों पर उपोष्णकटिबंधीय बागों के विकास और सभी सहायक सेवाओं के प्रावधान के लिए सामग्री एवं सेवाओं की खरीद का प्रबंधन करेगा। सीएचपीएमए सदस्यों को अपने खेतों में बगीचे लगाने के लिए आर्थिक रूप से योगदान करने की आवश्यकता हो सकती है। इस समझौते के तहत इस तरह के किसी भी बदलाव पर बातचीत की जाएगी।

IV. अपेक्षित परिणाम

एचपीशिवा परियोजना के अंत में इस सहयोग के अपेक्षित परिणाम :—

- a. सभी क्लस्टर में सीएचपीएमए की स्थापना एवं सिंचित उपोष्णकटिबंधीय फलों के बागों की स्थापना और संचालन।
- b. सीएचपीएमए बाजार पहुंच/मूल्यवर्धन निवेश योजनाएं।
- c. बेहतर बाजार पहुंच और निवेश योजना के लिए जिला स्तर पर बहु-हितधारक मंच स्थापित करना।

d. किसानों की कृषि आय में अपेक्षित वृद्धि।

V. प्रभावी तिथि

हम अधोहस्ताक्षरी इस समझौता ज्ञापन की सामग्री को स्वीकार करते हैं और सहमत हैं, जो लाभार्थियों को एचपी-शिवा बागवानी सामग्री प्राप्त होने की तारीख से लागू होगा।

बागवानी विभाग (DOH) की ओर से

सामुदायिक बागवानी उत्पादन
और विपणन संघ (CHPMA) की ओर से

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द्वारा हस्ताक्षर किए

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द्वारा हस्ताक्षर किए

दिनांक:

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