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Report No: PAD1637

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF US\$135 MILLION

TO THE

REPUBLIC OF INDIA

FOR A

HIMACHAL PRADESH HORTICULTURE DEVELOPMENT PROJECT

May 6, 2016

Agriculture Global Practice
South Asia Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective March 31, 2016)

Currency Unit = INR
INR 66.22 = US\$1

FISCAL YEAR
April 1 – March 31

ABBREVIATIONS AND ACRONYMS

AAP	Annual Action Plans	HPMC	Horticulture Produce Marketing Corporation
ABPF	Agri Business Promotion Facility	HPSAMB	Himachal Pradesh State Agriculture Marketing Board
AERC	Agro-Economic Research Centre	IAs	Implementing Agencies
APMC	Agricultural Produce Marketing Committee	ICM	Integrated Crop Management
BIU	Block Implementation Unit	ICT	Information and Communication Technology
C&AG	Comptroller General of Accounts	IFRs	Interim Financial Reports
CA	Controlled Atmosphere	IHSMS	Integrated Horticulture Management & Monitoring System
CPS	Country Partnership Strategy	IPF	Investment Project Financing
CSC	Common Service Center	IPNM	Integrated Pest and Nutrient Management
DCC	District Coordination Committee	ISM	Implementation Support Mission
DIU	District Implementation Unit	ISP	Implementation Support Plan
DoH	Department of Horticulture	KPI	Key Project Indicator
DPR	Detailed Project Report	M&E	Monitoring & Evaluation
EG	Environmental Guidelines	MFE	Market Field Engineer
EIA	Environmental Impact Assessment	MSME	Micro, Small and Medium Enterprises
EMIIC	Economic and Market Information and Intelligence Cell	MTR	Mid Term Review
EMP	Environmental Management Plan	NABARD	National Bank for Agriculture and Rural Development
E-NWRs	Electronic Negotiable Warehouse Receipts	NEFT	Net Enabled Fund Transfers
ERR	Economic Rate of Return	NGO	Non-Government Organization
ESA	Environment and Social Assessment	NPV	Net Present Value
ESMF	Environmental and Social Management Framework	PAD	Project Appraisal Document
FAO	Food and Agriculture Organization	PCDO	Progeny Cum Demonstration Orchards
FIRR	Financial Internal Rate of Return	PRI	Panchayati Raj Institutions
FM	Financial Management	PCU	Project Coordination Unit
FNPV	Financial Net Present Value	PDO	Project Development Objectives
FPO	Farmer Produce Organization	PIP	Project Implementation Plan
GIS	Geographical Information System	PIU	Project Implementation Unit
GoHP	Government of Himachal Pradesh	POP	Package of Practices
GRS	Grievance Redressal Service	R&D	Research and Development
GSDP	Gross State Domestic Produce	RTGS	Real-time Gross Settlement
HDO	Horticulture Development Officer	SMS	Subject Matter Specialist
HPHDP	Himachal Pradesh Horticulture Development Project	TDF	Tribal Development Framework
HPHDS	Himachal Pradesh Horticulture Development Society	TDP	Tribal Development Plan
HPNDODMS	Himachal Pradesh Nurseries cum Demonstration Orchards Development & Management Society	UHF	University of Horticulture and Forestry
		WUA	Water User Associations

Regional Vice President:	Annette Dixon
Country Director:	Onno Ruhl
Senior Global Practice Director:	Juergen Voegele
Practice Manager:	Martien Van Nieuwkoop
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PAD DATA SHEET

India

Himachal Pradesh Horticulture Development Project (P151744)

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

0000009246

Report No.: PAD1637

Basic Information			
Project ID P151744	EA Category B - Partial Assessment	Team Leader(s) Manivannan Pathy	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints []		
	Financial Intermediaries []		
	Series of Projects []		
Project Implementation Start Date 30-May-2016	Project Implementation End Date 30-Jun-2023		
Expected Effectiveness Date 31-Oct-2016	Expected Closing Date 30-Jun-2023		
Joint IFC No			
Practice Manager/Manager	Senior Global Practice Director	Country Director	Regional Vice President
Martien Van Nieuwkoop	Juergen Voegele	Onno Ruhl	Annette Dixon
Borrower: Republic of India			
Responsible Agency: Department of Horticulture, Himachal Pradesh			
Contact:	Jagdish Sharma	Title:	MD- HPMC
Telephone No.:	91-177-2623835	Email:	jagdish91@gmail.com
Project Financing Data(in USD Million)			
[] Loan	[] IDA Grant	[] Guarantee	
[X] Credit	[] Grant	[] Other	
Total Project Cost:	171.50	Total Bank Financing:	135.00
Financing Gap:	0.00		

Financing Source	Amount
BORROWER/RECIPIENT	33.70
International Development Association (IDA)	135.00
LOCAL BENEFICIARIES	2.80
Total	171.50

Expected Disbursements (in USD Million)¹										
Fiscal Year	2016	2017	2018	2019	2020	2021	2022	2023	0000	0000
Annual	0.00	5.00	11.00	18.00	24.00	25.00	26.00	26.00	0.00	0.00
Cumulative	0.00	5.00	16.00	34.00	58.00	83.00	109.00	135.00	0.00	0.00

Institutional Data

Practice Area (Lead)

Agriculture

Contributing Practice Areas

Cross Cutting Topics

- Climate Change
- Fragile, Conflict & Violence
- Gender
- Jobs
- Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Agriculture, fishing, and forestry	Agricultural extension and research	15	5	6
Agriculture, fishing, and forestry	Crops	20	5	6
Agriculture, fishing, and forestry	Irrigation and drainage	25	20	1
Agriculture, fishing, and forestry	General agriculture, fishing and forestry sector	15	2	2
Industry and trade	Agro-industry, marketing, and trade	25		24
Total		100		

I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

¹ Disbursement profile is estimated by the Bank team. Actual disbursements would be based on pace of expenditure incurred by the project implementing entities and it could be more than the projected disbursement profile.

Themes		
Theme (Maximum 5 and total % must equal 100)		
Major theme	Theme	%
Trade and integration	Trade facilitation and market access	20
Rural development	Rural markets	40
Rural development	Rural services and infrastructure	40
Total		100

Proposed Development Objective(s)

The Project Development Objective (PDO) is: “to support small farmers and agro-entrepreneurs in Himachal Pradesh, to increase the productivity, quality, and market access of selected horticulture commodities.”

The project beneficiaries will include farmers and entrepreneurs especially in the micro-small medium enterprises (MSME) segment, farmer producer organizations, and other value chain participants. The project will contribute to inclusive growth by prioritizing support to small and marginal farmers in the state, with specific focus on fruit tree crops. The project will benefit about 150,000 producers. Of these beneficiaries at least 33 percent are expected to be women. Indirect beneficiaries will include those who benefit from technologies demonstrated by the project, farmers whose produce goes through rehabilitated markets, and farmers accessing negotiable warehouse receipt financing, etc. Rules, procedures, and guidelines will be employed to promote and enable equitable access to project benefits.

Components

Component Name	Cost (USD Millions)
Component A: Horticulture Production and Diversification	93.60
Component B: Value Addition and Agro-enterprise Development	43.40
Component C: Market Development	19.20
Component D: Project Management, Monitoring and Learning	15.30

Systematic Operations Risk- Rating Tool (SORT)

Risk Category	Rating
1. Political and Governance	Low
2. Macroeconomic	Low
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Moderate
7. Environment and Social	Moderate
8. Stakeholders	Low
9. Other	Low

OVERALL	Substantial		
Compliance			
Policy			
Does the project depart from the CAS in content or in other significant respects?	Yes []	No [X]	
Does the project require any waivers of Bank policies?	Yes []	No [X]	
Have these been approved by Bank management?	Yes []	No []	
Is approval for any policy waiver sought from the Board?	Yes []	No [X]	
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No []	
Safeguard Policies Triggered by the Project	Yes	No	
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04	X		
Forests OP/BP 4.36		X	
Pest Management OP 4.09	X		
Physical Cultural Resources OP/BP 4.11		X	
Indigenous Peoples OP/BP 4.10	X		
Involuntary Resettlement OP/BP 4.12		X	
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50	X		
Projects in Disputed Areas OP/BP 7.60		X	
Legal Covenants			
Name	Recurrent	Due Date	Frequency
Implementation Responsibility	Yes	N/A	Project duration
Description of Covenant			
GoHP to: (i) vest overall responsibility for project coordination and implementation in DoH, acting through its HPHDS, and to maintain the HPHDS in good standing and operation; and (ii) allocate responsibility for day-to-day implementation of Project activities among HPHDS and other implementing agencies in accordance with PIP.			
Name:	Recurrent	Due Date	Frequency
Implementation Units – I	Yes	N/A	Project duration
Description of Covenant			
HPHDS to maintain: (i) a Governing Council, chaired by GoHP Chief Secretary to provide overall strategic guidance and policy directives in Project implementation to HPHDS; (ii) an Executive Body, chaired by the Administrative Secretary (DoH) to monitor Project activities and assess their progress, approve annual action plans and budgets, and review Project Reports; and (iii) a Project Coordination			

Unit (PCU), headed by a full-time Project Director, to assist the implementing agencies in preparing annual action plans and budgets, monitor the progress of the Project, evaluate performance and prepare the Project Reports, identify bottleneck and propose corrective actions, etc.

Name:	Recurrent	Due Date	Frequency
Implementation Units – II	Yes	N/A	Project duration

Description of Covenant

Implementing agencies (HPMC, HPSMB and HPNDODMS) to maintain Project Implementation Units (PIUs) to carry out and/or oversee the day-to-day implementation of their respective activities.

Name:	Recurrent	Due Date	Frequency
Implementation Units - III	Yes	Prior to commencing Project activities in respective District	Project duration

Description of Covenant

GoHP to establish: (i) District Coordination Committee (DCC) in each District, to ensure adherence to sub-grants selection and eligibility criteria and maximize complementary of activities carried out by the various implementing agencies; and (ii) District Implementation Units (DIUs) responsible for implementing district-level activities, monitor physical and financial progress; provide quality assurance and liaise with communities..

Name:	Recurrent	Due Date	Frequency
Community Operations Manual	Yes	Prior to commencing activities under Sub-Components A.2, B.1 and B.3	Project duration

Description of Covenant

GoHP to prepare and adopt a Community Operations Manual (COM) detailing, among other things: (i) the eligibility and selection criteria and institutional arrangements for the implementation of sub-projects and business plans; (ii) the roles and responsibilities of implementing agencies and WUAs, FPOs, entrepreneurs and the community/other stakeholders; (iii) the mechanisms for the flow of (sub) grants funds; and (iv) monitoring, evaluation and reporting requirements (on sub-grants).

Name:	Recurrent	Due Date	Frequency
Project Documents	Yes	N/A	Project duration

Description of Covenant

GoHP to ensure that all implementing agencies carry out their respective activities under the Project in accordance with the PIP, the Community Operations Manual, the FM Manual and the Procurement Manual.

Name:	Recurrent	Due Date	Frequency
Annual Acton Plans & Budgets	Yes	December 31, each year	Project duration

Description of Covenant			
GoHP to ensure the each implementing agency: (i) prepares an Annual Action Plan and Budget covering the respective activities to be carried out during the following fiscal year, in accordance with the FM Manual; (ii) furnishes such plan and budget to the PCU for consolidation, the Association for comments/concurrence, and the HPHDS' Executive Body for approval, and then (iii) implements the plan/budgets as approved/concurred.			
Name:	Recurrent	Due Date	Frequency
Progeny-cum-Demonstration Orchards	Yes	Prior to implementation of Sub-Component A.1	Project duration
Description of Covenant			
GoHP, acting through DoH, to enter into an MoU with HPNDODMS regulating the assignment of existing progeny-cum-demonstration orchards owned by DoH as well as those new ones being created/financed under the Project from DoH to HPNDODMS.			
Name:	Recurrent	Due Date	Frequency
Various Grants	Yes	N/A	Project duration
Description of Covenant			
For the purpose of carrying out activities under components A.2. B.1 and B.3 GoHP shall cause the implementing agencies to: (i) screen all Sub-Project proposals submitted by WUAs or FPO, or the Business Plans submitted by entrepreneurs, (ii) select for financing those that meet the eligibility criteria set forth in the Community Operations Manual; and (iii) enter into grant agreements with each selected WUA, FPO or entrepreneur, for the provision of a (sub) grant, in terms and conditions approved by the Association.			
Name:	Recurrent	Due Date	Frequency
Safeguard Documents	Yes	N/A	Project duration
Description of Covenant			
GoHP to ensure that the implementing agencies, the WUAs, FPOs, and entrepreneurs carry out the activities under the Project in accordance with the ESMF, the EMPs and the TDPs (the "Safeguard Documents").			
Name:	Recurrent	Due Date	Frequency
Environment and Social Specialists	Yes	N/A	Project duration
Description of Covenant			
HPHDS and other implementing agencies to maintain qualified and experienced environment and social specialists to be responsible for (a) reviewing and clearing the environmental screening/assessments of Project activities and monitoring reports; (ii) carrying out regular field visits to ensure compliance with Safeguard Documents; and (iii) providing training on environmental and social issues to implementing agencies, WUAs, FPOs and entrepreneurs.			
Name:	Recurrent	Due Date	Frequency
Environmental and Social Screening	Yes	Prior to tendering bids for civils works, selecting sub-projects for financing or requesting EoIs.	Project duration

Description of Covenant			
GoHP to ensure that HPHDS and other implementing agencies: (i) carry out the environmental screening of civil works, technical services, Sub-project proposals and/or business plans in accordance with the ESMF; (ii) whenever required, prepare the respective EMPs and or TDPs; and (iii) publicly disclose the Safeguard Documents at the respective Project sites.			
Name:	Recurrent	Due Date	Frequency
Excluded Activities	Yes	N/A	Project duration
Description of Covenant			
GoHP, HPHDS and other implementing agencies to ensure that no activity under the project require involuntary acquisition of land, or give rise to displaced persons, or have significant adverse environmental impact that are sensitive, diverse and/or unprecedented.			
Name:	Recurrent	Due Date	Frequency
Government Permits/Clearances	Yes	Prior to commencing any activity, Sub-Project or Business Plan	Project duration
Description of Covenant			
GoHP, HPHDS and other implementing agencies to ensure that all relevant government permits/clearances have been obtained, and/or any pre-conditions imposed have been complied with/fulfilled.			
Name:	Recurrent	Due Date	Frequency
Contractors' Safeguards Obligations	Yes	N/A	Project duration
Description of Covenant			
GoHP, HPHDS and other implementing agencies to ensure that contracts for civil works include the contractors' obligations to comply with Safeguard Documents.			
Name:	Recurrent	Due Date	Frequency
Grievance Redressal/ Complaints Processing	Yes	N/A	Project duration
Description of Covenant			
GoHP, HPHDS and the other implementing agencies to maintain and operate a grievance redressal committee and processing protocol for the handling of any stakeholder complaints arising out of the project activities.			
Name:	Recurrent	Due Date	Frequency
Ineligible Expenditures	Yes	N/A	Project duration
Description of Covenant			
GoHP, HPHDS and the other implementing agencies to ensure that any land needed under the Project is acquired on a willing-buyer willing-seller basis or other voluntary means, and any such expenditures are paid out of the implementing agencies own resources or the resources of the WUAs, FPOs or the entrepreneurs.			

Name:	Recurrent	Due Date	Frequency
Social and Environmental Impact Reporting	Yes	45 days after the end of calendar semester	Semi-annual throughout Project duration
Description of Covenant			
GoHP to: (i) maintain and cause the implementing agencies to maintain, M&E protocols and record keeping procedures adequate to supervise on on-going basis, the compliance with Safeguard Documents; and (ii) furnish to the Association as part of the Project Reports, an assessment of the general compliance therewith, and the social and environment la impact of Project activities (and mitigation measures applied thereto).			
Name:	Recurrent	Due Date	Frequency
Mid-Term Review	N/A	July 31, 2018	N/A
Description of Covenant			
GoHP to finish to: (i) the Association a mid-term review report integrating the result of semi-annual Project reports up to that date on progress achieved in Project implementation, and sting out the measures recommended to ensure the efficient carrying out of the Project and the achievement of its development objectives; and (ii) within 30 days of completion of that report, review the report with the Association and thereafter implement the measure required to the efficient completion of the Project and the achievement of the development objectives.			
Name:	Recurrent	Due Date	Frequency
M&E Consultant	Yes	6 months after the Effective Date	Project period
Description of Covenant			
HPHDS to hire an M&E consulting firm to: (i) create a monitoring and evaluation framework for the Project, (ii) conduct a baseline survey (within 11 months of effectiveness); (iii) monitor and evaluate the progress in achieving the Project's outputs, outcomes and development objectives; (iv) strengthening the monitoring and evaluation capacity of implementing agencies; and (v) assist in the preparation of the semi-annual Project Reports.			
Conditions			
Source Of Fund	Name	Type	
Description of Condition			

Team Composition				
Bank Staff				
Name	Role	Title	Specialization	Unit
Manivannan Pathy	Team Leader (ADM Responsible)	Sr Agricultural Spec.	Agribusiness	GFA12
Heenaben Yatin Doshi	Procurement Specialist (ADM Responsible)	Procurement Specialist	Procurement	GGO06
Tanuj Mathur	Financial Management Specialist	Sr Financial Management Specialist	Financial Management	GGO24
Abhishek Pruthi	Team Member	Consultant	Financial Management	GGO24
Ademola Braimoh	Team Member	Sr Natural Resources Mgmt. Spec.	Climate Smart Agriculture and GHG accounting	GFA13
Ajai Nair	Team Member	Program Coordinator	Financial Inclusion	GFMPA
Animesh Shrivastava	Team Member	Program Leader	Rural-Urban Transformation	ECCU8
Anju Gaur	Team Member	Sr Water Resources Spec.	Irrigation and Hydrology	GWA06
Anupam Joshi	Safeguards Specialist	Senior Environmental Specialist	Safeguard	GEN06
Arvind Jhamb	Team Member	Consultant	Pomologist and Nursery Management	GFADR
Asha Bhagat	Team Member	Consultant	Financial Management	GGO24
Ashwini Bharat	Team Member	Program Assistant	Operations	SACIN
Bekzod Shamsiev	Team Member	Senior Agriculture Economist	Economist	GFA03
Garima Sahai	Team Member	Consultant	Economist and M&E	GFA12
Geeta Alex	Team Member	Program Assistant	Operations	SACIN
Gunnar Larson	Team Member	Operations Analyst	Operations	GFA12
Jacqueline Julian	Team Member	Operations Analyst	Cost tables and M&E	GFA06
Jeevanandhan Duraisamy	Team Member	Consultant	Climate Smart Agriculture and GHG accounting	GFADR
Madhur Gautam	Team Member	Lead Economist	Economist	GFA12
Martin M. Serrano	Team Member	Senior Counsel	Legal - EAP and SAR Regions	LEGES
Panayotis N. Varangis	Team Member	Head - GFM	Financial Inclusion	GFMTD
Priti Kumar	Team Member	Sr Agricultural Spec.	Climate Smart Agriculture and GHG accounting	GFA06
Ramziath Teni Ola Abebi	Team Member	Young Professional	Economist	GFA12

Adjao				
Ravishankar Natarajan	Team Member	Consultant	E-Auction and Virtual Market	GFADR
Saumya Srivastava	Team Member	Consultant	Operations	GFA12
Shankar Narayanan	Team Member	Senior Social Development Specialist	Safeguard and Social Development	GSU06
Sharlene Jehanbux Chichgar	Team Member	Consultant	Safeguard	GWA06
Shashank Ojha	Team Member	Senior e-Government Specialist	ICT and e-Governance	GTI09
Smrithi Talwar	Team Member		Safeguard	GSURR
Soujanya Krishna Chodavarapu	Team Member	Operations Officer	Enterprise Development	GTCSA
Srihari Gopaldaswamy	Team Member	Consultant	Safeguard	GSU06
Tripti Chopra	Team Member	Financial Management Specialist	Financial Management	GGO24
Varun Singh	Safeguards Specialist	Senior Social Development Specialist	Safeguard and Social Development	GSU06
Victor Bundi Mosoti	Team Member	Senior Counsel	Legal - Environmental and International Law	LEGEN
Vikas Kanungo	Team Member	Consultant	ICT and e-Governance	GTI09
William Young	Team Member	Lead Water Resource Management Specialist	Water Resource Management	GWA06
Xiaoyue Hou	Team Member	Consultant	GHG accounting	GFAGE

Extended Team					
Name	Title	Office Phone	Location		
Ajay Markanday	Senior Economist				
Benoist Veillerette	Senior Economist				
Watkins Stevens	Agricultural Officer (Marketing and Agribusiness)	+39 - 06 - 5705 6851			
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
India	Himachal Pradesh	State of Himachal	X		

		Pradesh			
India	Himachal Pradesh	Bilaspur	X		
India	Himachal Pradesh	Chamba	X		
India	Himachal Pradesh	Hamirpur	X		
India	Himachal Pradesh	Kangra	X		
India	Himachal Pradesh	Kinnaur	X		
India	Himachal Pradesh	Kulu	X		
India	Himachal Pradesh	Lahul -Spiti	X		
India	Himachal Pradesh	Mandi	X		
India	Himachal Pradesh	Shimla	X		
India	Himachal Pradesh	Sirmour	X		
India	Himachal Pradesh	Solan	X		
India	Himachal Pradesh	Una	X		

Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required ? As per specifications in the project's procurement plan.

INDIA
Himachal Pradesh Horticulture Development Project (HPHDP)

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I. STRATEGIC CONTEXT

A. Country Context

1. **During the decade from 2001 to 2011, India’s economy expanded at an average annual rate of 8 percent per year. After a subsequent slowdown during 2011-2012 and 2012-2013, higher growth rates are projected to resume.**² While the prospects for overall economic growth are optimistic, concerns persist over the nature of this growth and its inclusiveness. Job creation remains a daunting challenge to achieving shared prosperity and to reducing the number of people living in poverty – particularly in rural areas, where most of India’s labor force is employed. About 68 percent of India’s rural labor force is employed in agriculture. Long term agricultural growth remains volatile, fluctuating by around 3 percent per year. The agriculture sector therefore remains very important to the larger economy, and its political and social significance is widely recognized as well.

2. **The Government of India (GoI) recognizes the potential that agriculture carries as an engine of growth and job creation, its role in the country’s ongoing process of rural – urban transformation, and its role as a necessary driver of improved nutrition outcomes.** The GoI also recognizes the need for certain strategic shifts to enable and facilitate the structural transformation of Indian agriculture, more fully capitalizing on the sector’s potential contributions to economic growth and job creation. Four such shifts reflect underlying trends in food supply and demand, including: (i) A shift away from traditional food grain production and towards diversification into the production of higher value agricultural commodities such as fruits, vegetables, and dairy products. (ii) A shift away from emphasizing on-farm production and towards value addition in the post-harvest segments of agriculture value chains. (iii) A shift away from focusing on productivity and towards resilience of agriculture production systems for addressing the effects of climate change. (iv) A shift away from a focus on agricultural production and towards nutrition sensitive agriculture. To facilitate these four shifts that underlie the transformation of the agriculture sector in India, the GoI has launched a number of policies and initiatives since 2014. These include a technology driven second green revolution with a focus on higher productivity and diversification; a National Action Plan on Climate Change (NAPCC) and its component Missions a “National Adaptation Fund” to meet the challenges of climate change; a nationwide “District Level Incubation and Accelerator Programme” focusing on micro, small and medium enterprises (MSME); and a scheme for promoting a National Agricultural Market to accelerate the integrated development of agricultural marketing and trade.

3. **The Indian agri-food system is undergoing a major transformation.** First, organized retail, including e-retail, is rapidly growing giving consumers a wider choice of goods, more convenience, and often more competitive prices. The benefits of this trend are expected to extend to the mass of Indian consumers. Second, changes in consumption patterns are driving rapid changes in the production basket, which is diversifying in favor of high value commodities such as fruit, vegetables, livestock and fisheries. This change in consumer tastes and preferences has set the stage for expanding and modernizing handling, storage and distribution networks.

² Economic Survey 2014–15, GoI, Mid-Year Economic Analysis, 2015-2016, GoI, India Country Snapshot, The World Bank Group, October 2015.

B. Sectoral and Institutional Context

4. The state of Himachal Pradesh (HP) is characterized by a significant number of opportunities in high-value commodities. These include, most importantly, diversity in agro-climatic conditions, possibilities to produce for ‘off-season’ markets, relatively well-educated producers, and proximity to consumer markets. The state’s agriculture is dominated by high value horticultural commodities, which account for about 44 percent of the cropped area, and which account for about 48 percent of the agricultural gross state domestic product (GSDP). The state has emerged as a leading producer of fruits and offseason vegetables. The horticulture sector annually contributes INR 63,000 million (US\$1,051 million) to the state’s economy, which is about 7 percent of the GSDP³.

5. Horticulture in HP has been responsible for many of the positive outcomes in employment, wages, and in turn, poverty reduction. Employment in horticulture as a percentage of all agricultural employment in HP increased from 0.9 percent to 28 percent between 1983 and 2009-10⁴. Crop diversification has made a significant impact on income and employment among small and marginal farmers. The expansion of area cultivated with non-food grain crops was a significant factor influencing the growth of rural non-farm employment in the state. Ninety percent of the population of Himachal Pradesh resides in rural areas as of the latest census, and 88 percent are small and marginal farmers⁵. The average operational land holding is less than one hectare. About 70 percent of the state’s overall employment is in agriculture and the rural economy. Women are significant contributors in agriculture, horticulture, and livestock/dairying sectors. In horticulture, women continue to provide significant labor and supervisory input to pre-harvest and post-harvest activities. However, their access to horticulture technologies and extension services, market infrastructure/information, skill and entrepreneurship development opportunities and decision making structures remains weak.

6. Notwithstanding the significant potential of horticulture production in HP to contribute to higher economic growth and poverty reduction objectives, the state faces a number of sectoral, institutional and policy challenges which need to be addressed more systematically if the full potential is to be realized and translated into sustainable development impacts. These include: (i) limited access to appropriate production technologies, including elite planting materials, leading to low productivity; (ii) insufficiently developed water management systems, leaving the state’s horticulture almost entirely dependent on rainfall in spite of available water resources; (iii) challenging research system and extension services leading to inappropriate horticulture practices; (iv) high post-harvest losses, paired with low value addition, exacerbated by inadequate storage, processing, and marketing capabilities; (v) limited institutional capacity for the development of micro, small and medium enterprise (MSME) in agro processing; and (vi) curtailed access to medium and long-term financial capital. The sector is also faced with competition from abroad because its domestic markets are open to international trade. While the total volume of banking sector credit to the agriculture sector is large and a substantial number of farmers have access to credit, just 21 percent of the banking sector loan portfolio in agriculture was medium and long-term (over one year) in 2014-15. This share has steadily decreased from

³ Himachal Pradesh Economic Survey, 2013-14. Indian Horticulture Database - NHB, 2013.

⁴ Kumar, A., Kumar, S., & Singh, D. K. Shivjee (2011) Rural employment diversification in India: Trends, determinants and implications on poverty. *Agricultural Economics Research Review*, 24, 361-372.

⁵ India census, 2011.

63 percent in 2010-11.⁶ Addressing these constraints to horticulture development will require a predictable and supportive policy environment for private sector development, better access to product and input markets, and improved farmer's access to horticultural extension services and financial services.

7. The sustainability of a growing horticulture sector will require improved and long term resilience against climate change risks. Although regional projections from IPCC assessments generally apply to Himachal Pradesh, the specific impacts of climate change on the state's horticulture sector remain difficult to determine and forecast with any precision. Long-range studies (covering 30 year records) conducted by the Himachal Pradesh Agricultural University point to average air temperatures in the range of 0.7 to 2.4°C higher than that in the 1980s, as against the global average of 0.5°C.; the Himachal Pradesh trend indicates an increase of 0.06°C per year. Temperature increases are greater in the uplands than the lowlands. Analyses of rainfall data over the period 1976 to 2006 show trends of increasing rainfall in the high elevation districts of Lahaul-Spiti, Chamba and Kangra, but decreasing trends in the lower Solan and Kinnaur districts.

8. The strategy of GoI and Government of Himachal Pradesh (GoHP) to address the constraints for the rapid and sustainable development of the horticulture sector includes a variety of initiatives. These focus on growth through diversification into high value horticulture production by creating an environment that enables the farming community to acquire the necessary technical knowledge and capacity to capitalize on emerging market opportunities.⁷ The GoHP actively supports the implementation of Weather Based Crop Insurance Scheme (WBCIS).⁸ In 2014-15, over 85,000 horticulture (mainly apple) producers benefitted from insurance coverage of INR 320 crore (US\$49 million). The GoHP is also pioneering a number of initiatives emphasizing carbon-sensitive and environmentally sustainable watersheds. The State is also first to have a large scale forestry Clean Development Mechanism (CDM) project the *Himachal Pradesh Reforestation Project, Improving Livelihoods and Watersheds (CDM Project 4174)*. The state's strategic shift to and emphasis on high value horticulture opens the financial viability of providing irrigation, which in turn provides improved resilience against rainfall uncertainties.

9. The proposed Himachal Pradesh Horticulture Development Project (HPHDP) represents a major shift in how the long term development of the horticulture sector can be supported through an integrated value chain approach. As such the HPHDP expands

⁶ In 2014-15, banking sector provided over INR 2517 crore (US\$387 million) in financing for agriculture (including horticulture) and allied activities to around 200,000 farmers and the banking sector's loan portfolio to this sector was INR 6711 crore (just over US\$ 1 billion).

⁷ Under the umbrella function of the National Horticulture Mission (NHM) of GoI, the overarching policy objectives are to integrate existing national and state sponsored schemes in the sector for a holistic growth of the sector through area-based, regionally differentiated strategies, including location specific research, technology promotion, extension, post-harvest management, processing and marketing, in line with the comparative advantage of each State/region and diverse agro-climatic features. The NHM will also facilitate marketing reforms, discouraging payment of unnecessary market levies and encouraging private investment for setting up horticulture produce markets.

⁸ The State Level Coordination Committee on Crop Insurance (SLCCCI) is chaired by the Additional Secretary (Agriculture) and GoHP provides subsidizes 25 percent of the premium (GoI subsidizes another 25 percent and the farmer bears the balance 50 percent).

investments in production, processing, and marketing while improving service delivery. The project supports the modernization of the horticulture sector through the application of new technologies and approaches that will contribute to climate resiliency, strengthen the productive capacities of producers and their organizations, and facilitate access to markets and value addition for selected commodities.⁹ It will facilitate improved access to and use of financial services—in particular credit and insurance—for farmers and agro-enterprises by supporting new product development and financial counselling.

C. Higher Level Objectives to which the Project Contributes

10. The proposed project is consistent with the current Country Partnership Strategy (CPS) for India (2013-2017). The CPS outlines Bank support to India under the three pillars of *integration*, *transformation*, and *inclusion*, with a cross-cutting focus on improving governance, environmental sustainability and gender equality. The proposed project is aligned with all three pillars. Under *transformation*, the key project thrust will be to enhance the agglomeration of, mainly, small and marginal horticulture producers, to improve economies of scale in producing, processing, and marketing. The broader longer term aim will be to instill a collective entrepreneurial spirit, through which producers shift from being “price takers” of primary produce, with no or very little influence over the market, to being more business and value focused. In parallel with this, the project will support horticulture productivity (including value and incomes) through essential technology transfer in production and improved post-harvest and market operations, and also explore and pilot possible financing modalities to support entrepreneurship and agri-business. The development of higher value crops and more efficient supply chains will underpin an ongoing structural transformation of the economy. Under *integration*, the project will strengthen both physical connectivity and market mechanisms to improve market access and to increase profitability and incomes among horticulture producers in HP. The project will support post-harvest and supply chain development (including private sector engagement), which will develop local industries in storage and processing, increasing employment opportunities and wages, particularly for the rural poor (CPS para 44). Under *inclusion*, as mentioned above, the majority of agriculture producers in HP are small and marginal. In the medium term, owing to land fragmentation, an increasing number of farm families are projected to become smaller and more marginal. Given that the majority of producers are *de facto* small and marginal, the project will primarily benefit this category of producers. Also, as stated in the CPS outcome 2.4 on increased agricultural productivity, the project will invest in climate-resilient agriculture. The project will have potentially significant impact on promoting gender inclusiveness through employment creation in post-harvest management and processing which traditionally employ a much higher proportion of female labor. Furthermore, the proposed project is aligned with the World Bank Group’s goal of promoting shared prosperity and is well aligned with the Agriculture Global Practice’s key priority areas of value chains, jobs, links with the private sector, and climate smart agriculture.

⁹ Project investments relevant to climate adaptation include high-yielding and climate-resilient varieties of fruit tree crops, plant multiplication techniques, improved on-farm technologies for soil nutrient and pollination management, augmentation of irrigation, and farmers’ access to finance as key areas with major potential to support climate adaptation. Additionally, shift from annual crops to perennial tree crops will also result in climate mitigation co-benefits.

11. The proposed HPHDP's objectives are closely aligned with the key development goals of GoI related to faster, sustainable, and more inclusive growth, focusing *inter alia* on poverty reduction, equality, regional balance, and employment.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

12. The Project Development Objective (PDO) is: “to support small farmers and agro-entrepreneurs in Himachal Pradesh, to increase the productivity, quality, and market access of selected horticulture commodities.”

Project Beneficiaries

13. The project beneficiaries will include farmers and entrepreneurs especially in the micro-small medium enterprises (MSME) segment, farmer producer organizations, and other value chain participants. The project will contribute to inclusive growth by prioritizing support to small and marginal farmers in the state, with specific focus on fruit tree crops. The project will benefit about 150,000 producers. Of these beneficiaries at least 33 percent are expected to be women. Indirect beneficiaries will include those who benefit from technologies demonstrated by the project, farmers whose produce goes through rehabilitated markets, and farmers accessing negotiable warehouse receipt financing, etc. Rules, procedures, and guidelines will be employed to promote and enable equitable access to project benefits.

PDO Level Results Indicators

14. The Key Project Indicators (KPI) will be:

- (a) *Productivity*: Productivity (in ton/ha) (i) of rejuvenated apple orchards; and (ii) of new plantations of selected horticulture crops.
- (b) *Quality*: Percentage of Grade A, B and C Apples produced in HP.
- (c) *Market Access*: Share of selected horticulture commodities sold through new marketing channels¹⁰ for (i) Apple, and (ii) Tomato.
- (d) Direct project beneficiaries (number), of which female beneficiaries (%).

III. PROJECT DESCRIPTION

15. The project will support interventions designed to help the horticulture sector improve productivity and build resilience against weather-related shocks, while improving market access to provide incentives for growers to produce as per the market need. Project activities will focus on resolving the binding constraints on productivity, quality, value-addition and market linkages. In so doing it will contribute to the key aspects of the GoI's, GoHP's and the Bank's CPS strategic objectives related to faster and broader agriculture sector growth and inclusive development. The project will achieve the PDO by: (i) improving producer's access to

¹⁰ New marketing channels will include - direct purchase arrangements, contract farming, e-marketing, e-auction, trade of negotiable warehouse receipts. Indicator covers proportion of total production accessing new marketing channels supported by or made accessible because of policy reform initiated the project.

knowledge and horticulture production technologies (including climate resilient technologies¹¹), and access to financial services so that they are able to better respond to climate variability and emerging market opportunities; (ii) promoting investments in agribusiness, fostering backward and forward linkages in the value chains for horticulture products, piloting negotiable warehouse receipts for horticulture commodities, and facilitating access to financial services for agribusiness enterprises, including collectives such as producer companies; and (iii) supporting the development of an improved platform for market-related information and intelligence, developing new e-market channels outside of regulated markets, and improved services provided by modernizing traditional wholesale markets. The project will support gender inclusive strategies especially in the project intervention areas of: (i) sustainable increase in productivity of fruit tree crops through technical training on grafting techniques, management of orchards, soil, nutrients, pests and diseases, extension approaches that are designed to target women; and (ii) entrepreneurial development through training, skill development and market linkages with specific focus on fruit processing (on job work to large processors), indigenous beekeeping for managed pollination services, etc. The project will also actively support participation of women in the decision making structure of farmer producer organizations and water user associations.

A. Project Components

16. The activities of the project are clustered around three main interlinked technical components that have the following purpose: (i) improving producer's access to knowledge and horticulture production technologies (including climate resilient technologies), and access to finance; (ii) promoting investments in agribusiness, fostering backward and forward linkages in horticulture product value chains, facilitating access to finance for agribusiness entrepreneurs, and, piloting negotiable warehouse receipts for horticulture commodities; and (iii) supporting the development of an improved platform for market-related information and intelligence, and upgrading and modernizing the promising traditional wholesale markets. (See Annex 2 for a detailed description).

17. Component A: Horticulture Production and Diversification (US\$93.60 million). The objective of this component is to enhance horticultural competitiveness at the farm level by supporting access to knowledge, technology and finance in order to increase long term productivity and farm incomes in an environment marked by changing market patterns and increased climate variability. This will be achieved by: (i) enhancing producer's access to disease free elite planting materials; (ii) supporting sustainable intensification and diversification of horticultural production through technology and knowledge transfer, including harvest, capture, collection, delivery and distribution of water; (iii) strengthening applied research and development; and (iv) enhancing the access to and use of financial services by producers.

18. Component B: Value Addition and Agro-enterprise Development (US\$43.40 million). The objective of this component to improve value realization at the farm level, promote

¹¹ Climate resilience will be pursued, through application of new technologies and approaches – largely in the no-regrets domain – that will contribute to climate resiliency in the horticulture sector. It will be measured by following indicators: (i) area under scientific orchard management practices and replantation/expansion of fruit tree crops supported under the project; (ii) increased productivity; (iii) number of technologies demonstrated in the project area; (iv) area covered under irrigation and drainage services; and (v) number of farmers adopting improved agricultural technologies (see Annex 2 for details).

investments in agribusiness, fostering backward and forward linkages in the value chains for horticulture products, support supply chain infrastructure that prevents wastage and value erosion; and enable secondary and tertiary processing that create higher value for the produce. This will be achieved by: (i) building community/farm level marketing capacities and supporting them through matching grants to acquire productive assets; (ii) establishing a modern supply chain comprising pack-houses, controlled atmosphere (CA) stores, and processing facilities to be operated under operational management arrangement with private partners; (iii) piloting warehouse receipt systems linked to commodity exchanges; identifying, mobilizing and supporting agro entrepreneurs; and (iv) co-financing investments and facilitating access business advisory and to financial services for agribusiness enterprises, including collectives such as producer companies.

19. Component C: Market Development (US\$19.20 million). The objective of this component is to provide an improved platform for market-related information and intelligence, expand market access through alternative marketing channels, enhance transparency in the price discovery process, and improve market infrastructure. This will be achieved by: (i) supporting market information and intelligence services; (ii) introducing of e-marketing platforms; and (iii) upgrading wholesale markets.

20. Component D: Project Management, Monitoring and Learning (US\$15.30 million). This component will ensure the effective implementation of the project activities and monitor and evaluate project implementation progress, outputs and outcomes, building on implementation experience. This component will support: (i) establishment and operations of Project Coordination Unit (PCU), which will oversee and coordinate activities of the implementing agencies of the project; (ii) establishment and operations of Project Implementation Units in the respective implementing agencies; and (iii) setting up of a monitoring and evaluation (M&E) system for the project, including a project management information system and contracting an external M&E agency to monitor project activities and impact. The component will also finance dedicated staffing for the project activities that are attributable to the outcomes of the project, consultancies, training and related material, office equipment, and operational costs.

B. Project Financing

21. The project will be financed through a seven year Investment Project Financing (IPF). The total project cost is US\$171.5 million and will be funded by an IDA credit (US\$135.0 million equivalent), the GoHP (US\$33.7 million equivalent), and beneficiary contributions (US\$2.8 million equivalent). An IPF was selected as the lending instrument given that the investment is well defined and is to be implemented over a finite time period.

22. The GoHP will be seeking retroactive financing, not exceeding US\$27.0 million, for project-related work undertaken by the borrower during the project preparation, in advance of effectiveness. This includes procurement of planting materials, consultancies for preparation studies, incremental staff and operating costs for the Project Coordination Unit (PCU), equipment and minor upgrading of PCU office, workshops, and project-related travel, etc.

Project Cost and Financing

23. The table below details project financing by project component (in US\$ million).

Project Components	Project cost (US\$ million)	IDA Financing (US\$ million)	% Financing
A. Horticulture Production and Diversification	93.6	74.9	80
B. Value Addition and Agri-Enterprise Development	43.4	34.7	80
C. Market Development	19.2	13.1	68
D. Project Coordination and Management	15.3	12.3	80
Total Project Costs	171.5	135.0	
Total Financing Required	171.5	135.0	

C. Series of Project Objective and Phases

24. This section is not applicable to the current project.

D. Lessons Learned and Reflected in the Project Design

25. The project design has benefitted from the Bank's extensive experience in agriculture and rural development in India, and other countries, including Vietnam, Nepal, Ghana and supported by relevant studies¹² etc. Some of the main lessons reflected in the project design are:

- (a) *Strong government commitment at the highest level and integration of project activities into the mainstream operations of the line departments is key to success.* For instance, the recently concluded Assam Agricultural Competitiveness Project (AACP) was able to promote sector-wide policy improvements and reforms by effectively embedding project activities within the line departments operations.
- (b) *Participation of beneficiaries and other local stakeholders in project implementation ensures smooth implementation, success and sustainability of the project.* The demand-driven approach adopted by HPHDP requires that its design, preparation and implementation are driven by the producers. Also, the project recognizes the need for considerable and sustained long term support of community organizations, such as water user associations or other farmer-based organizations. This support includes both technical assistance through the project, and political support from the government.

¹² These include: (i) Stimulating the Growth of Agribusiness Activities in India, joint report by The World Bank, IFC and ADB (2014); (ii) Accelerating Agricultural Productivity Growth, The World Bank (2014) ; (iii) Information, Direct Access to Farmers, and Rural Market Performance in Central India, American Economic Journal: Applied Economics, Vol. 2, No. 3, July 2010, Goyal, Aparajita; (iv) High-value Crop and Marketing, Strategic Options for development in Uttarakhand, June 2010, IFPRI; (v) India: Taking Agriculture to the Market, The World Bank (2008); (vi) From Competition At Home to Competing Abroad: A Case Study of India's Horticulture, The World Bank (2007).

- (c) *Access to appropriate credit is critical in facilitating productive investments, particularly for farmers and enterprises that are resource constrained.* The project addresses this by facilitating access to financial services to producers and enterprises.
- (d) *Establishment of an integrated system that links production, processing and marketing is necessary for optimum utilization of resources and maximum benefits.* The project addresses these issues by placing strong emphasis on an integrated approach which combines investments in infrastructure with market led production systems and supported by policy reforms where needed.
- (e) *Opening alternative marketing channels leverages the increased efficiencies in the traditional marketing channels.* Studies suggest that the transaction costs in traditional wholesale market reduce within a year of the emergence of a real alternative market channel mainly through the reduction in the aggregate cost of a number of wholesale market malpractices (e.g., under weighing, extra commissions, underpricing through cartels at auctions, additional labor charges, delayed payments, etc.). Also, there is a positive correlation between better market infrastructure and improved market prices received by farmers. The Bank-funded projects (e.g. Uttar Pradesh Diversified Agricultural Support Project, AACP etc.), found that investing in market infrastructure led to an increase in farm sales. This is supported studies, which also reported a positive correlation between better market infrastructure and improved market prices received by farmers.
- (f) *The multiple State Action Plans on Climate Change for India provide a compilation of existing state government programs that contribute to climate resilience however they lack the operating and institutional mechanisms required for implementation.* HPHDP will demonstrate implementation and mainstreaming of climate resiliency into the state's horticulture sector through locally-relevant technical interventions with farmer-based institutions as well as with state institutional frameworks. Local-level actions will be changed to encourage adaptive practices by creating new incentives for public and private farm-based investments.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

26. The project will be implemented over a period of seven years, with a mid-term review envisaged two years after effectiveness. Although the project will cover the entire state (12 districts), the intensity of activities in each district will depend on the existing production potential.

27. The project will be fully integrated in the GoHP administration and implementation is designed to promote the use of existing GoHP structures at central level, and when available, at decentralized levels. Where institutional capacity is limited and special skills are required, the project will acquire outside expertise, including international technical assistance and consulting services. The project will put particular efforts into institutional coordination across departments

and agencies, and ensure that project management incorporates private sector perspectives essential for long-term development and commercialization of the state's horticulture sector.

28. Overall management and coordination will be the responsibility of the HPHDP Society, a registered body established by GoHP to implement the project. The Society will have a Governing Council and an Executive Body. The Governing Council will be chaired by the Chief Secretary of Himachal Pradesh, and will have the secretaries and principal secretaries of the implementing agencies, the principal secretaries of finance and planning, and the Vice Chancellor of the State Horticulture University as members. The Additional Chief Secretary – Horticulture will be the member secretary. The Council will meet once a year to provide overall strategic guidance, policy directives for smooth implementation, and monitor implementation of the project. The key role of the Governing Council headed by the senior most civil servant in the state will be to ensure a coordinated approach across different line departments and stakeholders in the project, and resolve any outstanding issues requiring high-level decision. The Council will have the power to approve need-based changes in the design, budget and administrative issues in project implementation. The Executive Body will be chaired by the Additional Chief Secretary – Horticulture, and will have Commissioners and Directors of the implementing agencies as members. Project Director (PD), HPHDP will be the member secretary of the Executive Body and representatives from NABARD and State Level Banking Committee will be special invitees. It will meet quarterly to ensure efficient execution of project activities.

29. Coordination of day-to-day project implementation, planning and scheduling, procurement management, financial control, as well as reporting and monitoring will rest with the Project Coordination Unit (PCU), which is part of the HPHDP society. The PCU will be headed by a full-time PD who will report to the Executive Body. The PCU will be responsible for: (i) assisting the implementing agencies in preparing annual plans and budgets; (ii) monitoring progress of project components/sub-components, preparing quarterly progress reports, evaluating performance, and providing feedback to implementing agencies; (iii) ensuring the financial reports are available, audited, and submitted to the World Bank within six months of closing of the financial year; and (iv) hiring technical experts, and key consultants, as needed, for project implementation, monitoring, and technical evaluation. The PCU will be staffed by a team of professional staff and support staff, including a Chief Financial Controller, Procurement Specialist, M&E and MIS specialists, Social and Environment specialists, Agri-business Specialist, Financial Services Specialist, and other technical personnel. In addition, the PCU will have representatives deputed from the participating implementing agencies, to coordinate with their respective department/agency.

30. Four Project Implementing Units (PIUs) have already been setup within the Department of Horticulture, Himachal Pradesh Horticulture Processing and Marketing Corporation (HPMC), Himachal Pradesh State Agriculture Marketing Board (HPSAMB), and University of Horticulture and Forestry (UHF) to oversee the implementation of their specific activities. These PIUs will be responsible for preparing, implementing and monitoring their respective annual action plans. A nodal officer has been appointed by each department to effectively liaise with the PCU. Besides the nodal officer, each PIU will be supported by procurement, finance, safeguards, and technical specialists, as needed. Implementing agencies will make extensive use of NGOs/field facilitators, like farmer interest groups or community groups for irrigation development, Farmer Producer Organization (FPO), etc.

31. For ensuring coordination and reviewing project progress at the district level, a District Coordination Committee (DCC), headed by the Deputy Commissioner, comprising all implementing agencies, lead bank, with Deputy Director of Horticulture as member secretary, will be established. The DCC will be responsible for ensuring that: (i) the participant selection criteria is adhered to, consistently, by all the implementing agencies; and (ii) at a micro level, the convergence of complementary activities is maximized (e.g., on-farm irrigation development through micro irrigation, weather insurance, etc.). District Project Implementation Units (DIUs), under the DCC will be responsible for the implementation of district programs; achievement of physical and financial milestones; quality assurance; and working closely with communities to achieve the project development objectives. The DIUs will be supported by block level implementation units consisting of Horticulture Extension Officer (HEO), Subject Matter Specialist (SMS), irrigation specialists, and community mobilizers/facilitators.

32. Using project funds, the PCU and the implementing agencies will hire service providers (e.g., international institutions, consulting firms, academia, or others) to deliver the technical assistance needed to strengthen their institutional capacity and to support their PIUs with the implementation of component-specific activities.

B. Results Monitoring and Evaluation

33. The results monitoring and evaluation system (M and E) takes into account the comprehensive nature of the operation and includes the following core elements: (i) a rigorous impact evaluation with baseline, midline and endline household and community surveys allowing for adjustments during implementation; (ii) an ICT-based Integrated Horticulture Management and Monitoring System (IHSMS) for monitoring project implementation; and (iii) a reporting system with semiannual and annual progress reports with data generated from the IHSMS. In addition, the project will introduce ICT-based tools to capture beneficiaries' feedback; assess changes in the performance of beneficiaries over time; and real time monitoring and evaluation of all the activities carried out under various components of the project. The M and E system will leverage the potential of geographical information system (GIS) for evidence-based monitoring and planning. It will enable tracking of small and marginal farmers' inclusion in project investments, interventions, and community institutions. It will also monitor gender inclusion and impact and facilitate gender disaggregated analysis. The baseline will involve a gender focused module, including work time dimensions of women engaged in horticulture.

34. The PCU will have the operational responsibility for planning and coordinating M and E activities for the entire project. The PCU will also be responsible for: (i) analysis of all project-level M and E information and generation of regular semiannual M and E reports; (ii) updating key performance indicators by consolidating the information provided by different implementing agencies and the external M and E agency; (iii) conducting independent field visits to monitor implementation and outputs of selected project activities; (iv) commissioning special M and E studies as needed; (v) maintaining the IHSMS; (v) identifying bottlenecks and corrective actions, if needed; (vi) documenting success stories; (vii) regular reporting to the Project Management Committee and the Project Steering Committee; and (vii) semiannual reporting to the World Bank on the project status. Nodal officers in each of the PIUs will be responsible for process and performance monitoring of the individual activities within the purview of the respective agencies. They will be responsible for: (i) consolidating and analyzing all M and E data

provided by district, block officers, and service providers, as relevant; (ii) validating M and E data in the IHSMS entered at the District/Block/market level and entering additional data as required; (iii) monitoring field level activities and identifying corrective actions, if needed, as well as documenting success stories; and (iv) providing monthly reports to the PCU.

C. Sustainability

35. The project is being designed following intensive consultations with all stakeholders, and its interventions geared towards attracting private investors and promoting professional producer organizations. The GoHP has confirmed its willingness and commitment to see this operation designed and quickly implemented at various stages during the preparation phase, and has provided substantial leadership in its preparation. This is amply demonstrated by the critical policy changes made by the government during preparation phase.¹³ Moreover, by anchoring project implementation within the government departments and agencies and giving them full responsibility for project implementation and management, the project will not only have a positive effect on public sector service delivery, but will also build capacity and experience within these departments and agencies.

36. The project includes several other features to foster sustainability. In India's rapidly changing food marketing environment, this operation aims to enable farmers to be better prepared to respond to these changes by supporting producers: (i) to adopt productivity-enhancing and innovative technologies (including climate resilient technologies); and (ii) to better access markets with timing and quality requirements. The project is also investing in market intelligence services, providing farmers with the signals for adjusting to changing market conditions, and facilitating access to and use of financial services. All of these are essential for sustainably increasing farmers' income, thereby putting in place also a solid basis for the O&M of assets made available through the project.

37. Dispersed smallholders may also face monopolistic competition in which one or a few buyers have most of the bargaining power. Given these circumstances, the project will play an important role in helping to facilitate collective action by groups of farmers, including fostering the growth of effective producer organizations to reduce transaction costs. Experience indicates that there is no universal approach to supporting producer organizations and that assistance must be tailor-made to the specific needs of producer organizations. The assistance must foster learning-by-doing processes, and the empowerment of producer organizations through which leaders and members assume the primary role in identifying their own needs and negotiating contracts within the markets with which they elect to engage.

38. A number of new business models will be promoted, not all of which will prove successful. However, close monitoring of the early pilots and dissemination of the lessons learned from the successful business models will enhance sustainability and reduce risks in the existing and future

¹³ GoHP is committed to amend HP-APMC Act to enhance and expand available marketing channels and outlets to horticulture producers; amended HP Fruit Nursery Act to enable the development of quality fruit nurseries; and hived off the hived off the Progeny cum Demonstration Orchards (PCDOs), belonging to Department of Horticulture, into a Special Purpose Vehicle (SPV), with the objective of formation of a commercially oriented nursery production and marketing organization. Also, GoHP has taken measures to transform the existing HP Horticulture Produce Marketing Corporation (HPMC) from a state-owned, state-managed entity to a state-owned, private-sector managed entity by adjusting the Corporation's relevant statutes and by-laws.

investments. Improved infrastructure leads to better prices and more sales.¹⁴ As part of Components B and C, investments in improved traditional and alternative markets are expected to result in such benefits.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

Risk Category	Rating
1. Political and Governance	Low
2. Macroeconomic	Low
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Moderate
7. Environment and Social	Moderate
8. Stakeholders	Low
9. Other	Low
OVERALL	Substantial

39. The overall project risk is rated as substantial. This rating takes into account technical design and institutional capacity for implementation. While the project design is not considered unduly complex and the component structure has been purposefully streamlined and simplified as much as possible to ensure consistency with the KPIs, there are risks that the intermediate outcomes of the various activities of the project may not be synchronized in terms of timing (e.g., enhancing producers access to elite planting materials). Such risks have been addressed in part by the strong commitment shown thus far by GoHP to proactively undertake policy and institutional reforms like amending the APMC Act. The GoHP is also committed to transforming the existing HP Horticulture Produce Marketing Corporation (HPMC) from a state-managed to a private sector-managed entity, though ownership will remain with the state. The GoHP is also committed to initiating a number of activities relating to project readiness (e.g. importing elite planting materials, initiating the functional requirement study for implementing business process reengineering of Department of Horticulture, initiating procurement of key consultancies, including international technical assistance consultancy, etc.). Notwithstanding the strong commitment and sound policy basis underpinning the project, the overall capacity of key participating institutions in HP will need significant strengthening in order to fulfill the oversight functions required under the project. To mitigate this, the project will provide investment and technical support, including internal consultancy/collaboration with leading research institutions, establishment of sound management information system and ICT systems, and accompanying capacity strengthening of key personnel. Another significant risk is the ability of the farmers to mobilize the financial resources necessary to make the investments necessary for replantation or expansion of orchards and that of the agro-enterprises to make the investments necessary for

¹⁴ India: Taking Agriculture to the Market, The World Bank (2008).

starting or scaling up their operations. The project will be mitigating this risk by partially co-financing such investments, providing financial education and counselling services to farmers, and facilitating access to appropriate financial services by working with financial service providers.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

40. Expected Benefits. The project is expected to result in: (i) increased fruit production (component A); (ii) domestic production of high quality apple clonal rootstock seedlings (component A); (iii) increased value addition to fruit and vegetable production (component B); (iv) reduced marketing costs (component C); and (v) nutritional benefits as a result of increased production and consumption of fruits, vegetables and legumes, better incomes of small and marginal farmers and positive effect on the value chains of these nutritious rich food commodities.

41. The financial analysis shows that: (i) rejuvenation of orchards leads to a 25 percent increase of the net revenue per hectare; (ii) new orchards plantations produce substantial financial benefits with Financial Rates of Return (FIRR) ranging from 16 percent to 35 percent and Net Present Value ranging from INR 1.4 to 8.4 million per hectare. Typical individual loans (e.g. 0.2 ha per household) would amount to INR 0.1 to 0.5 million and to be repaid over 10-12 years including a 5-6 years grace period during the establishment period of the orchards; (iii) SPV nurseries can become a profitable enterprise after 4 years, with good return: FIRR is calculated at 39 percent if sale price of feather plants¹⁵ is assumed at INR 150; (iv) component B enterprises such as common service centers (CSCs), controlled atmosphere (CA) stores, micro and small enterprises promoted by the ABPF and HPMC processing plants show good financial returns with FIRRs ranging between 24 percent and 43 percent. The project is also expected to create the equivalent of over 36,000 full time employment as a result of new orchards and enterprises under component B.

42. The economic analysis aggregated all economic cost and benefit streams during a 25 year period. In addition, the reduction in Greenhouse Gas (GHG) emissions resulting from the project was quantified applying the social value per tCO₂e estimated by the World Bank to increase in real terms from US\$30 in 2015 to US\$65 in 2040. The Economic Rate of Return (ERR) is calculated at 17.2 percent and the Net Present Value (by applying a 6 percent discount rate corresponding to the latest World Bank guidelines) is calculated at INR47.6 billion, or US\$721 million. Without counting GHG benefits, the ERR is calculated at 16.3 percent and the NPV at US\$643 million. The sensitivity analysis shows that economic results are resilient to risks such as increased costs or decreased or delayed benefits, with ERR remaining above 15.9 percent and NPV above US\$550 million.

¹⁵ Feather plants will be ready for fruit bearing within a year of planting

B. Technical

43. The project technical design is based on empirical evidence¹⁶ which suggests that: (i) creating the right enabling environment is critical for improving producers' access to markets. In general, reforms that have encouraged the private sector's role and reduced direct government involvement in agricultural marketing have had positive outcomes, and these depend on certain conditions viz., investments in public goods such as irrigation, agricultural research and development, and extension; and (ii) policies that intended to anticipate emerging winners will likely fail, but policies that build on comparative advantage and support producers and investors along the value chain can provide a framework that promotes adaptation and success for the sector as a whole.

44. The main focus of the project is on developing and commercialization of improved fruit tree cultivars that meet consumer expectations. Since fruit tree crops have a long gestation period, the project will support scaling up of dwarfing/semi-dwarfing germplasm that not only produce higher yield and better quality, but also come to bearing in a shorter time period, thereby also improving cash-flows. Moreover, this technology allows producers to readily adapt to changes in market preferences as they are able to produce trees that bear fruit quickly; and they are able to replace old trees with new varieties to meet consumer needs, if required.

45. The project will mobilize farmers into groups to take up marketing activities. Recognizing that this is a complex process that takes time, the project is providing for specialist non-governmental support organizations which will be responsible for social mobilization of farmers and for providing technical and management support during the initial years. The project is also hiring, international consultant for supporting the development of cold chain especially the infrastructure needs of pack-house and controlled atmosphere stores selected for expansion under the project. One of the project activity is modernizing markets with appropriate design. The market design consultants, recruited by the project will help in the development appropriate market design and implementation. Identification of the investments will involve participatory consultations with market users. Additionally, the project is supporting the recruitment of additional engineers in HPSAMB to assist in the implementation of this activity.

C. Financial Management

46. Overall, the financial management (FM) arrangements as proposed for the project are considered to be adequate to account for and to report on the project expenditure, as well as to satisfy the fiduciary requirements of IDA, subject to compliance with the agreed financial management framework detailed in Annex 3. The key features of this framework are as follows:

47. Implementing Agencies (IAs): HPHDP envisages the involvement of four implementing agencies: (i) Department of Horticulture (the nodal agency, through the Himachal Pradesh Horticulture Development Society or HPHDS); (ii) University of Horticulture and Forestry; (iii) HP Horticulture Produce Marketing and Processing Corporation Limited (HPMC); and (iv) HP

¹⁶ These include: (i) Stimulating the Growth of Agribusiness Activities in India, joint report by The World Bank, IFC and ADB (2014); (ii) Accelerating Agricultural Productivity Growth, The World Bank (2014) ; and (iii) Information, Direct Access to Farmers, and Rural Market Performance in Central India, American Economic Journal: Applied Economics, Vol. 2, No. 3, July 2010, Goyal, Aparajita.

State Agriculture Marketing Board (Board). To ensure coordination as well as to manage implementation, a Project Co-ordination Unit (PCU) is established within the HPHDS, which is a Society under the Himachal Pradesh Societies Registration Act, 2006.

48. Budgeting and Flow of Funds: Annual action plans (AAPs) will be prepared by all IAs for the project activities and forwarded to the PCU in Horticulture Department, for consolidation. Project funds will flow from the Treasury to the Bank account of HPHDS, at PCU and periodic disbursements will be made to the implementing agencies, based on Interim Financial Reports (IFRs). Bank accounts, with a common scheduled commercial bank, will be opened at each accounting center. The PCU will use the RTGS/NEFT system to transfer funds/make payments and cash payments will be minimized.

49. Accounting and Reporting: Books of accounts will be maintained in a Computerized Accounting System (Tally or equivalent) under Double Entry System, using cash basis of accounting. The PCU will furnish quarterly consolidated IFRs to the Bank for claiming Bank finance. The project will have 17 accounting centers which will include: (i) PCU; (ii) four Project Implementation Units (PIUs) at Horticulture Department, Horticulture University, HPMC and Board; and (iii) 12 DIUs at the District Level under PIU of the Department of Horticulture.

50. Financial Management Manual: The financial management arrangements, including the internal control framework, are documented in detail in the Financial Management and Procurement Manuals. This includes a section on delegation of power as well.

51. FM Staffing: The Finance function of the Project will be led a by the Chief Financial Controller, on deputation to PCU from the State Finance and Accounts Services. The Controller will be assisted by a Finance and Accounts Manager (preferably a Chartered Accountant). Finance Controllers of each implementing agency will have an additional charge of FM functions at PIUs. Every accounting center of project will have a dedicated accountant.

52. Audit: The Comptroller and Auditor General of India (C&AG), through its offices in Shimla, will be the external auditor for the project. The C&AG's office will conduct an annual audit of the financial statements. The audit report will be submitted to the Bank within nine months of the close of each financial year. The project will also appoint a CA firm as internal auditor as per terms of reference and selection criteria agreed with the Bank.

53. Funds Disbursed to Water User Associations (WUAs), agro enterprises under Agri-Business Promotion Facility (ABPF) and Farmers Produce Organizations (FPOs): Funds released to WUAs/ FPOs and beneficiary agro enterprises under ABPF will be eligible for reimbursement from the project subject to adequate checks and balances. Funds will be transferred electronically to the bank account of WUAs / FPOs / beneficiary agro enterprises in tranches of 50:30:20 based on pre-determined milestones. Further, these activities will be subject to audit by a Chartered Accountant firm appointed by PCU. In the case of Special Purpose Vehicle for Nursery, funds will be provided by the parent department (viz., Department of Horticulture) through its PIU.

54. Disbursement Arrangements: The Bank will finance approximately 80 percent of the project cost subject to a limit of US\$135 million equivalent. Regular disbursements will be made every quarter, based on expenditure as reported in the IFRs. Funds from the Bank will be made available to GoHP (through GoI) under the standard arrangements between GoI and the states.

55. Retroactive financing: Up to 20 percent of the World Bank's contribution to the project equivalent will be available for financing eligible project expenditures incurred before the one-year period of the likely date of Credit Agreement signing.

56. The overall financial management risk is rated to be moderate. This is on account of inherent risk due to, a large number of implementing entities, and funds flowing down to large number of community groups for implementation. The risk will be constantly evaluated and restated, if implementation experience so warrants.

D. Procurement

57. Procurement for the project will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" (January 2011 revised July 2014) [Procurement Guidelines]; "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers (January 2011 revised July 2014)" [Consultant Guidelines]; guidance note for "Design and Management of Procurement Responsibilities in Community Driven Development (CDD)" projects, March 15, 2012; and the provisions stipulated in the Legal Agreements.

58. A Procurement Plan for the first 18 months of project implementation, including contracts to be procured under advance contracting, has been agreed with the Bank. Details of procurement arrangements are provided in Annex 3.

59. Procurement manuals, including appropriate contract management and a complaint handling mechanism, have been prepared by the Nodal Agency (Department of Horticulture, through the Himachal Pradesh Horticulture Development Society or HPHDS) and the same will be used by all the implementing entities, which details procurement arrangements and methods.

60. Procurement Plan: The Project is using a Procurement Plan (PP) as well as monitoring and execution software [Systematic Tracking of exchanges in Procurement (STEP)] to strengthen the management of the PP. The Procurement Plan will be updated throughout the duration of the Project at least annually by including contracts previously awarded and to be procured in the next 12 months. All Procurement Plans and their updates or modifications are subject to the World Bank's prior review and no objection before implementation.

61. Procurement Risk Assessment and Mitigation (PRAMS): As part of the Project preparation process, an assessment of procurement capacity of all the implementing entities was conducted using the Procurement Risk Assessment Management System (PRAMS) and accordingly, risk mitigation measures have been proposed. The overall risk is rated as "moderate". Based on the assessment of implementing agencies, the main procurement risks were identified as limited capacity and inefficiencies resulting in delays in procurement and non-compliance with agreed procurement arrangements. Agreed mitigation measures are: use of skilled procurement staff;

monitoring through the procurement plan and quarterly reports and strengthening of the complaint management process.

62. E-procurement System: The project will be using an e-procurement system for all envisaged procurement under the Project. The e-procurement system assessment was carried out against the Multilateral Development Banks (MDB) requirements, and has been accepted for use for Procurements under Bank funded projects by the Bank. The Nodal Agency (Department of Horticulture, through the Himachal Pradesh Horticulture Development Society or HPHDS) and all the implementing entities will use this system to procure above the shopping threshold. The two envelope system will be termed as “bid in two parts”; technical qualification assessment will determine the eligibility and qualification of the bidders; and the technical-financial part of the bid will be opened in a timely fashion for the qualified bidders.

E. Social (including Safeguards)

63. The project has undertaken an Environment and Social Assessment (ESA) to identify the key environment and social impacts, risks, mitigation actions, as well as constraints and opportunities directly related to project interventions and investments. The assessment involved review of project documents, existing studies and reports, and discussions with project preparation team and implementation agencies. **Stakeholder consultations** were held with farmer groups/cooperatives, fruit growers’ associations, women’s groups, government departments (agriculture, horticulture, HPMC, forests, tribal development), as well as local NGOs. The key social development/safeguard issues, strategies and implementation arrangements are summarized below.

64. **OP 4.12 on Involuntary Resettlement** is not triggered as the project does not anticipate any private land acquisition. Government land available with HPMC or state government will be utilized for market yards, nurseries and packaging/processing infrastructure. For minor irrigation schemes and common service centers, farmer organizations will be procuring land through voluntary donation, private purchase or lease (from private individuals or panchayats). The project will use a social screening checklist to identify and mitigate any adverse impacts arising out of land related issues. The **OP 4.10 on Indigenous Peoples** is applicable as several project intervention areas will be covering tribal areas and communities. While tribal communities are dispersed throughout the state, they are particularly concentrated in more remote, backward areas in Kinnaur, Chamba, and Lahaul-Spiti districts. While an overwhelming majority of farmers in HP have marginal (70%) or small landholdings (18%), and are expected to be the main project beneficiaries, the risk of their exclusion from project interventions, investments and institutions will need to be mitigated through systematic prioritization and targeting, and citizen’s engagement strategy. Women producers engaged in agriculture and horticulture development are key to improving productivity, and will need to be engaged in project activities.

65. To address the key social safeguard, social inclusion, gender and citizen’s engagement issues summarized above, the Project has prepared an Environment and Social Management Framework (ESMF). It includes details of relevant social policies, social baseline, stakeholders’ consultations, social screening checklist, guidelines for producer organizations, tribal development plan (TDP) outlines, implementation and monitoring arrangements, and capacity building program. Besides, it comprises of: (i) a strategy for targeting, prioritization and

tracking of small and marginal farmers as project beneficiaries, as well as members of WUAs and FPOs; norms/rules for inclusive membership and benefit sharing in WUAs, and FPOs; (ii) an indigenous peoples planning framework (IPF) or Tribal Development Framework (TDF) that provides guidance on screening/identification of tribal communities in project areas, conducting informed consultations and documenting broad community support, inclusive planning and institution building processes, preparing area-specific tribal development plans, and implementing socially compatible outreach and communication strategies; (iii) a gender strategy that includes targeting and inclusion of women producers in farmer interest groups, water user associations and common service centers; providing technical knowhow, extension, and practical training on management of orchards, soil, nutrients, pests and diseases, nurseries; training and entrepreneurship promotion in indigenous beekeeping, vermi-composting, fruit processing, nursery management/development; participation of women producers in post-harvest management and market infrastructure/services; gender focused module as part of baseline study; as well as other demand driven programs; (iv) a Citizens Engagement Strategy that includes actions related to participatory planning and implementation for common service centers, community minor irrigation schemes; use of ICT in beneficiary feedback, information dissemination, technical advice, monitoring beneficiary satisfaction, and grievance redressal; and (v) social impact screening for post-harvest infrastructure, common service centers (CSCs), and minor irrigation schemes. Institutional arrangements to implement the ESMF comprise of two Social Development Coordinators (SDC) and one Tribal Development Consultant who will be hired at the state level for the entire project duration and will be responsible for overall implementation of the social management framework and tribal development framework. At the district level, they will be supported by six Social Development Specialists (SDS) who will cover all the project districts. Details of implementation arrangements, including grievance redressal are provided in Annex 3.

66. ESMF Disclosure: The Borrower disclosed the completed ESMF and translated version of the executive summary on its website on January 11, 2016, besides disclosing at district level. The document, as requested by the Borrower, was also disclosed at the Bank's Infoshop on January 18, 2016. Further an in-country disclosure workshop with representatives from relevant departments, NGOs, FPOs, WUAs and PRIs etc., was held on January 21, 2016 in the project area.

F. Environment (including Safeguards)

67. **The proposed project is categorized as 'B' triggering the safeguard policies OP/BP4.01 Environmental Assessment, OP/BP4.09 Pest Management, and OP/ BP4.04 Natural Habitats.** An Environment and Social Management Framework has been developed for mitigating potential identified impacts and managing identified environmental and social risks under the project. The environmental policy framework, institutional arrangements, potential environmental impacts and their proposed mitigation measures along with compliance management issues are addressed in the ESMF. All interventions proposed under the project share the long term objective of increasing the productivity, profitability and market access of selected horticulture commodities and will require, from a safeguards perspective, addressing the core issues of environmental sustainability and social inclusion. The current practices in the state for boosting horticultural productivity need to become more sustainable and require revisions to the available package of practices (POPs), introduction of better cultivars,

modernizing and improving the irrigation systems and improving farm management. This is particularly critical in the light of anticipated climate change impacts for which farmers need to develop adaptation capacity and increased resilience. The market infrastructure will also need to evolve and be upgraded in parallel for ensuring that the horticulture produce fetches competitive price to the grower. The issues of safe and sustainable environmental and social practices are central to the project design. All infrastructure proposed under the project will be designed and executed according to the provisions in the ESMF.

68. Institutional Capacity for Safeguards Management. The PCU, PIUs and DIUs at the state, and district level are new entities requiring additional skills in management of social and environmental aspects, including safeguards management. The project will support the appointment of environmental and social specialists in the PCUs to monitor implementation of the ESMF and other social and environment related activities. At the sub-project level, the environment specialists in the PIUs of HPMC and HPSAMB will ensure that individual ESAs, EMPs, are prepared and implemented, with support from qualified firms. The project will support safeguard training for all the specialists at the state level (PCU, PIUs), district and block level implementation units. The PCU will also provide resource persons and personnel for training on Integrated Pest and Nutrient Management (IPNM) related activities.

69. Environmental Impacts. Proposed interventions pose the potential risk of adversely impacting the local environment if not appropriately designed, executed or operated. While no significant and/or irreversible impacts are anticipated, there exists a possibility of some long term impacts due to improper and overuse of pesticides and agrochemicals, and risks associated with the introduction of exotic cultivars of select horticulture species. Improper site selection for siting physical infrastructure, unsustainable water resource management practices, absence of solid and liquid waste disposal and management facilities in the proposed agro-processing facilities, expansion of horticulture into natural areas, including forests, etc. could result in additional impacts. However, these impacts could be reversed, mitigated, contained and managed through well-designed mitigation strategies. An Environmental and Social Management Framework (ESMF) has been developed that spells out the provisions required to be undertaken at the time of designing, constructing and operating sub-projects. Both the ESA and the ESMF benefitted from wide stakeholder consultations across the state, including with producers and producer groups, subject matter specialists, Horticulture Development Officers, Horticulture Extension Officers, Block Development Officers, women, and tribal populations. The ESMF specifically includes an Integrated Pest Management (IPM) strategy to ensure that the farmers would reduce reliance on chemical pesticides with the introduction of imported cultivars. Since all investments are not identified at this stage, the ESMF provides for the screening of project investments according to their likely environment and social impacts. Activities that will finance physical infrastructure, particularly supply chain infrastructure with a potential to have moderate to substantial adverse impacts, will require undertaking a site specific Environmental Impact Assessment (EIA) for preparing and implementing specific Environment Management Plan (EMP). The provisions for implementing EMP will be incorporated into the bidding documents and contracts prior to commencement of works.

70. Green House Gas (GHG) analysis for the proposed project was carried out which quantifies the net carbon balance, that is GHGs emitted or sequestered, as a result of the project compared to the without project scenario. The project is likely to have a net positive impact on carbon

sequestration, primarily led by the conversion of grasslands to permanent tree crops, demonstration of good resilient agricultural practices such as soil nutrient management, targeted fertilization, and pesticide management and energy-efficient post-harvest infrastructure such as CA storage.

G. Other Safeguards Policies Triggered

71. **International Waterways (OP7.50):** This policy is triggered as the project is supporting development of minor irrigation systems in about 19,500 ha out of a total of 30,000 ha for sustainable increase in productivity of the fruit tree crops. The minor irrigation activities will consist of: (a) remodeling, improvement and strengthening of existing irrigation systems in about 6,950 ha; and (b) development of new minor irrigation systems in about 12,600 ha. Under the development of new minor irrigation activities, following five major categories of activities will be carried out: (i) rain water capture, harvesting, storage, and distribution for about 2,480 ha; (ii) spring water capture, storage and distribution for about 3,330 ha; (iii) snow melt capture, storage and its distribution for about 682 ha; (iv) diversion of water from first and second order streams (typically that are near habitations), for about 2,532 ha; and (v) construction of small head weirs in first and second order streams (typically that are near habitations) for about 3584 ha. The irrigation activities under the project will cover all the 12 districts of the state, however, the intensity of the irrigation activities in each district will primarily depend on the beneficiary demand for improved seedling of the targeted fruit tree crops, and on the production potential of the district. Investments in the development of new minor irrigation systems in all of the 12,608 ha to be supported under the project will fall entirely in the catchments of the Sutlej, Ravi and Beas basins, which as per the Indus river treaty are for India's exclusive use only. The Project is also expected to improve the existing irrigation infrastructure in about 160 ha of total surface area in the district of Lahaul-Spiti which is crossed by the Chenab, one of the "Western" tributaries of the Indus, which waters have been assigned by the Treaty to Pakistan. It is expected, though, that the proposed improvement of the existing irrigation infrastructure will not affect the current flows of the Chenab, nor demand any additional water extraction, conveyance or storage. In light of the above, the riparian countries of China and Pakistan, were notified on January 15, 2016 about the project activities and were given sufficient time to communicate any concerns posed by the Project. China (upstream riparian) did not respond. On May 6, 2016, Pakistan (the downstream riparian) formally conveyed to the Bank the no-objection to the Project, thereby satisfactorily concluding the notification process.

72. The riparian notification process that has been followed is consistent with the requirements in OP 7.50. The riparian countries have been properly informed of the salient features of the Project, and have been given sufficient time to communicate any concerns posed by the Project. Moreover, the task team has expeditiously and satisfactorily provided the additional information requested by Pakistan. It is the Task Team's determination that taking into account the location and the minimal incremental rate of water abstraction that may result from the proposed small scale irrigation activities, the Project will not cause appreciable harm to China and Pakistan, nor be appreciably harmed by these riparians' possible uses of the international waterways.

H. World Bank Grievance Redress

73. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring

Results Framework

PDO Statement								
The Project Development Objective (PDO) is: “to support small farmers and agro-entrepreneurs in Himachal Pradesh, to increase the productivity, quality, and market access of selected horticulture commodities.”								
The project beneficiaries will include farmers and entrepreneurs especially in the micro-small medium enterprises (MSME) segment, farmer producer organizations, and other value chain participants. The project will contribute to inclusive growth by prioritizing support to small and marginal farmers in the state, with specific focus on fruit tree crops. The project will benefit about 150,000 producers. Of these beneficiaries at least 33 percent are expected to be women. Indirect beneficiaries will include those who benefit from technologies demonstrated by the project, farmers whose produce goes through rehabilitated markets, and farmers accessing negotiable warehouse receipt financing, etc. Rules, procedures, and guidelines will be employed to promote and enable equitable access to project benefits.								
These results are at	Project Level							
Project Development Objective Indicators								
	Cumulative Target Values							
Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6	End Target
Productivity of rejuvenated apple orchards (Tons/Ha)	7	7	7	6.3	7	7.35	7.7	8.0
Productivity of new plantations of selected horticulture crops (Tons/Ha) ¹⁷								
Apple	0	0	0	0	0	0	2.0	2.7
Pears	0	0	0	0	0	0	3.0	3.3
Plum	0	0	0	0	0	0	1.5	2.2
Peach	0	0	0	0	0	0	1.5	2.2
Pomegranate	0	0	0	0.5	0.8	1.0	2	3.5

¹⁷ By the very nature of fruit tree crops, most productivity returns accrue after the project period. See Annex 5 Financial and Economic Analysis for details regarding the long term returns of the fruit tree crops supported under the project.

Percentage of Apple Grades A, B and C (Percentage)								
Grade A	40	40	40	41	42	44	46	50
Grade B	25	25	25	26	27	28	28	30
Grade C	35	35	35	33	31	28	26	20
Share of selected horticulture commodities sold through new marketing channels (Percentage)								
Tomato	10	10	10	10	12	15	15	15
Apple	10	10	10	10	12	15	20	25
Direct project beneficiaries (Number) - (Core)	0	2800	13500	27100	51600	82600	112300	150000
Female beneficiaries (Percentage) - (Core)	0	33	33	33	33	33	33	33
Intermediate Results Indicators								
	Cumulative Target Values							
Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6	End Target
Area covered under (Ha)								
Scientific orchard management	0	0	880	2200	3520	4840	6600	8800
Replanting unproductive apple orchards	0	0	0	50	330	1080	2050	3000
Area expansion of apple orchards	0	0	0	100	870	2550	4760	7000
Area expansion of other fruit trees	0	550	2070	3625	5270	6865	9017	11200
Technologies demonstrated in the project areas (Number) - (Core)	0	0	5	10	15	15	15	15
Clients who have adopted an improved agr. technology promoted by the project (Number) - (Core)	0	1900	9500	19000	36000	58000	78000	100000
Clients who have adopted an improved agr. technology promoted by project – female (Number) - (Core)	0	630	3100	6300	12000	19000	26000	33000

Climate resilient technologies demonstrated in project area (Number)	0	2	4	7	7	7	7	7
Area provided with irrigation and drainage services (Ha) - (Core)								
Area provided with irrigation and drainage services - Improved (Ha)	0	150	750	1450	2600	4000	5400	6850
Area provided with irrigation and drainage services - New (Ha)	0	300	1400	2700	4900	7400	10000	12700
Water users provided with new/improved irrigation and drainage services (Number) - (Core)								
Water users provided with irrigation and drainage services - male (Number)	0	1500	7300	14300	26700	40100	54200	70000
Water users provided with irrigation and drainage services - female (Number)	0	200	1100	2100	4000	6000	8100	10500
Operational water user associations created and/or strengthened (Number) - (Core)	0	22	105	205	382	573	774	1000
Farmers who have been provided with financial counseling.	0	1600	6000	12000	20000	36000	57000	75000
FPOs supported by the Project								
FPOs (Number)	0	0	0	15	30	30	30	30
Members (Number)	0	0	0	1500	3000	3750	4500	5250
Yearly throughput (Tons)	0	0	0	0	6000	13000	20000	60000
Quantity of farmer's produce stored in newly established and upgraded CA capacities (Tons)	2040	2040	2040	1600	3210	3710	5210	5210
Quantity of farmers' produce utilizing upgraded and newly established pack-house facilities (Tons)	11200	0	15000	22500	34000	41500	60000	60000
Number of enterprises set up with the support of ABPF (Number)	0	0	0	25	70	100	125	125
Increase in the throughput of the 14	1148000	0	0	1170000	1216000	1320000	1389000	1435000

rehabilitated markets (Tons)								
No. of APMC markets with computerized auction system with full trading of selected commodities (Number)	0	0	0	5	15	55	55	55
No. of markets networked into a virtual market (Number)	0	0	0	0	0	10	15	20
Percentage of Beneficiaries who are satisfied with project interventions (Percentage) ¹⁸	0			60	60	60	80	80

Indicator Description				
Project Development Objective Indicators				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Productivity of rejuvenated apple orchards (tons/ha)	Baseline = 2 year HP average yields; Scientific Orchard Management i.e. new package of practices in all apple orchards under the project will result in an increase of 15% in productivity. Intervention starts in Project Year (PY) 2, and a 10 % decrease in existing productivity is expected in PY3. In PY4, the yield is expected to equal the baseline and thereafter there will be an increase in yield by 5, 10 and 15 % annually for the next three years.	Annual, midterm review and final assessment	Field monitoring and external impact assessment	DoH field staff, checked and aggregated by PCU M&E Unit and external impact assessment agency
Productivity of new plantations of selected horticulture crops (ton/ha)	Baseline = 2-year HP average yields; Annual yields (ton/ha) on (new) plantations of demonstration plots in PCDOs and lead farmer plots of 5 horticulture crops (apple, pear, plum, peach, pomegranate). In Apples, Plum, Peach and Pear, plantations will be undertaken by PY4 and production starts by PY7; In Pomegranate, plantation will take place in PY1 and yields start in PY3.	Annual, midterm review and final assessment	Field monitoring and external impact assessment	DoH field staff, checked and aggregated by PCU M&E Unit and external impact assessment agency
Percentage of Apple Grades A, B and C	The grades will be defined on the prevalent norms in the market. Grade A: more than 80 % color, uniform shape and upto 10 % blemishes. Grade B: 80-60 % colour, fairly uniform shape, upto 15 % blemishes. Grade C: colour less than 60 % and fruits with defects sold in gunny bags. The baseline value has been agreed in discussion with	Annual, midterm review and final assessment	Field monitoring and external impact assessment	DoH field staff, checked and aggregated by PCU M&E Unit and external impact assessment agency

¹⁸ This indicator would be revisited at the first MTR.

	experts from Department of Horticulture and HPSAMB. The quality of apples under the project areas will be enhanced by interventions like SOM and use of elite planting material (rootstock and cultivars). The field staff will monitor the change in proportion of grades of apples annually by interviewing farmers and or CAs in the markets. Data on proportion of grades of apples produced will also be gathered during external impact assessment studies by external agencies.			
Share of selected horticulture commodities sold through new marketing channels	New marketing channels include: wholesale within the State through direct purchase arrangements, contract farming, e-marketing, e-auction, negotiable warehouse receipts. Indicator should cover: Apples and Tomatoes. Proportion of total production accessing new marketing channels supported by or made accessible because of policy reform by the project: these would include NWRs under C3, CSCs under B1, Cold Storage and CAs under B2. Baseline exist for apple and tomato (AERC Report – 2011)	Annual, midterm review and final assessment	Annual market survey in Delhi and in HP	HPMC and external impact assessment agency (with support of AERC)
Direct project beneficiaries	Direct beneficiaries are people or groups who directly derive benefits from an intervention.	Annual, midterm review and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	PIUs aggregated by the PCU M&E Unit
Female beneficiaries	Female direct beneficiaries are people who directly derive benefits from an intervention	Annual, midterm review and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	PIUs aggregated by the PCU M&E Unit

Intermediate Results Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Area covered under (Ha): (i) Scientific orchard Management practices; (ii) Replanting unproductive apple orchards, (iii) Area Expansion of Apple Orchards, and (iv) Area Expansion of other fruit trees	(i) Area on which POP for selected horticulture crops given by the project is applied for apples (ii) Area where current cultivation is replanted with HYVs of selected horticulture commodities and where POP (including chloropicrin) for these commodities provided by the project is applied. (iii) New area brought under cultivation of apple using clonal rootstock provided by then project and applying POP (iv) New area of other fruit trees using HYVs of selected horticulture crops	Annual, midterm review and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	DoH field staff, checked and aggregated by PCU M&E Unit and external impact assessment agency

	promoted by the project and applying POP			
Technologies demonstrated in the project areas (Number)	This indicator measures the number of unique technologies demonstrated by the project.	Annual, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	PCU and the four implementing agencies
Clients who have adopted an improved agr. technology promoted by the project (gender disaggregated) (Number)	This indicator measures the number of clients of the project who have adopted an improved agricultural technology promoted by the project. This also measures the number of clients who adopt climate resilient technologies.	Annual, midterm and final assessment	Reports by the Dept. of Horticulture, HPMC and University complemented with independent assessment of the extent and conditions of adoption of technologies	PCU, the four implementing agencies and the external impact assessment agency
Climate resilient technologies demonstrated in project area (Number)	This indicator measures the number of unique climate resilient technologies demonstrated by the project.	Annual, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	PCU and the four implementing agencies
Area provided with irrigation and drainage services (Ha)	This indicator measures the total area of land provided with irrigation and drainage services under the project, including in (i) the area provided with new irrigation and drainage services, and (ii) the area provided with improved irrigation and drainage services, expressed in hectare (ha).	Annual, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	DoH field staff, checked and aggregated by PCU M&E Unit and external impact assessment agency
Water users provided with new/improved irrigation and drainage services (Number)	This indicator measures the number of water users (gender disaggregated) who are provided with irrigation and drainage services under the project.	Annual, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System, complemented with independent assessment of WUAs	PCU and external impact assessment agency
Operational water user associations created and/or strengthened (Number)	This indicator measures the number of water user associations created and/or strengthened under the project that are operational.	Annual, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System, complemented with independent assessment of WUAs	PCU and external impact assessment agency
FPOs supported by the Project	FPO created or strengthened under the project.	Annual, midterm and final	On-going monitoring - Integrated Horticulture	PCU and PIU Horticulture

		assessment	Management & Monitoring System	
Quantity of farmer's produce stored in newly established and upgraded CA capacities (Tons)	Assumption: 50% of the CA capacity used by individual farmers.	Annual, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	PCU and PIU-HPMC
Quantity of farmers' produce utilizing upgraded and newly established pack-house facilities (Tons)	Assuming that grading machines work at 75 % efficiency.	Annual, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	PCU and PIU-HPMC
Number of enterprises set up with the support of ABPF (Number)	Enterprises for which business plans have been financed by the project through matching grant.	Annual, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	PCU and PIU Horticulture
Increase in the throughput of the 14 rehabilitated markets (tons)	Through put is the total produce coming to the market yard for auction/sale. Baseline: Average of past 2 years.	Annual, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	PCU and PIU-HPSAMB
No. of APMC markets with computerized auction system with full trading of selected commodities (Number)	Top five commodities will be taken for computerized auction.	Annual after PY 3, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	PCU and PIU-HPSAMB
No. of markets networked into a virtual market (Number)	Markets include APMC (Principle market yards and other market yards under APMC, Cold stores, CSCs)	Annual after PY 4, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	PCU and PIU-HPSAMB
Percentage of Beneficiaries who are satisfied with project interventions (Percentage)	Proportion of beneficiaries who are satisfied with the project services they have utilized.	Annual, midterm and final assessment	On-going monitoring - Integrated Horticulture Management & Monitoring System	PIUs aggregated by the PCU & M&E unit

Annex 2: Detailed Project Description

1. The Project Development Objective (PDO) is: “to support small farmers and agro-entrepreneurs in Himachal Pradesh, to increase the productivity, quality, and market access of selected horticulture commodities.”

2. Project activities will be grouped into four components: (i) Component A: Horticulture Production and Diversification: improving producer’s access to knowledge and horticulture production technologies (including climate resilient technologies), and access to finance so that the producers are able to respond to climate variability and emerging market opportunities; (ii) Component B: Value Addition and Agri-enterprise Development: promoting investments in agribusiness, fostering backward and forward linkages in the value chains for horticulture products, facilitating access to finance for agribusiness entrepreneurs, and, piloting negotiable warehouse receipts for horticulture commodities; (iii) Component C: Market Development: supporting the development of an improved platform for market-related information and intelligence, and upgrading and modernizing the promising traditional wholesale markets; and (iv) Component D: Project Management, Monitoring and Learning: improving public sector capacity in delivering horticulture support services.

3. Implementation of the four components will take place over seven years. Although the project will cover the entire state (12 districts), the intensity of activities in each district will depend on the existing production potential and as dictated by the participant’s demand.

Component A: Horticulture Production and Diversification (US\$93.60 million)

4. This component will enhance horticultural competitiveness at the farm level by supporting access to knowledge, technology and finance in order to increase long term productivity and farm incomes in an environment marked by changing market patterns and increased climate variability. This will be done by enhancing producer’s access to disease free elite planting materials; supporting sustainable intensification and diversification of horticultural production through technology and knowledge transfer, including harvest, capture, collection, delivery and distribution of water; strengthening applied research and development; and enhancing the access to finance to producers.

5. This component supports the application of new technologies and approaches – largely in the no-regrets domain – that will contribute to climate resiliency in the horticulture sector. Results indicators for Component A that are directly relevant to climate adaptation and mitigation include: (i) area under scientific orchard management practices and replantation/expansion of apple orchards and expansion of fruit trees; (ii) increased productivity; (iii) number of technologies demonstrated in the project area; (iv) area covered under irrigation and drainage services; and (v) number of farmers adopting improved agricultural technologies (see Annex 1 for details).

Sub-Component A1: Enhancing availability and adoption of elite planting materials and horticulture technology transfers.

6. The main objectives of this sub-component are enhancing availability and adoption of improved true-to-type, disease-free, elite planting materials of horticulture crops by establishing a locally robust nursery industry (including supportive regulatory structures) capable of meeting demands for high quality and diverse planting materials; and supporting adaptive research and development, and dissemination of improved technologies to producers.

7. Developing and commercialization of improved fruit tree cultivars that meet consumer expectations is important for the economic sustainability of fruit tree industry in the state. In many leading fruit tree producing countries (especially for pome and stone fruits), planting of dwarf/semi dwarf trees using clonal rootstocks¹⁹ has become the industry standard. Advantages of clonal rootstocks, compared to seedling rootstocks are four fold viz., a shorter time period before reaching full production; higher tree density and thus higher yield per acre; better quality (because of more sunlight capture leading to better sugar production and improved flavor); faster and less expensive pruning, thinning and fruit harvesting; and favorable cash flows. As such with the dwarf/semi dwarf trees, a small but significant yield is expected during the second growing season of the orchard, substantial in the third growing season, and mature yield in season five. In addition to higher yield, early achievement of breakeven through dwarf/semi dwarf technology allows growers to more readily adapt to changes in market preferences, as they are able to produce trees that bear fruit more quickly, and are also able to replace old trees with new varieties to meet consumer needs, if required.

8. However, inadequate availability of quality planting material (including the dwarfing/semi dwarfing technologies for stone and pome fruits) is an important deterrent in the development of a sound horticulture industry in the state. It is of special significance, especially in fruit tree crops which have a long gestation period and effects are known only in later stages. Fruit growers have very limited choice of good quality elite planting material. At present, the state depends on mostly unregulated small scale private sector nurseries which lack modern infrastructure for nursery management; sell plant materials of unknown pedigree; and often encounter un-availability of standardized root stocks and non-maintenance of healthy stocks of elite varieties.

9. To address these issues, GoHP has recently adopted a series of important measures such as: (i) amendment of the Himachal Pradesh Fruit Nurseries Registration and Regulation Act, that not only enables the establishment of a network of quality nurseries, but also promotes stricter enforcement of quality standards; and (ii) hived off the Progeny cum Demonstration Orchards (PCDOs), belonging to Department of Horticulture into a Special Purpose Vehicle (SPV) with the objective of creating a commercially oriented nursery production and marketing organization that has advanced and integrated production and multiplication facilities, and can offer producers and private sector nurseries with elite planting materials and clean mother stock material at competitive rates.

10. The project's support for enhancing the access to elite planting material in the state will comprise of three major interconnected interventions, including: (i) standardize and certify

¹⁹ A clonal rootstock is a vegetatively propagated rootstock. Clonal rootstocks allows for better selection of genetics in the orchard; they are more productive, uniform, disease resistant, and adaptable. Examples include, among others, EMLA rootstock for Apples, Quince for Pear, and Gisela for cherries.

planting materials by implementation of a system of inspection and certification; (ii) training and capacity building of private sector (small scale) nurseries, organizing them into a nursery grower association; and (iii) support the newly established SPV for modern nursery production.

11. This sub-component will support: (i) importing true-to-type, disease-free genetic material (both root stock and cultivars); (ii) strengthening post-quarantine facilities and pest and disease surveillance; (iii) establishing nurseries in the SPV using modern techniques for propagation; (iv) training and capacity building, including study tours, workshops, vocational and academic training, preparation of technical advice modules, etc.; (v) international technical assistance to SPV, for a period of five years, to ensure implementation as per international standards²⁰; (vi) collaboration with international nurseries/research institutions for joint ventures and partnerships²¹; and (vii) adoptive research and development and dissemination of improved technologies (including: package of practices for management of high density planting, pollination, fertility management practices, labor-saving agricultural technologies for women; expanding the usage of bio control agents and bio-fertilizers. etc.) to be implemented under the sub-component A2. The adaptive research program will be built on the existing technologies developed by the UHF and those sourced internationally.

Sub Components A2: Promoting Climate Resilient Technologies and Adoption

12. The objective of this sub-component is to support sustainable increase in productivity of fruit tree crops, and promote the adoption of climate resilient, on-farm technologies. To achieve these objectives, this sub component will promote: (i) development of new orchards using dwarfing/semi dwarfing technologies (about 13700 ha); (ii) diversification of the horticulture production base (about 4500 ha); (iii) replanting unproductive apple orchards by developing soil fumigation systems appropriate for hilly terrain and introducing alternative integrated soil management practices and services²² (about 3000 ha); and (iv) scientific orchard management practices in existing orchards (about 8800 ha) by modernising farm management practices, including, new planting systems and structures, canopy management and pruning, integrated pest, disease and nutrient management systems, fertiliser and irrigation management. In these project areas, this sub-component will support the development of minor community irrigation systems for storage, distribution and delivery of water, to overcome variability during the critical summer months and to ensure stable soil moisture during budding, flowering and fruiting (about 19600 ha).

²⁰ The project will finance the human resources and incremental operating costs of the SPV for four years. It is envisaged that by the end of fourth year the SPV will generate sufficient revenues to sustain itself independently.

²¹ The project will support the SPV's partnership with acclaimed tree fruit nurseries, and also become a member of the International New Varieties Network; International Tree Fruit Association and other relevant associations.

²² Specific Apple Replant Disease (SARD) is a major problem in apple orchards worldwide, preventing re-establishment of healthy apple orchards. Without soil remediation, establishment and growth of replanted trees will be extremely poor, with substantially retarded development. Some apple growers in India have historically used formalin to drench replant soil, but this is not only ineffective, it takes more than 24 months to remediate the soil. Internationally, chloropicrin is the preferred chemical as it not only effectively remediates the soil but the turnaround time is about 2 to 4 months. However, this chemical is not yet registered in the country. Project authorities have already applied for its registration for closed trail in technical collaboration with Trinity Manufacturing Inc. Based on the current progress, it is expected that commercial scale registration will be completed by mid 2018.

13. On-farm integrated crop management (ICM) demonstrations will be the core project intervention under this sub-component, and the main vehicle for the dissemination of improved technologies to the producers. The ICM demonstrations will include: (i) the demonstration and adaptation of location-specific technologies, including technologies that meet the changing climatic conditions like low chill cultivars of apple, new dwarfing/semi dwarfing technologies, soil remediation, anti-hail net etc.; (ii) pollination management; (iii) soil test and leaf analysis based application of fertilizers (including use of organic manures, bio-fertilizers); (iii) integrated pest management (including use of bio-pesticides); (iv) cultural practices (like pruning, canopy management etc.) at the optimum stage of crop; and (v) efficient methods of on-farm water management (including micro irrigation). Where feasible, special efforts will be made to include low cost methods for improving on-farm water use efficiency, such as alternate furrow irrigation, paired row irrigation, use of crop residues as mulches for reducing evaporation loss, etc., as an integral part of ICM demonstrations.

14. This sub-component will support a package of institutional, physical, and improved water management related activities, which will include, among others: (i) development of new minor community irrigation systems for storage, delivery and distribution of water to overcome variability during critical summer months (about 12600 ha); (ii) remodeling, improvement and strengthening of existing community minor irrigation systems (about 7000 ha); (iii) formation of about 1000 Water User Associations (WUAs) which will be responsible for planning, execution, operation and maintenance of the community minor irrigation system; and (iv) fostering and capacity building of water users organizations. Activities to be financed under this activity include: (i) capacity building to promote self-management by community-based institutions; (ii) technical assistance for preparation, implementation and monitoring of development plans; (iii) services of NGOs / field facilitators, engineering-support consultants, etc., to assist with community mobilization, capacity building and technical assistance; (iv) procurement of survey equipment and GIS maps etc.; and (v) developing and improving minor community irrigation system for about 19600 ha. The project will also support WUA training and capacity building in key areas such as: planning and implementation of minor community irrigation systems works; preparation and implementation of operations and maintenance (O&M) plans; assessment and collection of water charges; maintenance of records and accounts; improved water-sharing and utilization; and participatory monitoring, learning and evaluation. Although the infrastructure that will be needed for the development of minor community irrigation systems will emerge from the actual field level assessment, through participative consultation and crop water budgeting, illustrative features will include, water harvesting structures, poly-lined tanks²³, check dams, small lifts, high density poly ethylene pipes, etc.

15. The sub-component will also support post-harvest management demonstrations for promoting farm level cleaning, grading, packing and value addition of horticulture produce. Other activities will include training and exposure visits for farmers, training of trainers, workshops, etc. Training topics will include, but not limited to, good agricultural practices²⁴,

²³ Polythene lined tanks (poly-tanks) can provide lower unit cost of storage than concrete storage (estimated cost of poly lined storage is about INR 500 per cubic metre (CuM), while that of cement concrete storage is about INR 2000 per CuM.

²⁴ Special efforts will be made for complying with Good Agricultural Practices (GAP) and facilitating accreditation of producer's orchards under the Indian Good Agricultural Practices (IndGAP) program, which the Quality Council of India is sponsoring.

agribusiness management, negotiating in the market, basic accounting, record keeping, etc. The project will also support adaptive trials for testing promising crop husbandry practices and on-farm water management technologies which are at an advanced stage of development and require on-farm testing, refinement and validation. The project will finance the extended presence of a technical assistance consultant firm which will assist with the planning and management of implementation of investments in this component. Additionally, two Centers of Excellence will be established in the state in technical collaboration with international agencies. These agencies will be competitively selected at implementation.

Sub-component A3: Facilitation of access to financial services and building financial capability

16. The objective of this sub-component is to ensure that adoptee farmers have the financial capital to make the farm-level investments necessary to participate in the project and the financial capacity to do this in a responsible manner. It is estimated that about 75 percent of the adoptee farmers under the project for new area expansion and replantation will need access to long-term credit. At an average investment cost of \$16,000 per hectare²⁵ and 21,200²⁶ hectares of coverage expected, the farm-level investment needed over the project period is estimated to be US\$339 million. Assuming that at least 75 percent of this investment will need to be financed by farmers through borrowing from financial institutions, the amount that will be needed is estimated at US\$189 million. This amount is not too large considering that this is over a period of seven years and the current annual financing to the sector is at least US\$250 million. Further, in consultations with the industry, major financial service providers indicated willingness and interest in reversing the trend of falling share of medium and long term credit to the sector. Commercial banks interests are also strengthened by the fact that: (i) clonal rootstock technology, unlike the current seedling based technology, enables financial service providers to develop new credit products since the gestation period is much lower²⁷; and (ii) financial returns of the clonal technology is about four times of the returns from the current practices²⁸. Hence, the project will undertake targeted activities to ensure that the appropriate credit and insurance services are available to the project beneficiaries and they use them prudently.

17. The project will support: (i) the development of appropriate loan and insurance products and their responsible provision to farmers, in partnership with the National Bank for Agriculture and Rural Development (NABARD)²⁹ and financial services providers³⁰; (ii) the development of Key Facts Statements for the new products that provide key information regarding the products in simple accessible language that will be available to farmers prior to their buying these products;

²⁵ Averaging among all the fruit tree crops

²⁶ Consisting of: (i) new orchards development using clonal rootstock technologies (about 13700 ha); (ii) diversification of the horticulture production base (about 4500 ha); (iii) replanting unproductive apple orchards (about 3000 ha).

²⁷ Gestation period for peak harvest is reduced from 12 years under the currently practiced technology to 3-6 years under the clonal rootstock technology.

²⁸ See crop budgets in Annex 5, Financial and Economic Analysis.

²⁹ NABARD in partnership with HPHDP has prepared a draft policy and guidelines, including the scale of finance, for use by banks to provide long-term finance for major tree crops supported under the project.

³⁰ Project has had discussions with commercial banks and insurance companies to assess their willingness to develop appropriate products and banks have given letter in support for their participation in the project through existing financial products or by developing a separate product line that meets the specific needs of the project.

(iii) the use of mobile phone based communication to inform producers of key events like due dates for loan installments and insurance premiums, loan amounts and insurance claims that are credited from loan account; and (iv) financial education and counseling to producers to ensure that they have financial resources necessary to make project investments through savings and prudent borrowing; use insurance to protect their key assets; and, are better prepared to prudently save and invest income generated from the investments. To effectively undertake the above activities, the project will finance targeted analytical and technical assistance activities including studies on producer demand for financial services and financial capability. Financial education/counseling will be provided to farmers at key stages of the investment cycle in partnership with financial service providers.

Component B: Value Addition and Agri-enterprise Development (US\$43.40 million)

18. This component will enhance market access for farmers through value addition at the farm level, through improved post-harvest handling of their produce, to meet the demands of high-value markets; and support increased private investment in the development of value chains, processing, marketing, and other field services.

Sub-Component B1: Product Aggregation and Sale through Producer Associations

19. The objective of this sub-component is to organize the producers into farmer producer organizations (FPOs); develop their capacity and skills for marketing for accessing wider markets; and investment support to these FPOs for establishing common service centers (CSCs). The CSCs are conceived as small scale aggregation places owned, managed and operated by FPOs. The project will finance 'productive' demand-driven investments, on a grant basis, to FPOs, for establishing CSCs and it will be made available based on the business plans prepared by them. The grants provided under these activities will be supported at 75 percent of costs with 25 percent contribution in cash/kind by beneficiaries. The mobilization of producer groups, FPOs and establishment of common service centers will be carried out by suitably qualified service providers hired by the project. Establishment of about 30 common service centers and corresponding FPOs will be supported by the project, primarily focusing on vegetables, fruits, and cut flowers.

20. FPOs will undertake various activities such as bulk purchase of inputs for sale to individual members, marketing of produce, grading and quality control, and enhancing access to distant and higher value markets and by-passing existing market inequities. The benefits to the members of FPOs are expected to be higher prices through the combination of larger critical mass of saleable produce, thereby providing economies of scale, savings in transaction costs, and strengthened negotiation positions, coupled with the added value achieved through primary grading and packing.

Sub-Component B2: Supply Chain Infrastructure Support and piloting Negotiable Warehouse Receipts

21. The objective of this sub-component is to establish a modern supply chain, that prevents wastage and value erosion, and allows access to more distant markets; and enable secondary and tertiary processing that create higher value for the produce. To achieve this goal, this sub-

component will support upgrading, and modernizing the supply chain infrastructure, consisting of cold chain³¹ and processing facilities, of HPMC to be operated on a for-profit basis under operational management arrangements with private sector partners.

22. The GoHP has taken measures to transform the existing HP Horticulture Produce Marketing Corporation (HPMC) from a state-owned, state-managed entity to a state-owned, private-sector managed entity by adjusting the Corporation's relevant statute and by-laws. By doing so, GoHP has ensured that envisaged investments under the project aimed at improving marketing and processing infrastructure are operated on a for-profit basis.

23. By supporting the capacity and facilities of a professionally managed and commercially oriented HPMC, with its cold chain and processing facilities operated under operational management arrangements with private sector partners, the project will:

- Improve the capacity of the growers to utilize markets to their financial advantages: Though, HP has seen investments in cold chain by private players, all of which is based on trading model wherein the private player procures the apples during season and sells it during the off season, with risk and rewards are borne by the private players. As such the availability of cold chain on a rental basis to producers is virtually non-existent in HP. By supporting the increase in the capacity of HPMC owned cold chain, which are operated under PPP arrangements, with 50 percent storage space earmarked for producers, the project provides arbitration opportunities to the producers in the state.
- Create an alternative marketing channel: the Project will also support negotiable warehouse receipts (NWRs) on a pilot basis, in order to provide post-harvest finance against the stored goods and facilitate NWR based trading. This will be done in conjunction with commercial banks, accredited controlled atmospheres and electronic commodity exchanges³². FPOs that are formed under the project will be affiliated with the accredited controlled atmospheres storages for the purposes of warehouse receipt financing and/or electronic spot trading.
- Investments in the cold chain will also reduce seasonal gluts, extend the marketing period by withdrawing some supplies from the fresh spot market and storing them for off-season marketing. It will thus relieve the downward pressure on the spot prices, especially with the anticipated higher production due interventions under Component A.
- Likewise, the removal of large volumes of processing grade apples, (essentially the C-grade apples, currently estimated at about 20 percent of grower output) from local circulation, supports higher prices for the remaining volumes of apples by product differentiation and market segmentation, while still being quite profitable to HPMC.

24. The activities to be financed will include modernization and upgrading of HPMC existing pack houses (from 24,000 mt to about 33,000 mt capacity per year), controlled atmosphere (CA) storage (from 4,000 mt to about 10,500 mt capacity), processing facilities (upgraded to 80 mt per hour, and enhancing the packaging capacities at two HPMC plants), proposed 57,000 mt pack house capacity and 5,000 mt CA volumes based on fruit production volumes in the later years of

³¹ Cold chain consisting of pack-houses, cold storages, controlled atmosphere (CA) storages.

³² HPHDP has already initiated discussion with NCDEX e Markets Limited, which provides trade-facilitation, collateral management, logistics and supply chain management and clearing and settlement.

the project; feasibility studies; investment support for goods and equipments; consultancy services; and capacity building and training. The infrastructure that will be needed each of the cold chain and processing facility will be determined individually for each location and will emerge from the business and market needs assessment. The process of business and market need assessment, and facility design will be facilitated by a qualified service provider. An illustrative list of infrastructure that will be financed under the project includes, among others, packaging, storage, food quality testing and side-line manufacturing of value added products, color-grading machine lines, etc.

Sub-Component B3: Agri-Business Promotion Facility (ABPF)

25. The project will establish an Agri-Business Promotion Facility (ABPF) with the main objective of: (i) promoting private investment in local horticulture agribusiness, fostering backward and forward linkages in horticulture value chains, and promoting positive policy change; and, (ii) providing agribusiness incubation services, with the objective of identifying and supporting entrepreneurs and facilitating their investment in the local agribusiness sector – this will consist of both technical support and business mentoring to develop the required skill sets.

26. ABPF will provide pre and post investment support for agri-entrepreneurs. This will include, among others, scanning the market for potential opportunities for entrepreneurs to participate, conducting market studies and value chain analysis; holding investor meets (including outreach initiatives); establishing a mentor network; scouting for new technologies; assisting small and medium private entrepreneurs to prepare business and financial proposals; and providing incubation services to emerging agri- entrepreneurs. It will also facilitate agriculture policy seminars, thereby providing a forum for stakeholders in Himachal Pradesh to discuss improvements in the agribusiness investment climate. ABPF will facilitate linkages between enterprises and clients. Networking between entrepreneurs, farmers, government, and other stakeholders will provide valuable feedback towards creating a more conducive, business enabling environment, to attract private investment in the local horticulture industry. The agribusinesses supported through ABPF could be value added manufacturing or service businesses supporting horticulture production. More widespread availability of such services and market outlets will further encourage farmers to take up improved production and post-harvest handling technologies.

27. The ABPF will provide matching grants to new and existing agro enterprises (including commercial and existing agro enterprises, commodity associations and producer collectives) that are actively seeking to expand their operations. The grants will be provided on a competitive basis and the maximum proportion will be similar in value to that provided to producers (under component A and sub-component B1). Selection criteria for these grants will include: (i) additionality (the grant is not simply replacing commercial capital); (ii) have some public good character that benefits many participants in a value chain; and (iii) has the potential for systemic impact (for jump-starting structural changes in the sector for adoption of a new technology, etc). Lastly, the ABPF will work with financial services providers to facilitate availability of investment and working capital financing for these enterprises. This will be done by financing targeted analytical and technical assistance activities that can help financial service providers in develop new agri enterprise financing products (including credit guarantee mechanism) or refine existing products.

Component C: Market Development (US\$19.20 million)

28. The objective of this component is to improve farmer access to market information and intelligence; improve transparency in price discovery, improve market infrastructure and services in the traditional wholesale markets, and making market management more efficient and responsive to farmers' needs. This component will have the following sub-components: (i) upgrading and modernizing market infrastructure; and (ii) setting up an economic and market information and intelligence cell.

Sub-component C1: Upgradation and modernization of agricultural wholesale markets

29. The main objective of this sub-component is to upgrade and modernize selected agricultural wholesale markets, by enhancing efficiency and reducing transaction costs, enabling automation of the business processes in the market and also open-up standalone physical markets to distant buyers. To achieve this goal, this sub-component will support upgrading and modernizing the market infrastructure in agriculture wholesale markets, including about 16 primary and secondary wholesale markets managed by Agriculture Produce Market Committees (APMC). APMC would contribute 20 percent toward the cost of market upgrading.

30. **Market upgrading** will be supported by the development of 'basic' infrastructure that promotes improved handling of commodities, improved hygiene and improved price dissemination. The infrastructure that will be needed in the wholesale markets will be determined individually for each market and will emerge from the market needs assessment through participative consultation with the market users. The process of market need assessment, and market design will be facilitated by a qualified service provider. An illustrative list of basic infrastructure that will be financed under the project includes, among others, auction hall, internal roads, toilets, parking, price display board, loading platform, ramps, fence, etc.

31. **Market modernization** will be supported by suitable automation, including electronic auction, bringing about greater ease, accuracy and speed of transactions for the benefit of all the market participants. Electronic auction will usher in greater transparency in price discovery, also encouraging wider trade participation thereby increasing competitive pressures. The system will also open up the possibilities of selling produce through e-auction, without having to bring the produce to the physical market yards, by enabling remote buyers to participate in the electronic auction, by creating a virtual market network. Activities to be financed include: (i) feasibility studies; (ii) investment support for goods and equipments; and (iii) capacity building and training. The expected results are: (i) improvement of transparency in the price discovery; (ii) automating the business transactions of the markets; and (iii) opening up of a standalone physical market to distant buyers.

32. This sub-component will also support: (i) capacity building and training of market functionaries and implementing agency staff. Although the training needs will come from training needs assessment, an indicative list of trainings will include planning and implementation for market improvement; preparation and implementation of operations and maintenance plans for the market; post-harvest management; marketing and market extension; maintenance of records and accounts; and market charge estimation and collection; (ii) technical assistance for the preparation of detailed architectural designs and work estimates along with

detailed project proposal for each market through a specialized agency to be engaged under the project as consultants; (iii) review and quality assurance of civil works by independent market field engineers (MFEs) of the project; and (iv) technical assistance for effective enforcement of provisions of the Himachal Pradesh Agricultural Produce Marketing (HPAPMC) Act, Rules and Bylaws, and the newly setup agriculture market regulator in the state. The expected results are: (i) increase in the number of farmers satisfied with improved markets; and (ii) increase in the volume of market transactions.

Sub-Component C2: Setting up Economic and Market Information and Intelligence (EMI) cell

33. The main objectives of this sub-component are to increase information transparency, productivity, profitability and market access to the farming community in the state. To achieve this, the project will support the setting up of an EMI cell within the HPSAMB. EMIC is expected to provide producers, enterprises and trade intermediaries with relevant information, technical knowledge, and market intelligence; and support diversification and intensification of horticultural production, aimed at responding to market demand and climate variability. To date, such a comprehensive service is at an infant stage in the state and needs to demonstrate its value, improve its content and outreach, and reduce costs.

34. The sub-component will support a solution access architect for market information and market intelligence. For market information, project will support dissemination of targeted information through information and communication technology (ICT) in partnership with the existing private players³³. For market intelligence, the project will support preparation and dissemination of commodity outlook reports; creating a database of buyers, traders, agribusiness and transporters. The aim is to create a body of commercial and market knowledge on horticulture marketing and production, and to establish a system of communicating technical, economic and marketing information to the producers and department staff. Towards this, the project will hire a qualified service provider to staff the cell (illustrative staffing consisting of economist, market analyst, IT expert, etc.).

Component D: Project Management, Monitoring and Learning (US\$15.30 million)

35. This component will ensure the effective implementation of the project activities and monitor and evaluate project implementation progress, outputs and outcomes, building on implementation experience. Under this component the project will support: (i) establishment and operations of Project Coordination Unit, which will oversee and coordinate the activities of the implementing agencies of the project; (ii) establishment and operations of Project Implementation Units in the respective implementing agencies; and (iii) setting up of a monitoring and evaluation (M&E) system for the project, including a project management information system and contracting an external M&E agency to monitor project activities and impact. This component will also finance dedicated staffing for the project activities that are attributable to the outcomes of the project, consultancies, training and related materials, office equipment, and operational costs.

³³ For example, cell phone text service (popularly called the SMS service) has seen the emergence of private sector players. However, their reach in Himachal Pradesh is very limited.

36. The component will also support Government Process Re-engineering (GPR), of the Horticulture Department, to enhance operational efficiency in administration and service delivery. GPR will focus on improved citizen focus and experience, minimized process complexity, cost and service delivery time, increased transparency levels, and reduced administrative burden. In order to achieve the desired outcomes the project will finance development and deployment of an Integrated Horticulture Management and Monitoring System (IHSMS) so as to improve service delivery as well as real time monitoring and evaluation of all the activities carried out under various components of the project. The proposed system will leverage the potential of GIS technologies for evidence based monitoring and planning. The modules of this system will include: Horticulture Sector Portal; Department Wide Management Information System (MIS) Module; Mobile and Cloud based Monitoring and Evaluation Module (M&E); and Citizen Engagement and Grievance Redress Module.

Annex 3: Implementation Arrangements

Project Institutional and Implementation Arrangements

1. The implementation arrangements for the project cover issues related to governance structures for the project, coordination between various implementation partners, particularly representation and participation of the implementing entities namely Department of Horticulture, Himachal Pradesh Horticulture Processing and Marketing Corporation (HPMC), Himachal Pradesh State Agriculture Marketing Board (HPSAMB), and Dr. YS Parmar University of Horticulture and Forestry (UHF). This also covers the details regarding fund flow and fiduciary systems, and the implementation structure described below follows the state, district, cluster and community level implementation and monitoring arrangements.
2. The project will be implemented over a period of seven years. Although the project will cover the entire state (12 districts), the intensity of activities in each district will depend on the existing production potential.

Project administration mechanisms

State level:

3. Overall management and coordination will be the responsibility of the HPHDP Society, a registered body established by GoHP to implement HPHDP. The Society is controlled by a Governing Council, chaired by the Chief Secretary, and an Executive Body, chaired by the Additional Chief Secretary – Horticulture³⁴. The day-to-day executive control rests with the Project Director, who heads the Society's Project Coordination Unit (PCU). The relevant line Departments / autonomous bodies, will act as implementing agencies for all the project activities falling under their area of responsibilities.
4. The Governing Council at the State level has been set up under the Chair of the Chief Secretary, Government of Himachal Pradesh. Principal Secretaries/Secretaries of the implementing agencies, Principal Secretaries Finance, Planning, and Vice Chancellor of the State Horticulture University are its members. Additional Chief Secretary – Horticulture is the member secretary. The Council will meet once a year to give overall advice, policy directives for smooth implementation, and monitor implementation of the project. The key role of the Governing Council headed by the senior most civil servant in the state, is to ensure a coordinated approach across different line departments and stakeholders in the project. The Council has the power to approve need-based changes in the design, budget and administrative issues involved in the implementation of HPHDP. The Executive Body chaired by the Additional Chief Secretary – Horticulture and including Commissioners and Directors from implementing agencies, has been constituted to ensure efficient execution of project activities. Representatives from NABARD and State Level Banking Committee will be special invitees to the Executive Body. It will meet half yearly and the Project Director is the member secretary of the Executive Body.

³⁴ Refers to the administrative secretary of the department concerned.

5. Coordination of day-to-day project implementation, planning and scheduling, procurement management, financial control, as well as reporting and monitoring will rest with the Project Coordination Unit (PCU). The PCU will be responsible for: (i) assisting the implementing agencies in preparing their annual plans and budgets; (ii) monitoring progress of project components, preparing quarterly progress reports, evaluating performance and providing feedback to implementing agencies; (iii) ensuring the financial reports are available, audited, and submitted to the World Bank within six months of closing of the financial year; (iv) hiring technical experts, and key consultants, as needed, for project implementation, monitoring, and technical evaluation; and (v) providing timely and quality resources as well as technical assistance to the District Project Implementation Units (DIUs). The PCU will be staffed by a team of professional staff and support staff, including a Chief Financial Controller, Procurement Specialist, M&E and MIS Specialists, Social and Environment specialists, Agri-business Specialist, Financial Services Specialist, and other technical personnel. In addition, the PCU will have representatives deputed from the participating implementing agencies, to coordinate with their respective department/agency.

6. Four Project Implementing Units (PIUs) have been setup within the Department of Horticulture, HPMC, HPSAMB and UHF to oversee the implementation of their specific activities. These PIUs will be responsible for preparing, implementing and monitoring their respective annual action plans. A nodal officer has been appointed by each department to effectively liaise with the PCU. Besides the nodal officer, each PIU will be supported by procurement, finance, safeguards, and technical specialists, as needed. The exact staffing of each PIU will vary and the staffing will be based on the quantum of activities undertaken by each implementing agency. Implementing agencies will make extensive use of NGOs / field facilitators, like farmer interest groups or community groups for irrigation development, Farmer Producer Organization (FPO).

District and Block level:

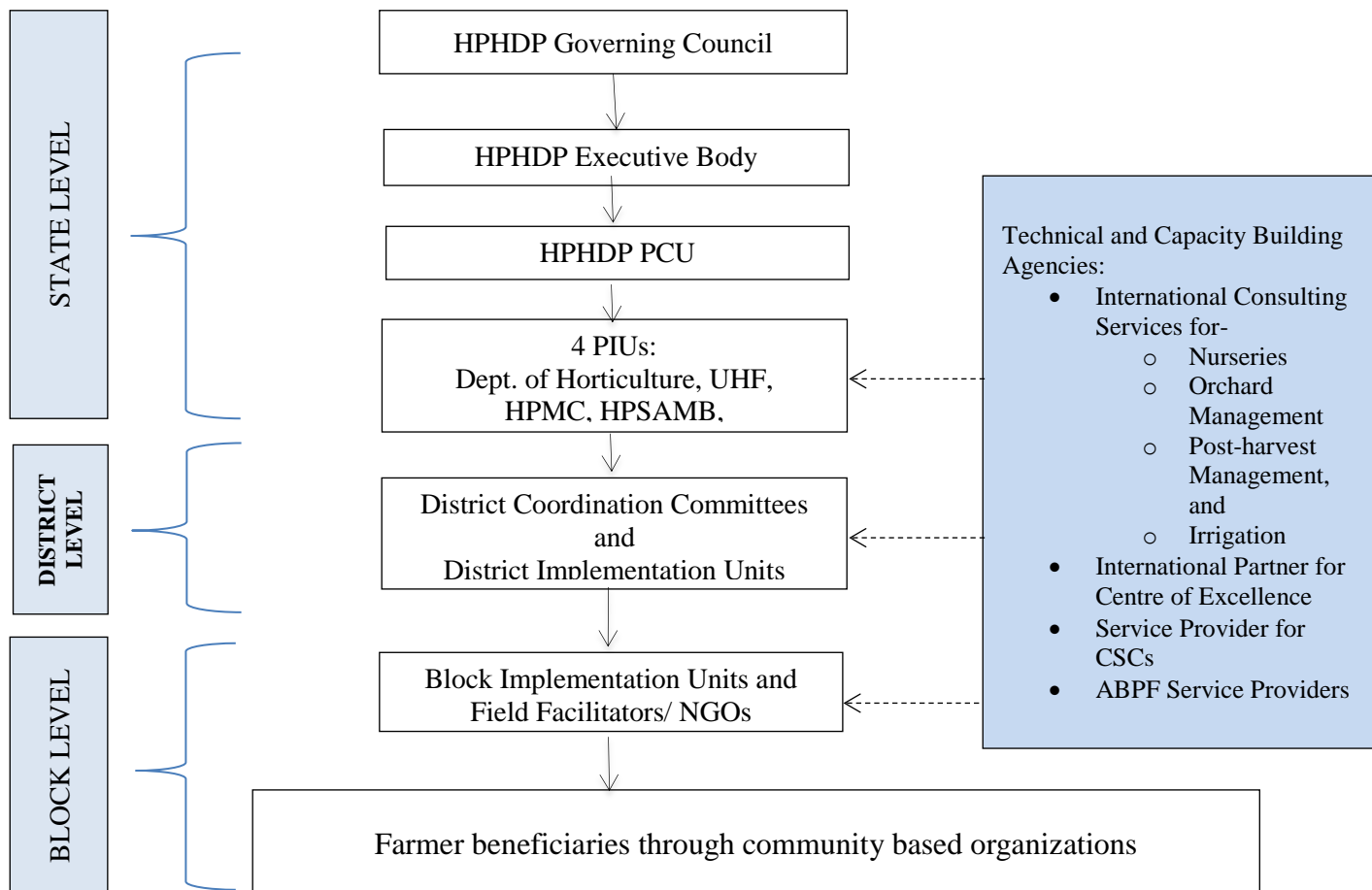
7. To ensure coordination and review the project progress at the district level, a District Coordination Committee (DCC), headed by the Deputy Commissioner, comprising all implementing agencies, lead bank, with Deputy Director of Horticulture as member secretary, will be established. The DCC will have the responsibility to ensure that (i) the participant selection criteria is adhered to, consistently, by all the implementing agencies; and (ii) at a micro level, the convergence of complementary activities are maximized (e.g. on farm irrigation development through micro irrigation, weather insurance etc.). District Project Implementation Units (DIUs), under the DCC, will be responsible for the implementation of district programs; achievement of physical and financial milestones; quality assurance; and working closely with communities to achieve the project development objectives. The DIUs will be supported by block level implementation units consisting of Horticulture Extension Officer (HEO), Subject Matter Specialist (SMS), irrigation specialists, and community mobilizers/facilitators.

8. Implementation capacity will be strengthened by selective collaborations and technical assistance. The Project will collaborate with both national and international institutions for training, technical backstopping and setting up Centers of Excellence. Internationally recruited consultants will be engaged to support elite plant multiplication, nursery management, scientific orchard management, and address the various productivity enhancement measures both at farm

and supply chain (e.g. pollination management, addressing replant problems, processing, controlled atmosphere storage etc.).

9. Project implementation arrangements are shown diagrammatically in Figure 1.

Figure 1.



10. A Project implementation plan (PIP) has been prepared explaining the roles and responsibilities of district offices of line departments, and project support organizations, for all project activities, and detailing arrangements for the flow of funds down to implementing units in the field. Selection criteria for participating groups have been agreed, and are included in the PIP. The PIP will be subject to periodic reviews conducted jointly by GoHP and IBRD/IDA with stakeholder participation to address any constraints to the successful implementation of the project.

Specific implementation arrangements includes the following:

11. Multiplication of elite planting materials: Department of Horticulture and Dr. YS Parmar University of Horticulture and Forestry (UHF) will be responsible for implementing this component. Specialist service providers will be recruited by the respective implementing agencies for implementing some of the activities. A Special Purpose Vehicle (SPV), a registered

body established by GoHP is responsible for the propagation of elite planting materials. During the project processing, the GoHP had taken an early action towards the implementation of the specific reform of restructuring of Progeny Cum Demonstration Orchards (PCDO) of Department of Horticulture (DoH), by hiving off selected PCDOs³⁵ into a Special Purpose Vehicle (SPV), and provided a governance structure with financial and administrative autonomy. This has been done with the objective of enabling sustainable production of high quality elite planting material for different fruits crops. A MoU will be signed between the DoH and the SPV for transfer of the identified PCDOs along with the assets and seconded staff. This SPV will be operated on commercial basis, and it will reinvest the funds generated, into the operations and maintenance of the organization, and the SPV is expected to become a financially viable organization after the first three years of operations. As the need arises and based on the performance assessment at midterm, the legal status of the SPV will be changed from Society to Company. Further, international and national consultants will be recruited to provide technical assistance on the best available technology and practices adopted in horticulturally advanced countries of the world.

12. Fostering and capacity building of Water User Associations (WUAs): Mobilization of water user organizations around a micro watershed cluster is a known practice in the Himachal Pradesh and is well codified in the guidelines of the state irrigation policy. There are many examples of successful WUAs being formed within Himachal Pradesh, through the on-going World Bank assisted project and the best practices from this project will be used. The WUAs essentially take over the operations and maintenance of the system. Implementation of subcomponents will be supported by NGOs / field facilitators capable of supporting cluster level community mobilization, irrigation system management, on-farm water management, and formation of farmer groups and producer organizations. The WUA will be expected to play an active role in the planning, implementation and supervision of subprojects, procurement of goods works, services, operation and maintenance of the minor community irrigation systems, and self-monitoring of cost effectiveness and sustainability. The district implementing unit with the support for NGOs / field facilitators will work with the WUAs to prepare a the development plan of the minor community irrigation system, which, through a participatory process, will identify and prioritize desirable interventions as well as prepare cost estimates and implementation plans for them. The plan will include: (i) detailed cost estimates of rehabilitation interventions required following a joint walk through of the minor irrigation system; (ii) identify works that will be directly implemented by WUAs and those that will be contracted out; (iii) a horticulture development plan covering all crops in that command area; (iv) plans to deal with social and environment safeguards; (v) training and capacity building needs; (vi) estimates of annual O&M requirements; and (vii) indicators and arrangements for participatory monitoring of project implementation progress and impacts. Once completed, the development plan will be approved by the General Body of the WUA and submitted to DIU for review and consolidation and ultimately, formal ratification by the DLIC.

13. Product Aggregation and Sale through Producer Associations: The responsible implementing partner for this sub-component is the Department of Horticulture. Three private

³⁵ In the first phase, selected PCDOs located in different agro-climatic zones and two UHF farms have been transferred to this SPV to take over the responsibilities multiplication of imported germplasm under strict supervision and standardized protocol.

Service Providers will be contracted by PCU to mobilize producer groups, and establish FPOs across 30 possible geographic areas in HP. They will be hired for four years to establish FPOs and guide each FPO through registration. Furthermore, Service Providers will guide FPOs in their marketing arrangements, particularly identifying alternative market channels, such as attracting linkages with more distant higher value markets, and altering post-harvest practices accordingly. The work and progress of the Service Providers will be monitored by district staff of the Department of Horticulture. The size and scope of a particular producer association will not be pre-determined but will allow a demand led process. Depending on the capacity, maturity and needs these producer associations will be formed. The producer association may be a group based federation of 15-20 producer groups, with each producer group consisting of about 15-20 farmers or a membership based federation consisting of about 300-350 farmers. Wherever possible the existing commodity groups will be motivated to join the producer associations. At critical stages these producer associations will be evaluated on appropriate indicators such as membership attendance, membership strength, record keeping, growth in membership, retention of members, volume and value of marketed produce to assess the group's maturity. The project has a clearly laid-out sequence of activities for the formation of FPOs, that will guide implementation at the community level, which are detailed in the project implementation plan and community operational manual. The implementation cycle will have four sequential but interlinked stages, including: (i) social mobilization and producer group formation; (ii) group nurturing and capacity building; (iii) formation of FPO and establishment of common service center (based on a business plan); and (iv) handholding of FPOs.

14. Processing: An International Consultant will be hired to scope the installation of new equipment into the two existing HPMC processing plants and any Greenfield investments that occur later in the project. During Year 1, the consultant will scope the installations in the existing processing plants, conduct a needs analysis, identify appropriate systems in each location and provide technical recommendations based on modern technologies and best practices. Cost considerations will determine the most appropriate equipment and technologies to be purchased. Civil works, equipment installation and commissioning will be completed through procurement of local contractors. Following installation, the international consultant will quality assure and certify the equipment. The consultant will continue to provide training and support to HPMC for any problems that arise, particularly concerning food safety issues.

15. Pack-houses and CA stores: A lead international consultant and an assistant will be responsible for assessing current infrastructure at each HPMC pack-house and CA stores selected for expansion. They will assess and determine the profitability of the current operational management arrangements of HPMC's existing pack-house/CA stores, wherein the private partner operates the pack-house and CA store, while HPMC pays for utilities and maintenance of the facility, and reserve 25 percent of existing CA capacity for farmers. The consultants will recommend alterations to these existing operational management arrangements, if necessary, to improve returns to HPMC, and accommodate a proposed farmer CA reservation capacity of 50 percent under the project-financed upgrades at these pack-houses and CA facilities.

16. These consultants will also identify and design the most appropriate installations for each of the six existing sites. The consultant designs will include applicable equipment within given budgets. The basic design and equipment package should be replicable across any site pack-

houses and CA stores built during the latter stages of the project. The consultants will also train HPMC staff on designing and operating modern pack-house/CA facilities.

17. Agribusiness Promotion Facility (ABPF): The organizations involved in the implementation of ABPF are the: (i) Project Coordinating Unit (PCU) with overall responsibility for the Facility; (ii) a Service Provider contracted from the private sector responsible for ABPF operations; and (iii) an Independent Assessment Panel, for awarding the matching grant to the bidders. The PCU will ensure that ABPF remains fully aligned to and supportive of national economic policies and the objective of enabling agribusiness development in HP horticulture industry; it will oversee the implementation of ABPF by the Service Provider including approving annual work plans and budgets; lead the process of disseminating learning arising from funded projects and stakeholder interactions towards creating a more conducive local business enabling environment. The PCU will contract an expert consultant to make recommendations on the key design features of the matching grant (eligibility criteria, funding windows, funding rounds, leverage ratio, etc.) based on international best practices but adapted to the local context. The contracted service provider will staff ABPF's offices and manage ABPF's on-going program of activities. The service provider will: (i) document all policies and procedures relating to ABPF; (ii) provide business advisory and incubation services; (iii) manage the matching grant; and (iv) facilitate access to financial services for supported enterprises. The matching grant management role will include the following tasks: (i) raise public awareness and attract applications from suitably qualified entities; (ii) screen concept notes of the matching grant applicants based on publicly available criteria; (iii) submit eligible concept notes to the Independent Assessment Panel for decision; (iv) negotiate and conclude funding contracts with successful applicants; and (v) manage contracts in accordance with ABPF's operating procedures. The Independent Assessment Panel ensures the integrity of ABPF as fully competitive and transparent in the award of matching grants. The panel will consist of recognized experts in agribusiness, finance, and enterprise development, and will have gender diversity.

18. Up gradation and modernization of agricultural wholesale markets: HPSAMB will be responsible for the implementation of the activities under HPSAMB in close collaboration with Secretaries of the Agriculture Produce Market Committees will widely disseminate and share information about the component and its objectives with a special focus of market modernization. An awareness campaign will be undertaken to inform the potential beneficiaries about the benefits of market modernization especially with regard to the likely impact of automation, including electronic auction. The project will support exposure cum training visits of the key decision makers, in the identified markets, to states where market modernization (through electronic auction) has been implemented. The objective of these learning visits are to look at the key concerns and practices related to electronic auction implementation as well as share the experience on the governance system. The feasibility study³⁶ for the market modernization will be carried out by suitably qualified consultants. Based on the feasibility studies, the market modernization program will be implemented. The project will also discuss with the various national level electronic commodity exchanges for possible collaboration in market modernization. HPSAMB will recruit, through a competitive process, a design and

³⁶ As part of the project preparation, HPSAMB has already initiated the feasibility study for market automation including electronic auction.

engineering service provider for working with selected markets for the development of market upgradation proposal. The project will also support the recruitment of additional engineers in HPSAMB to assist the implementation of this sub component. The market upgradation proposal will be prepared through participatory consultations with the market users, who will identify and prioritize their needs. Once the market upgradation proposal is completed, HPSAMB will review and evaluate the proposal based on predefined quantifiable criteria and make recommendations to the Approval Committee for project funding. The project will recruit independent Market Field Engineer (MFEs) to ensure compliance with engineering design, technical specification and contract conditions.

19. Setting up of the Economic and Market Information and Intelligence Cell will be managed by HPSAMB in close collaboration with PCU. For market information services, specifically the Agricultural Short Messaging Services (SMS), will be outsourced through competitive bidding to a suitably qualified and experienced private sector service provider to disseminate SMS based agricultural and market information service³⁷ in local language. The HPSAMB and DoH will organize trainings for producers on market and agricultural information services, which the selected service provider will deliver. For market intelligence services, project will hire a qualified service provider to staff the EMIC cell (illustrative staffing consisting of economist, market analyst, IT expert etc.).

A brief overview of the various key activities, and responsible implementing agencies for these components and sub components are described below:

Component and Sub components	Key Activities	Responsible Implementing Unit
Component A: Horticulture Production and Diversification		
A1: Enhancing availability and adoption of elite planting materials and horticulture technology transfers	a. Importing true-to-type, disease-free genetic material and establishing nurseries for propagation b. Training and capacity building of farmers c. Strengthening the institutional capacity of the HPDODM Society	Dept. of Horticulture and PCU
	d. Post-quarantine facilities and pest and disease surveillance e. Adaptive research	University of Horticulture and Forestry (UHF)
A2: Promoting Climate Resilient Technologies and Adoption	a. Promoting new orchards, replanting and scientific orchard management b. Development and strengthening of minor irrigations system, including strengthening of WUAs c. Setting up of international centres of excellence.	Dept. of Horticulture
	d. Pre and Post-harvest on farm demonstrations	Dept. of Horticulture and UHF
A3: Facilitation of access to financial services and building financial capability	a. Facilitating the development of appropriate financial instruments and weather insurance products b. Financial outreach including farmer education and counseling and linking with banks	Dept. of Horticulture and PCU

³⁷ This will include local weather forecasts, crop market price information for local markets, technical advice, pest and diseases surveillance information etc.

Component B: Value Addition and Agro-enterprise Development		
B1: Product Aggregation and Sale through Producer Associations	a. Farmer mobilization and market linkage	Dept. of Horticulture and PCU
B2: Supply Chain Infrastructure Support and piloting Negotiable Warehouse Receipts	a. Development of business plans and investment plans for the supply chain infrastructure through international consultants b. Accreditation of the CAs with the Warehousing Development and Regulatory Authority (WDRA)	HPMC
B3: Agri-Business Promotion Facility	a. Setting up of the ABPF including hiring of qualified service providers b. Setting up an independent assessment panel to review the entrepreneur grants to agro-enterprises	PCU
Component C: Market Development		
C1: Up gradation and modernization of agricultural wholesale markets	a. Development of business plans, market design and investment plans for APMC markets and setting up of e-market platforms through qualified service providers	HPSAMB
C2: Setting up Economic and Market Information and Intelligence cell	b. Outsourcing of the agriculture SMS system c. Setting up of the market intelligence cell, within HPSAMB.	HPSAMB
Component D: Project Management, Monitoring and Learning		
	a. Coordination and oversight. b. Hiring of key service providers including M&E consultants, MIS consultants, etc.	PCU
	c. Government Process Re-engineering (GPR) of the Horticulture Department d. Development and deployment of an Integrated Horticulture Management and Monitoring System (IHMS)	PCU and Dept. of Horticulture

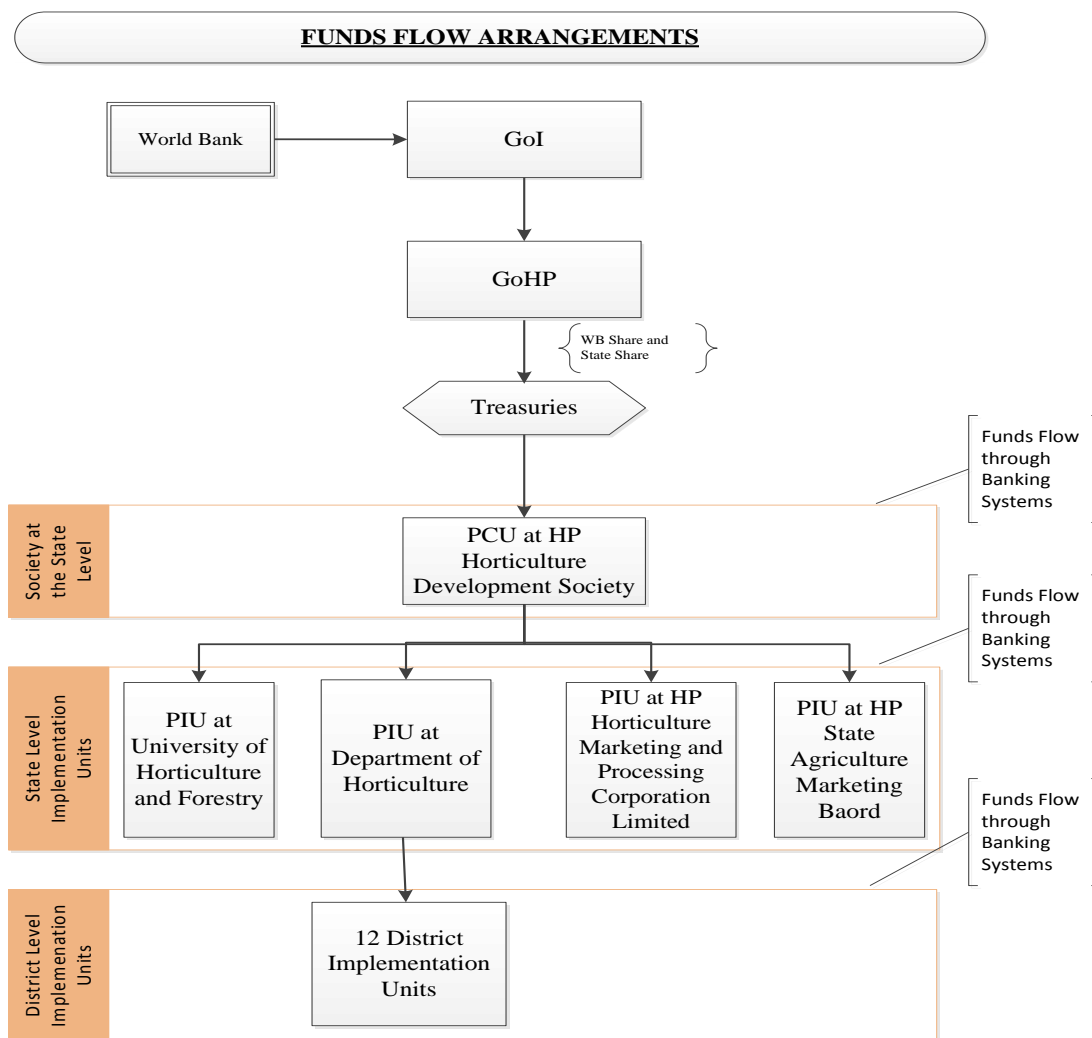
Financial Management, Disbursements and Procurement

Financial Management

20. Implementing Agencies: HPHDP envisages involvement of four implementing agencies: (i) Department of Horticulture (the nodal agency through Himachal Pradesh Horticulture Development Society HPHDS); (ii) University of Horticulture and Forestry; (iii) HP Horticulture Produce Marketing and Processing Corporation Limited (HPMC); and (iv) HP State Agriculture Marketing Board (Board). To ensure coordination as well as manage implementation, a Project Co-ordination Unit (PCU) is established within HPHDS which is a Society under the Himachal Pradesh Societies Registration Act, 2006. The Society is controlled by a Governing Council, chaired by the Chief Secretary, and an Executive Body, chaired by the Additional Chief Secretary – Horticulture. The relevant line Departments/autonomous bodies will act as implementing agencies (IA) for all the project activities falling under their area of responsibilities. Each IA will designate a Nodal Officer for the project who will head the state level Project Implementing Unit (PIU) comprising technical staff, financial management and procurement staff. Day-to-day executive control rests with the Project Director, who heads the Society's PCU. The Project Director is also responsible for overall implementation including responsibility for overall financial management, central level procurement, safeguards, M&E, supervision and other backstopping arrangements.

21. Budgeting and Planning: Annual Action Plans (AAP) will be prepared by all IAs for project activities and forwarded to the PCU in Horticulture Department for consolidation. Consolidated AAP and budget of the project will be approved by the Executive Committee (EC) of the Society and after due approval of Project Director (PD) it will be forwarded to Secretary, Horticulture Department for including in estimates of the department. The budget for the project will be allocated as part of the budget of Horticulture Department. The project budget for each financial year will grow out of the AAPs of the PIUs and DIUs. The budget planning process of each PIU/DIU will follow a “bottom-up” approach. After consolidating AAPs from respective PIU/DIU, the PCU will prepare and compile an AAP for the entire Project by December 31 of each year for the following financial year, in order to feed into GoHP’s budget cycle.

22. Flow of Funds and Banking Arrangements: Project funds will flow from the Treasury system to the Bank account of HPHDS at PCU. Periodic releases will be made to the implementing agencies (PIUs/DIUs) based on IFRs. The arrangements of the project are depicted in the fund flow diagram below. Bank accounts with a common scheduled commercial bank will be opened at each accounting centers. PCU will use RTGS/NEFT system to transfer funds to PIUs/DIUs as well as to make payments, and cash payments will be minimized.



23. Accounting and Reporting: Books of accounts will be maintained under Double Entry System using Cash basis of accounting. Accounts will be prepared using Tally or equivalent Computerized Accounting System (CAS). Accounts will be consolidated using ‘Sync’ feature of Tally. The PCU will furnish quarterly consolidated Interim Financial Reports to the Bank for claiming Bank finance, this will be submitted within 45 days of close of each quarter.

24. Accounting Centers: The Project will have 17 accounting centers which will include: (i) PCU; (ii) four PIUs at Horticulture, University, HPMC and Board; and (iii) 12 DIUs under the Department of Horticulture at the Districts. Presently, financial management arrangements at the HPMC are considered as unacceptable since the Auditors have stated that the financial statements of HPMC do not give a True and Fair view of the operations on account of several factors as stated in the report. Thus the auditor has issued a disclaimer of audit opinion. The Project authorities are working towards resolving this; till the time that this is resolved no project funds shall devolve to the HPMC and all payments related to its project activities shall be made by the HPHDS.

25. Financial Management Manual: The Financial Management arrangements, including the internal control framework, are documented in detailed in the Financial Management and Procurement Manuals. The FM Manual will help standardize the procedures, and reporting formats to be followed by all implementing agencies. The Financial Management Manual will be a living document. It will be reviewed periodically to ensure that it remains valid and adequate during project implementation and may be amended as per requirements on the ground. However every change will need to be approved by the Project Director, Chief Financial Controller and the Bank. The Financial Management Manual includes a section on delegation of powers as well.

26. FM Staffing: The Finance functions of the Project will be led a by the Chief Financial Controller who is on deputation to PCU from the State Finance and Accounts Services. The Financial Controller will be assisted by a Finance & Accounts Manager who will be a qualified professional (preferably a Chartered Accountant) on contractual engagement. Finance Controller of each implementing agency will have additional charge of the FM functions at respective PIUs. Every accounting center of the project will have a dedicated accountant either deputed from the government system or hired from the market. The staff requirements at each accounting center is detailed in the table below:

Sr.	Implementing Agency	Level	Finance Controller	Finance & Accounts Manager	Accountant cum Data entry operator
1	HPHDS (Society)	PCU	1 (Full Time)	1	2
2	Horticulture	PIU	1 (on additional charge)	--	3
		DIU	--	--	1
3	Board	PIU	1 (on additional charge)	--	2
4	HPMC	PIU	1 (on additional charge)	--	2
5	University	PIU	1 (on additional charge)	--	1

27. Internal Audit: The project will appoint a Chartered Accountant (CA) firm as internal auditor as per terms of reference and selection criteria agreed with the Bank. Internal audit will strengthen the internal control framework and assist the management in identifying and addressing control weaknesses periodically. Internal audit will be conducted on half yearly basis. The Project Audit Review Committee chaired by the Project Director will consider key issues pointed out by the auditors and ensure timely resolution of audit observations by project management.

28. External Audit: The Comptroller and Auditor General of India (C&AG) through its offices in Shimla will be the external auditor for the project. The C&AG's office will conduct an annual audit of the financial statements of the project covering all sources of funds (Gol and the Bank). This is under discussion; in case the C&AG expresses its inability to conduct the audit, then a firm of Chartered Accountants may be entrusted with this task. The audit report will be submitted to the Bank within nine months of the close of each financial year. This will be supplemented by internal audit of the project concurrent with this the entire report will also be made available on the project website.

29. Training and Capacity Building: The Project will provide training to finance staff at the PCU, PIUs and DIUs. On-going training will be conducted to maintain appropriate books and records in the CAS and undertake other FM functions as envisaged in the Project Implementation Plan. Appropriate staffing, commensurate with the size and nature of the Project, has been agreed for all accounting centres.

30. Funds Disbursed to Water User Associations (WUAs) / agro enterprises under Agri-Business Promotion Facility (ABPF) and Farmers Produce Organization (FPOs): Under Component A, the farmers will be federated into Water Users Association (WUAs). Approximately 1000 WUAs are expected to be formed; and each WUA will receive on average Rs. 50-60 Lacs during the project period. Various monitoring mechanisms will be exercised to ensure that the funds are spend for intended purposes: (i) release of funds will be made on installments after confirmation of progress by DIU; and (ii) BIUs will monitor progress. Under sub-component B1, the project will finance 'productive' demand-driven investments, on a grant basis, to FPOs, for establishing CSCs and it will be made available based on the business plans prepared by them. The grants provided under these activities will be supported at 75 percent of costs with 25 percent contribution in cash/kind by beneficiaries. Under sub-component B3, Agri-Business Promotion Facility, the project will provide matching grants to new and existing agro enterprises on a competitive basis. Funds released to WUAs / FPOs and beneficiary agro enterprises under ABPF will be eligible for reimbursement from the Bank subject to adequate checks and balances. Funds will be transferred electronically to the bank account of WUAs / FPOs / beneficiary agro enterprises of ABPF in tranches of 50:30:20 based on pre-determined milestones and after adjusting actual utilization reported against the previous release. These funds will be subject to audit by a Chartered Accountant firm appointed by PCU. These beneficiaries will be required to maintain separate books of accounts of the project funds establishing clear linkage with the project expenditure. A Community Operational Guideline will be prepared by the project which shall also include FM arrangements at the WUAs.

31. **Special Purpose Vehicle for Nursery:** The project will also involve a Special Purpose Vehicle (SPV), a registered society for the propagation of elite planting materials, having a separate governance structure with financial and administrative autonomy. This society functions under its parent department, DoH. Funds will flow to this society through PIU of DoH. These funds will be granted to SPV in the form of advance to implement specific activity of modern nursery production which will be adjusted upon the receipt of utilization certificates / expenditure report. Expenditure incurred by SPV will be reported under IFRs of DoH,

32. **Retroactive Financing:** Up to 20% of the World Bank contribution to the project equivalent will be available for financing eligible project expenditures incurred on or after July 1, 2015.

33. **FM Risk Rating:** The overall financial management risk is rated to be moderate. This is on account of the large number of implementing entities, and funds flowing down to the large number of community groups for implementation. This risk will be constantly evaluated and restated if implementation experience so warrants.

Disbursements

34. **Disbursement Arrangements:** The Bank will finance 80% of the Project cost subject to a limit of US\$135 million equivalent. This will be based on quarterly Interim Financial Reports which will be submitted to the Bank within 45 days of close of each quarter. Funds from the Bank will be made available to GoHP (through the Gol) under the standard arrangements between Gol and the States.

Procurement

35. Procurement for the Project is carried out in accordance with the World Bank's procurement guidelines, "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" (January 2011, revised July 2014); consultancy guidelines, "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" (January 2011, revised July 2014)"; Guidance note for Design and Management of Procurement Responsibilities in Community Driven Development (CDD) projects, March 15, 2012; and the provisions stipulated in the Project's Legal Agreement and the agreed Project Procurement Plan.

36. Most procurement is handled by the Department of Horticulture through the HPHDS, while procurement of specific packages within shopping limit and identified in the Procurement Plan will be done by the implementing entities.

37. During Project preparation, the e-procurement system of the GoHP was assessed by the World Bank with respect to the Multilateral Development Bank (MDB) electronic government procurement guidelines and was found to be acceptable for use in World Bank-funded transactions. All procurement of goods, works and non-consultant services under this Project are therefore conducted through the GoHP e-procurement system (NIC platform), using agreed standard bidding documents. Procurement of consulting services may be switched over to the e-procurement platform when the model RFP document for e-procurement becomes ready. A General Procurement Notice (GPN) was published on May 19, 2015 in UNDB and Specific

Procurement Notices (SPNs) are published against the corresponding contract packages when they are ready.

38. The Department of Department of Horticulture through the HPHDS and the implementing entities have developed a Procurement Plan for procurement of civil works, goods and consulting services planned for the first 18 months of the Project, which has been approved by the World Bank Project team. The Procurement Plans will subsequently be migrated to the Procurement Plan monitoring system, STEP, and will be updated annually reflecting changes in the packages to be procured and prior review thresholds, if any.

Procurement methods

39. Selection of Consultants—Quality and Cost Based Selection: Consultant Services may be procured under contracts awarded on the basis of Quality- and Cost-based Selection in accordance with the provisions of Section II of Consultant Guidelines using the World Bank's Standard RFP. In addition, the following selection methods may be adopted depending upon size and complexity of tasks and as agreed in the Procurement Plan:

- Quality Based Selection (QBS)
- Selection under Fixed Budget (FBS)
- Least Cost Selection (LCS)
- Single Source Selection (SSS)
- Individual Consultant (IC)
- Well-established Private Sector Procurement Methods or Commercial Practices which have been found acceptable to the Association

40. Single-Source Selection of consulting firms or individual experts may be used only if it presents a clear advantage over competition for the required consulting services in accordance with paragraph 3.8 of the World Bank's Consultant Guidelines. Selection of consulting firms based on Consultants' Qualifications (CQS) may be appropriate for assignments estimated to cost up to US\$300,000 or equivalent in accordance with paragraph 3.7 of the Consultant Guidelines. Advertisement for expression of interest may be limited to the regional level for assignments estimated to cost less than US\$100,000. For assignments that are estimated to cost less than US\$50,000, advertisement is not mandatory as long as a shortlist of at least three proven qualified firms is established. Shortlists of consultants for services estimated to cost less than US\$800,000 or the equivalent per contract may be composed entirely of national consultants (paragraph 2.6 of Consultant Guidelines). Services for assignments that meet the requirements set forth in paragraph 5.1 of the Consultant Guidelines may be procured under contracts awarded to individual consultants in accordance with the provisions of paragraphs 5.2 to 5.5 of the Consultant Guidelines. Under the circumstances described in paragraph 5.6 of the Consultant Guidelines, such contracts may be awarded to individual consultants on a sole source basis.

41. Procurement of works and goods. International Competitive Bidding (ICB) is the preferred method for procurement of goods, works and non-consulting services using the World Bank's standard bidding document. In addition, the following methods may be adopted depending upon size and complexity of subprojects in accordance with Procurement Guidelines, and as agreed in the Procurement Plan: (a) Limited International Bidding (LIB), (b) National Competitive

Bidding (NCB), (c) Shopping, (d) Framework Agreements, (e) Direct Contracting, (f) Force Account, and (g) Procurement of UN agencies. Limited International Bidding is essentially ICB by direct invitation, is used only under exceptional circumstances, and will be adopted only for packages that are specifically agreed by the World Bank to be procured following LIB.

42. National Competitive Bidding (NCB) for procurement of goods and works will be conducted in accordance with paragraphs 3.3 and 3.4 of the Procurement Guidelines and the following provisions:

- (i) Only the model bidding documents for NCB as agreed with the GoI Task Force (and as amended from time to time), will be used for bidding.
- (ii) Invitation to bid will be advertised in at least one widely circulated national daily newspaper (or on a widely used website or electronic portal with free national and international access along with an abridged version of the said advertisement published in a widely circulated national daily giving the website/electronic portal details from which the details of the invitation to bid can be downloaded), at least 30 days prior to the deadline for the submission of bids.
- (iii) No special preference will be accorded to any bidder either for price or for other terms and conditions when competing with foreign bidders, government-owned enterprises, small-scale enterprises or enterprise from any given regional government;
- (iv) Except with the prior concurrence of the World Bank, there will be no negotiation of price with the bidders, even with the lowest evaluated bidder;
- (v) For prior review contracts, extension of bid validity will not be allowed without the prior concurrence of the World Bank (i) for the first request for extension if it is longer than four weeks; and (ii) for all subsequent requests for extension irrespective of the period (such concurrence will be considered by the World Bank only in cases of Force Majeure and circumstance beyond the control of the Purchaser/Employer);
- (vi) For prior review contracts, re-bidding will not be carried out without the prior concurrence of the World Bank;
- (vii) The system of rejecting bids outside a pre-determined margin or “bracket” of prices will not be used in the Project;
- (viii) Rates contracts entered into by the Directorate General of Supplies and Disposal (DGS & D) will not be acceptable as a substitute for NCB procedures unless agreed with the World Bank on a case-by-case basis. Such contracts will be acceptable however, for any procurement under the shopping procedure;
- (ix) The two or three envelop system will not be used (except when using the e-procurement system assessed and agreed by the World Bank).

43. **Community Based Procurement**³⁸. The procurement thresholds for community institutions are as follows.

Expenditure category	Value Threshold per Contract	Procurement Method	Review Arrangement
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³⁸ Details of the process and procedures to be followed are detailed in the Procurement Manual. Community Participation procedures which have been found acceptable to the Association.

Goods and Non-consulting services contracts	Each less than US\$ 100,000 equivalent and greater than US\$ 20,000 or equivalent	Local Competitive Bidding	First contract irrespective of the value in the each state shall be prior reviewed by the Bank. All other contracts are subject to post review by the Bank
	Each below US\$20,000 or equivalent	Shopping/ Force Account	All contracts are subject to post review by the Bank
Works Contracts	Each less than US\$ 150,000 or equivalent and greater than US\$ 50,000 or equivalent	Local Competitive Bidding	First contract irrespective of the value in the each state shall be prior reviewed by the Bank. All other contracts are subject to post review by the Bank.
	Each below US\$ 50,000 or equivalent	Shopping/ Force Account	All contracts are subject to post review by the Bank.

44. **Shopping.** Procurement of goods, works and non-consulting services may be carried out using the shopping method (paragraph 3.5 of the Procurement Guidelines) for readily available, off-the-shelf products, or simple civil works valued at less than US\$100,000 and which do not require tailor made designs as agreed with the World Bank or concerned expert agencies. Such method, if any, will be agreed in the Procurement Plan. The implementing agency and entities will solicit at least three price quotations for the purchase of goods, materials, small works, or services (non-consulting), to formulate a cost comparison report. If agreed by the World Bank, under exceptional circumstances, (such as design sensitivity due to location near a monument or appropriate technology), International Shopping may be used wherein quotations will be solicited from at least three suppliers in two different countries. Goods that otherwise qualify for shopping could be procured directly from UN agencies. In specific cases agreed with the World Bank, procurement may be made from UN agencies as per paragraph 3.10 of the Procurement Guidelines.

45. **Direct Contracting.** Direct contracting for the procurement of civil works and goods (paragraph 3.7 of the Procurement Guidelines) may be used to extend an existing contract or award a new contract. For such contracting to be justified, the World Bank must agree that the price is reasonable and that no advantage could be obtained by further competition. Direct contracting can be used to procure from the private sector, UN agencies/programs (for goods), or contractors or NGOs that are already mobilized and working in the target areas.

46. **Force Account.** When contractors/suppliers are unlikely to bid at reasonable prices because of the location and risk associated with the subproject or a certain government agency has exclusive rights to a certain type of works/supply, the borrower may use its own department's personnel and equipment or government owned construction units, provided that the borrower has sufficient managerial capacity and possesses the required technical and financial controls to report to the World Bank on expenditure, as per paragraph 3.9 of the Procurement Guidelines.

47. **Framework Agreements.** Directorate General of Supplies and Disposal rate contracts will be acceptable as framework agreements for the procurement of goods. Regional government

level rate contracts will be examined by the World Bank and if agreed upon, may also be used as framework agreements. Implementing entities also have the option to set up new framework agreements as per paragraph 3.6 of the Procurement Guidelines.

48. Use of government institutions and enterprise. Government owned enterprise or institutions in India may be hired based on their unique and exceptional nature if their participation is considered critical to the Project implementation. In such cases, the conditions given in clauses 1.13 of the Consultant Guidelines will be satisfied and each case will be subject to prior review by the World Bank.

49. Well-established Private Sector Procurement Methods or Commercial Practices which have been found acceptable to the Association.

Table 3: Procurement Methods

Category	Method of Procurement	Threshold (US\$ Equivalent)
Goods and non-consulting services (including IT contracts)	ICB	≥3,000,000
	LIB	Wherever agreed by the World Bank
	NCB	Up to 3,000,000 (with NCB conditions)
	Shopping	Up to 100,000
	From UN Agencies	As per para 3.10 of Guidelines
	DC	As per para 3.7 of Guidelines
	Force Account	As per para 3.9 of Guidelines
	Framework Agreements	As per para 3.6 of Guidelines
Works	ICB	>40,000,000
	NCB	Up to 40,000,000 (with NCB conditions)
	Shopping	Up to 100,000
	DC	As per para 3.7 of Guidelines
	Force Account	As per para 3.9 of Guidelines
Consultants' services	QCBS	As per Section II of Guidelines
	CQS	Up to 300,000
	SSS	As per para 3.8-3.11 of Guidelines
	Individuals	As per Section V of Guidelines
	LCS	As per para 3.6 of Guidelines
	QBS	As per para 3.2 of Guidelines
	FBS	As per para 3.5 of Guidelines
	(i) International shortlist (ii) Shortlist may comprise national consultants only	>800,000 Up to 800,000

50. *Procurement risk and risk mitigation:* Subprojects will be implemented by multiple entities. For all of these entities, the Project represents the first experience of implementing an externally financed project, and the first experience of using World Bank procurement systems, which carries some risk. The procurement risk of the implementing entities in terms of procurement is rated as “moderate”. Constant support in terms of training and handholding has been provided throughout Project preparation and will continue to be provided throughout implementation, as necessary. It is also recommended for the Project staff to become familiar with the World Bank procurement procedures by attending trainings or workshops at the Administrative Staff College of India (ASCI) or National Institute of Financial Management (NIFM) or other suitable training institutes.

51. *Staffing:* The Department of Department of Horticulture/HPHDS is currently finalizing staffing, a dedicated Procurement Specialist has been hired at the HPHDS, who will be supported by Procurement/Contract Management Specialists where required.

Environmental and Social (including safeguards)

52. The project undertook an Environment and Social Assessment (ESA) to identify the key environment and social impacts, risks, opportunities and necessary mitigation strategies related to the proposed project interventions and investments. The ESA involved a review of project implementation plan, existing studies and reports, and extensive discussions with the project preparation teams and implementation agencies. Field consultations were held with farmers cooperatives and associations, fruit growers associations, women's groups, government departments (agriculture, horticulture, HPMC, forests, tribal development), as well as local NGOs. The consultations included institutional stakeholder such as: Directorate of Horticulture, Regional Horticulture Research and Training Station at Mashobara, HPMC center at Jarol Tikkar, Shimla district, etc. Stakeholder consultations organized at field level (Block and Village) included representatives such as Horticulture Development Officer (HDO), Horticulture Extension Officer (HEO), Subject Mater Specialist (SMS), Block Development Officer (BDO), besides Farmers Producer Organization (FPOs), Non-Government Organization(NGOs), women members of Self Help Groups (SHGs), tribal farmers, elected PRI leaders, members of Water User Associations (WUA), Farmer Interest Groups (FIG), cooperative societies. The purpose of these interactions were to ascertain likely social and environmental issues that need to be addressed during project preparation; understand current practices from production to marketing, validate findings from desk reviews, understand perceived benefits of the various interventions, awareness regarding government schemes, constraints faced, prevalent government schemes, etc.

53. OP 4.10 on Indigenous Peoples is applicable as some of the project clusters are likely to cover tribal areas and communities. While tribal communities are dispersed throughout the state, they are particularly concentrated in more remote, backward areas in Kinnaur, Chamba, and Lahaul-Spiti districts. While the precise location of project locations are yet to be determined, it is likely to positively impact tribal communities of these and other districts where tribal families are already cultivating fruit tree crops and are using irrigation methods to improve productivity. The exact locations, beneficiary profile and technical specifications of project interventions are not yet identified. This would happen during project implementation hence site specific indigenous people plans/tribal development plans can only be undertaken during implementation. The ESMF includes an indigenous peoples planning framework (IPF) and guidance for screening tribal communities, holding informed consultations, assessing broad community support, including tribal leaders in WUA, FPO and preparing area-specific tribal development plans.

54. Key social issues, including safeguard, for project design and processes are: (i) assessment of project impacts on tribal population ,and their meaningful and beneficial participation in project planning, investments and institutions; (ii) social impact screening of infrastructure subprojects to assess any potential loss of livelihoods, if any and to thereby provide commensurate mitigation measures; (iii) inclusion and tracking of small and marginal farmer beneficiaries under various project components; (iv) enhancing role of women in FPOs, WUAs; technical and market focused training on vegetable and floriculture production and post-harvest, building their capacity to access credit and government horticulture programs, entrepreneurship development on indigenous bees, bio-fertilizers/vermi-composting, etc.; (v) increasing the Horticulture department's outreach and information dissemination activities among horticulture

producers; and (vi) strengthening citizens engagement, especially women, and small and marginal farmers, with project services

55. Environment and Social Management Framework (ESMF). The project has prepared an Environment and Social Management Framework (ESMF), to address likely social issues and impacts, identified through ESA, provide commensurate mitigation measures and provide effective implementation arrangements. The ESMF comprises existing policy framework, social baseline, stakeholders consultations, social screening checklist, implementation and monitoring arrangements, capacity building program, and strategies on gender and women's participation, citizen engagement and grievances redressal mechanism.

56. Tribal Development Framework (TDF). As activities in the tribal areas will be largely demand driven, the actual locations will be identified during project implementation, hence a TDF has been prepared for screening tribal communities in project clusters, ensuring informed consultations and broad community support among tribal communities, preparing tribal development plans (TDPs) and socially compatible outreach and implementation strategies. The TDF comprises the following elements: Information, Education and Communication (IEC) materials for conducting Free Prior and Informed Consultation (FPIC), training and exposure visits, conducting feasibility studies for GI certification and a budget for special community needs TDPs when prepared will highlight local demand for practical field based trainings, camps and exposure visits, processing/market infrastructure and farming equipment, high quality inputs, access to credit, and other interventions which require convergence with programs of departments of horticulture, agriculture, irrigation, and tribal development.

57. Gender. The Gender strategy includes: inclusion of women producers in farmer interest groups, water user associations and common service centers; technical training on management of orchards, soil, nutrients, pests/disease; entrepreneurial support on indigenous beekeeping, vegetable cultivation, vermicomposting, mushroom farming; participation of women producers in post-harvest management and market yards; and other demand driven income generation programs, including those supported under the horticulture mission. Monitoring and evaluation indicators will enable gender dis-aggregated data analysis for all beneficiaries.

58. Citizen's Engagement. The Citizens Engagement strategy includes community-led, participatory planning for common service centers and minor irrigation schemes; use of ICT in beneficiary feedback and grievance redressal; use of ICT and IEC activities for providing information and technical advice on relevant horticulture programs and scientific practices related to management of planting material, orchards, soil, nutrients, pests and disease. The FPOs and WUAs will be provided capacity building support for institutional functioning, record keeping, benefit sharing, and operation and management of water schemes and CSCs.

59. Institutional Arrangements. The overall management and coordination will be the responsibility of the HPHDP Society, a registered body established by GoHP to implement HPHDP, which has a Project Coordination Unit (PCU). For the purposes of implementing the ESMF, the PCU will hire two Social Development Coordinators (SDC) and one Tribal Development Consultant and they will be responsible for overall implementation of the SMF and TDF. These resources will be hired within the first six months of the project and will be available for entire project duration. At the district level, the SDCs will be supported by six

Social Development Specialists (SDS) who will be hired to cover all the project districts. These SDS will be responsible for all safeguard aspects besides institutional development aspects of bodies such as WUAs, and FPOs. These resources will be hired within first year of the project and will be available for the entire project duration. They will derive support from Horticulture Extension Officer (HEO) and Subject Matter Specialist (SMS) at the Block Implementation Unit (BIU), besides about fifty community facilitators. Additional resource persons and consultants will be contracted as deemed necessary during project implementation. Capacity building of these personnel will comprise of requisite orientation and refresher trainings on ESMF including safeguards and TDF. ESMF and TDF implementation would be based on preparation of Annual Action plans formulated every year based on activities planned and as per demand and with inputs from the SDS and TDF consultant and would finalized at the PCU level. The budget finalized for the overall ESMF implementation comprises of staffing at PCU and PIU levels, consultants and additional resource persons and consultants, capacity building and activities identified under the TDF.

60. Environment Safeguards: Proposed interventions pose the potential risk of adversely impacting the local environment if not appropriately designed, executed or operated. The anticipated impacts could arise due to:

- (a) improper site selection for siting physical infrastructure inadequate management of environmental issues during the construction phase;
- (b) non-compliance with post entry quarantine regulations for imported root stocks;
- (c) increased pesticide use and indiscriminate application of other agrochemicals;
- (d) unsustainable water resource management practices (scientific, hydrological and community concerns not being balanced);
- (e) absence of solid and liquid waste disposal and management facilities in the proposed agro-processing facilities;
- (f) poor maintenance of CSCs, pack houses and market yards leading to improper land use management and other environmental issues; and
- (g) potential incidences of orchard areas encroaching onto forestland and felling of trees for building infrastructure.

61. Activities such as supply chain infrastructure where environmental impacts will be seen as moderate to substantial (CAs, sorting, grading, packing and primary processing, pack houses, and market yards) will require a project specific EIA/EMP for preparation, implementation and monitoring. Dust, noise and discharge & disposal of solid and liquid waste, land use management, improper storage of the crop are expected to be the likely environmental impacts. These subprojects, once selected for investments, will need to incorporate, on case to case basis, mitigation measures at the design stage by the proponent through a specific Environmental Impact Assessment (EIA) and by developing an Environmental Management Plan (EMP). The environmental management plan will also cover construction and operational phases of the subprojects. Activities which are seen as having low- moderate impact will have Environmental Guidelines (EGs) incorporated in the design, implementation and management of these activities. This is applicable for interventions such as scientific orchard management, minor irrigation systems, water management, demonstration nurseries (PCDOs), PEQ nurseries and smaller village level CSCs. The project will also have a detailed focus plan on integrated Pest and Nutrient Management. Water harvesting structures and distribution will incorporate EGs for

water use efficiency, sustainability, and soil and water conservation. These will be monitored by the community/cluster institution. Formation of FPOs will present opportunities for operating efficiency improvements. The FPOs will develop business plans, based on which critical infrastructure will be funded by the project and these business plans will include EGs for reducing environmental footprint.

62. Environmental and Social Management Framework (ESMF). Given the distributed nature of the proposed interventions across the state (12 Districts) and the adoption of an overall framework approach in which specific investments are not known in advance, an Environmental and Social Management Framework (ESMF) has been developed for the HPHDP. The ESMF is a technical guideline document that describes procedures and institutional responsibilities for assessing and managing the potential environmental and social risks and impacts that may come up during implementation and throughout the project cycle. The specific objectives of the ESMF are to:

- (a) Identify and assess the potential environmental impacts and risks of the interventions proposed under the HPHDP, and recommend mitigation measures;
- (b) Identify opportunities for enhancing environment benefits;
- (c) Ensure compliance with national, state environmental regulations and the World Bank's Environmental and Social Safeguards Policies that apply to HPHDP; and
- (d) Ensure the environmental sustainability of investments.

63. The environmental assessment included specific **stakeholder consultation** during the design and finalization of the ESMF in Kullu, Shimla and Chamba Districts. The various other stakeholder groups included producers (farmers) and producer groups; subject matter specialists, Horticulture Development officers, Horticulture Extension Officers, Block development officers, women and tribal. The local consultations focused on environmental and social issues associated with the horticulture practices in the state and how the project interventions will seek to address them.

64. The ESMF has been prepared based on: (i) review of secondary data and literature from the viewpoint of identifying key environment issues across the state by agro-climatic zones; (ii) review of relevant environment policies, legal and regulatory provisions of the World Bank, Government of India and Government of Himachal Pradesh; and (iii) detailed consultations with key stakeholders in what are expected to be areas where project investments will be implemented. The draft ESMF was disclosed on the Department of Horticulture website, with a summary available in local language prior to the disclosure workshop held on January 21, 2016.

65. **EMF Scope:** The ESMF provides for the screening of project investments according to their likely environment and social impacts, and a determination of the level of environment and social impact assessment to be conducted for the sub-project. The "moderate-high impact" category sub-projects require detailed EIA, EMP conducted by an external agency, while "Low-moderate Impact" category sub-projects only require following of EGs for design, implementation and management. The ESMF provides detailed guidance, and reporting structures for compliance with the ESMF requirements

66. Institutional Capacity for Safeguards Management: The PCU and PIUs at the district and block level are new entities requiring additional skills in management of social and environmental aspects, including safeguards management. The PIUs are likely to be HPMC, the university, marketing board and horticulture department; which have limited capacity in safeguards. Hence, the project will support appointment of environmental and social specialists in the PCUs, to monitor implementation of the ESMF and other social and environment related activities. At the sub-project level, the PIUs will ensure that individual ESAs, EMPs, are prepared and implemented, with support from qualified firms. The project will support safeguard training for all the specialists at the state level (PCU, PIUs), district and block level implementation units. The PCU will also provide resource persons and personnel for training on IPNM related activities

67. Grievance redressal mechanisms: Mechanisms for grievance redressal would be at four levels: (i) first level would be the Executive committee of WUA, FPO, (ii) second level would be the Sub-divisional level wherein the Sub-Divisional Magistrate would be supported in the grievance resolution processes by BDO, HDO, HEO and facilitators; (iii) third level would be the district level implementation committee; and (iv) finally at PIUs and PCU level. These would be also supported by Complaint Handling mechanisms at the PIU levels besides the existing state-wide grievance monitoring system "e-samadhan".

68. ESMF Disclosure: The Borrower disclosed the complete ESMF and translated version of the executive summary on its website on January 11, 2016, besides disclosing at district level. The document, as requested by the Borrower, was also disclosed at the Bank's Infoshop on January 18, 2016. Furthermore, an in-country disclosure workshop with representatives from relevant departments, NGOs, FPOs, WUAs and PRIs etc., was held on January 21, 2016 in the project area.

Monitoring & Evaluation

69. Project Coordination Unit (PCU): The PCU will have the operational responsibility for planning and coordinating M&E activities for the entire project. The PCU will also be responsible for: (i) analysis of all project-level M&E information and generation of regular 6-monthly M&E reports; (ii) updating key performance indicators by consolidating the information provided by different implementing agencies and the external M&E agency; (iii) conducting independent field visits to monitor implementation and outputs of selected project activities; (iv) commissioning special M&E studies as needed; (v) maintaining the Project Management Information System (IHSMS); (v) identifying bottlenecks and corrective actions, if needed; (vi) documenting success stories; (vii) regular reporting to the Project Management Committee and the Project Steering Committee; and (viii) six-monthly reporting to the World Bank on the project status. These six-monthly reports will include, inter alia: (i) up-to-date physical and financial expenditure data compared to annual and end-project targets; (ii) updated indicators of project performance compared to annual and end-project targets; (iii) successes and problems encountered during the reporting period with suggested remedial actions; and (iv) socio-economic and environmental impacts of the project. A full-time senior M&E specialist has been recruited in the PCU and will be responsible for overseeing all the activities related to M&E. In addition, a Management Information Systems (MIS) specialist will be recruited to oversee the operation of the IHSMS.

70. Project Implementing Units (PIUs): Nodal officers in each of these PIUs will be responsible for process and performance monitoring of the individual activities within the purview of the respective agencies. They will be responsible for: (i) consolidating and analyzing all M&E data provided by district, block officers, and service providers, as relevant; (ii) validating M&E data in the IHSMS entered at the District/Block/market level and entering additional data as required; (iii) monitoring field level activities and identifying corrective actions, if needed, as well as documenting success stories; and (iv) providing monthly reports to the PCU. Furthermore, implementing agencies, through their district and block offices will assume the primary responsibility of collecting data to update the process and performance indicators. The data will be consolidated and managed by the relevant PIUs and PCU.

71. M&E Consultants: The primary responsibility of the M&E consultants is to create an M&E framework for the entire HPHDP project in consultation with the PCU and PIUs. This framework must be aligned with the project and intermediate outcome indicators. In order to do so, the M&E consultant will define key process and performance monitoring indicators, data collection frequencies, and formats for collecting the relevant information. The M&E framework will clearly specify data collection responsibilities of the different implementing agencies and the external consultants. The M&E consultants will be responsible for collecting data for their independent monitoring, of both process and performance indicators.

72. Specific Responsibilities of the M&E consultants are to: (i) conduct the Baseline Survey for the project; (ii) monitor and evaluate the progress in the provision of critical project inputs and activities; (iii) evaluate progress in achieving the project outputs and outcomes and evaluate the project's impact at key junctures during the project period, to assess progress towards achieving project's objectives; (iv) strengthen the capacity of the project implementing agencies to monitor the project impact and use the IHSMS by providing on-the-job training; (v) design and implement a Participatory M&E System (PMES) using state-of-the-art methods and tools that will monitor the performance of relevant activities such as the activities of community level institutions, FPOs. The consultants shall identify suitable participatory M&E mechanisms and tools such as the use of community score cards, focus groups, and participatory social auditing. The methodology and approach for the PM&E shall be designed in close consultation with the key stakeholders and will be finalized in consultation with the PCU (vi) prepare six-monthly M&E reports for the PCU which will summarize the achievements of the preceding six months, cross-cutting issues and recommendations, and updated project indicators; and (vii) provide three comprehensive reports - the baseline survey and two impact evaluation assessments at the time of the 2nd, project mid-term review and at project completion.

73. Baseline Survey: The M&E consultants will also undertake the baseline survey for the project. This survey will collect information that will aid in project planning as well as to provide baseline values for the M&E framework. The baseline survey will be completed within the first six months of project implementation. In order to enable an impact evaluation of the project, it is critical that the sample design for the baseline survey includes controls. The control groups will include markets, villages and households in the Block where no HPHDP activities are being implemented. The M&E consultants will be responsible for determining the final breakdown of treatment versus control markets, households etc., to ensure that a statistically meaningful comparison can be made.

74. Impact Evaluation and Thematic Studies: In addition to the regular six monthly monitoring reports, there are two junctures during the project period where impact assessment studies will be undertaken by the M&E agency. These studies will evaluate HPHDP's performance and progress towards achieving the project's development objectives. The first impact evaluation will be at the time of the mid-term review (MTR) of the Project, and, the second impact evaluation around the time of the Project completion. The first review (MTR) will include an impact assessment of the project to date, and also focus on procedures, implementation processes and recommend adjustments in the project design and/or implementation arrangements to overcome the identified bottlenecks. The second major impact evaluation review will be a comprehensive overall impact assessment, including quantitative and qualitative assessment of progress, against project development objectives. To enable comparative assessment of with/ without 'project situation' (as opposed to the more standard before/after project situation), the impact assessments and analysis will also collect and use statistically robust comparable data from control (non-project) areas. The M&E Consultant will also carry out thematic studies to inform the implementation of the project and to serve as a source of learning for the PIUs involved.

75. Integrated Horticulture Management and Monitoring System (IHMSMS): An integrated project monitoring and management system leveraging the potential of ICT and new media technologies will be designed, developed and deployed under the project. The M&E system will use the features of GPRS enabled mobile devices and data analysis tools, to enable submission of data relating to the project activities under each of the components, directly by the field functionaries. This data submitted, will be Geo tagged and time stamped, thus enabling real time and evidence based monitoring of all the project activities. The project monitoring and management system will generate automated reports for all the PDO indicators, customized for each level of project administrators (role based access to data). The project will hire a consultant to develop and deploy this system. During preparation, a functional requirement study for preparing this system has been initiated.

Annex 4: Implementation Support Plan

Strategy and Approach for Implementation Support

1. The World Bank will review project implementation and provide support on a regular basis. Project implementation will be reviewed by Bank's implementation support missions (ISMs), conducted on semi-annual basis, or more frequently, as warranted. These will be complemented by visits by individual Bank task team members, to follow up on specific issues, as needed. The implementation support strategy will involve a combination of: (i) field visits by the Bank; and (ii) proactively obtaining and following up on relevant information from other sources.

2. The Bank ISM will visit randomly selected project sites (nurseries, markets, pack houses etc.), to assess and physically verify the work financed by the project. These site visits will include interaction with market users, including market committees, farmer interest groups, and non-government support organizations, assisting with community mobilization and capacity building. Areas to be visited will take in to account the following criteria: (i) random selection from district-wise list of project sites under the project; and (ii) special emphasis on those project sites identified by the complaint handling system.

3. Regular feedback will be obtained on project performance through project reports prepared by the PCU and the regular monitoring reports prepared by the external M&E consultants. Key issues identified in these reports will be followed up, including through short visits to the state, as necessary. Integrated fiduciary reviews during supervision will include, post reviews of a random sample of contracts, and spot checks of accounting records and financial reporting systems at the state, district and project site level. Reports of the auditors will be reviewed and meetings held with them to gain additional perspective. Issues identified will be recorded in aide memoires and followed up after the mission.

4. **Procurement.** The Bank team will conduct implementation support missions at least two times a year. The frequency of missions may be increased or decreased based on the procurement performance of the Project. An independent procurement consultant may also be hired by the Bank for implementation support missions and analyze selected contracts to identify weaknesses/irregularities and determine adherence to agreed procurement procedures. The World Bank will prior review all Terms of Reference and the following contracts:

- Works: All contracts more than US\$15.0 million equivalent;
- Goods: All contracts more than US\$3.0 million equivalent;
- Non-Consulting Services: All contracts more than US\$3.0 million equivalent;
- Consultancy Services: All contracts more than US\$1.0 million equivalent for firm; and
- Consultancy Services: All contracts more US\$300,000 equivalent for individuals.

5. The HPHDS will prior review the first contract issued by each implementing entity, if the estimates of those contracts are below the prior review threshold value. The Bank will conduct prior review for only those contracts whose estimates fall in the prior review threshold value. In addition, justifications for all contracts to be issued on Limited International Bidding (LIB), direct contracting or single sourcing (>US\$100,000) basis will be subject to prior review by the World Bank. These thresholds are set for the initial 18 months of project implementation and are

based on the procurement performance of the project, and may be modified. In addition, the Bank will carry out an annual ex post procurement review of the procurement falling below the prior review threshold mentioned above. All contracts below the specified prior review threshold value will be subject to Post Procurement Review (PPR). The implementing agency will prepare a list of contracts and submit it to the World Bank for this purpose. The PPR will be conducted on an annual basis.

6. Financial management. Implementation Support will review the project’s financial management system, including but not limited to, accounting, reporting, and internal controls. The support will be provided through regular interactions, half-yearly implementation support missions, and thematic implementation support missions, if required.

7. Environmental and Social Safeguards. The Bank safeguards specialists in the team will supervise various activities to ensure full compliance with the Bank’s operational policies / procedures and the agreed readiness criteria for sub-projects related to environment and social safeguards aspects. The implementation support will be provided through regular interactions, half-yearly implementation support missions, and thematic review missions if required.

Implementation Support Plan

8. The following Implementation Support Plan (ISP) reflects the preliminary estimates of skill requirements, timing, and resource requirements over the life of the project. Keeping in mind the need to maintain flexibility over project activities from year to year, the ISP will be reviewed periodically to ensure that it continues to meet the implementation support needs of the project.

9. The main focus in terms of support to implementation during:

Time	Focus	Skills Needed	Resource Estimate	Partner Role
First twelve months	Strengthening the foundation for project implementation and disbursements, M&E and MIS	Procurement and financial management plus other core team members including M&E	FY 16: (from April 2016) US\$35,000 FY 17: US\$100,000	NA
12-72 months	Operational support in first phase of intensive investments in project locations, assist with gathering lessons learned, and ensure this information is used to support broader scaling up in the latter years of the project	Technical specialists based on thematic focus of specific missions (including technical missions), emerging issues, and demand from client. Along with fiduciary team	US\$100,000	NA

Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
<ul style="list-style-type: none"> (a) Team lead (b) Financial Management (c) Procurement (d) Safeguards (e) M&E and MIS Specialist (f) Hydrologist (g) Irrigation Specialist (h) Horticulture Specialist (Pomology – Fruit tree crops) (i) ICT Specialist (j) Institution Development (including Gender) (k) MSME – enterprise development (l) Agribusiness (m) Post-harvest and value addition (n) Supply chain Specialist (for cold chain with refrigeration specialization) (o) Market Design Architect (p) Financial Inclusion 	<p>2 staff weeks annually.</p>	<p>1-2 trips per staff annually.</p>	

Annex 5: Financial and Economic Analysis

Financial and Economic Analysis

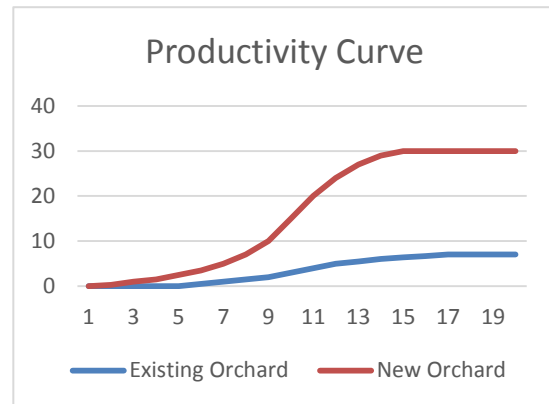
Expected Benefits and Main Assumptions

1. Project benefits are expected to be realized in a progressive manner during the 7-year implementation period and even more beyond completion given the time required for developing the necessary conditions for improved productivity and quality of orchards. These conditions include: (i) the development of the system to produce improved seedlings (import of root stocks, rehabilitation of SPV centers, multiplication, grafting and eventual production of seedlings); (ii) the design and construction work of irrigation facilities; (iii) the development of new orchards that take years to start producing and few more years to reach full development; (iv) the necessary phasing of project interventions to account for anticipated implementation capacities. The benefits are projected to be the following:

2. Increased productivity as a result of:

a) Rejuvenation of existing apple orchards is expected to lead to a slight decrease (10%) in the first year as a result of heavy pruning followed by a stabilization and eventual yield increase by an estimated 15% after 4 years;

b) New plantation (area expansion) with improved planting material are expected to yield 2 to 4 times the traditional orchards and will come into production much earlier than the traditional varieties. On the basis of existing performances on small areas in farmers' conditions, production curves have been assumed by tree and by hectare (assuming increased density of trees) depending on the species. Tree density and production curves are summarized in the following Table and visualized in the above Graph.



Fruit crop	tree	Density tree/ha	Production in kg per tree											
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12...
Apple Traditional		276					2	5	10	15	20	25	30	
Apple MM111		816				2	5	10	20	30	35	37	37	
Apple MM106		1111			2	4	10	15	20	25	27	27	27	
Apple M-9		2666		1	3	5	8	12	15	17	17	17	17	

Stone Fruits (Peach, Plum, Apricot, Almond)	1111		2	5	7	10	15	20	22	22	22	22	22
Cherry	1111		2	5	7	10	12	15	17	17	17	17	17
Pear	1111			3	8	10	12	15	17	17	17	17	17
Citrus (Orange, Grapefruit, Lime, Lemon)	333					10	15	20	25	30	40	42	42
Mango	1111				5	10	20	25	30	40	42	42	42

3. Value addition to the primary products as a result of investments in postharvest handling, storage and processing facilities. This is the case for: (i) grading / packaging facilities that ensure better marketability and therefore prices of fruits and vegetables; (ii) controlled atmosphere stores (CA stores) that enable to sell apples off-season with an estimated 50% price premium; (iii) processing plants such as for producing concentrate fruit juices as a means to bring value to lower quality / left over fruits, some of which are currently wasted or sold at a much lower price than the INR 7 per kg fixed by the Government as a minimum price.

4. Better access to markets from market rehabilitation. In 2013/2014, only 366,913 tons of fruits and 225,205 tons of vegetables were marketed through HP markets, corresponding to 43% and 15% of HP production respectively. The rest was marketed outside of HP state with accrued transaction and transportation costs and in the case of perishable goods with excessive wastes. The rehabilitation of 14 HP markets, the construction of 2 new markets and the connection of 20 markets networked into a virtual market is expected to result in: (i) an increase in go through by an anticipated 15% for both fruits and vegetables; (ii) a therefore easier and cheaper access to markets by producers; (iii) a bigger number of traders purchasing on these markets, thus an increased competition expected to result in lower marketing margins and increased prices paid to producers; (iv) an increase in market fees collected by market authorities, which is expected to reach INR 1.72 crores (about US\$ 0.3 million).

5. Area Expansion and Expected Impact on Prices. Increased quantities of fruits produced in HP would mostly result from area expansion on 18,200 ha, including 7000 ha of apples and 11,200 ha of other fruits (stone fruits, cherry, pears, citrus and mango). These represent respectively about 7% and 10% of current areas of fruits in the State: according to the horticulture department, this land is currently either fallow (e.g. in the mountainous areas where newly established irrigation facilities would enable this land to be planted into orchards) or is under annual crops (mostly grains) in lower areas where, again, lack of irrigation does not allow a more intensive use of land. The increase in production could reach about 200-250,000 tons of apple at full development (after 10 years). This represents about half of the current apple production of HP but only about 10% of the national production. Similar figures prevail for other fruits promoted by the project. Given that within 10 years, domestic demand for fruits is expected to substantially increase in India, increased production as a result of the project is not

expected to lead to a decrease in market price. However, an increase in competitiveness of domestic production of apples and other fruits could eventually lead the Government to decrease import tariffs, which would result in lower consumer prices for the concerned products.

6. In addition, though this has not been quantified at this stage, the project is also expected to contribute to improved nutrition in the following ways:

- a) Increased production of nutrient rich products, in particular fruits and vegetables. These will be marginally consumed by producers but more importantly by Indian consumers throughout the country and contribute to addressing some micronutrient deficiencies in India such as Vitamin A;
- b) Diversification of products. FAO recommends a minimum diversity in particular for women (Women Diet Diversity Score) whom diet should include at least 5 of the 10 food groups defined by FAO³⁹. This project is expected to contribute to increased diversification in 5 of these groups (fruits, vegetables, peas and beans).
- c) Increased economic and physical access to nutritious food, in particular off-season, by eventually decreasing prices of nutritious fruits: increased quantities off season is expected to lead to increased competitiveness with imported fruits and lowering import duties.
- d) Reduced food losses as a result of market development, bulking of products, reduction on the length of the marketing channels, juice factories that utilize fruits that could be wasted otherwise;
- e) Preservation of nutrition value of fresh fruits through CA stores.
- f) Improved sanitation conditions in the rehabilitated markets leading to improved food safety.

Financial Analysis

7. The financial analysis aims at assessing the profitability of various activities from the point of various stakeholders involved. Four types of financial analyses were undertaken:

- a) Crop budgets to assess financial attractiveness of the proposed activities under component A (rejuvenation, replanting and new plantations) on orchards of various species and to assess financing / credit requirements to engage into these activities. Simple and representative Farm models were developed to assess the expected financial impact of these interventions on typical farms in the State;
- b) Farm models to assess the financial impact of the project on typical households in terms of incomes, credit requirement and cash flow;
- c) Production model for SPV nurseries that will provide improved seedlings (including from clonal rootstocks for apple) to farmers investing in apple re-plantation or new plantations. Given the high cost associated with this activity (import of root stocks, rehabilitation of SPV centers, multiplication, grafting and eventual production of seedlings), the model is required to assess financial viability of the nurseries, the turning point in time when sales revenues exceed investment and operating costs (in order to determine how many years of project support are required) and provide some evidence for determining the sale price of seedlings to the farmers;

³⁹ see <http://www.fao.org/food/nutrition-assessment/women/en/>

- d) Simple business models of various value addition enterprises proposed under component B including a typical Common Service Centers (CSCs) run by Farmers Producers Organizations (FPOs) providing services to its members such as input supply, grouped marketing, grading and packaging of produce; CA storage plant; an apple juice factory and a couple of micro enterprises that will be supported by the Agri-Business Promotion Facility (ABPF).

Crop Budgets

8. Crop budgets are provided in Appendix Excel Table 3 to 12 and are summarized in the Table below. They were prepared for traditional apple orchards (without project), the rejuvenation of such existing orchards and area expansion for a number of species. Models run over the economic life of orchards (25 years) in constant 2015 price. Major investment costs consist of land preparation, planting material, irrigation facilities and anti hail nets and annual inputs during the gestation period during which no benefits are derived from the new trees. Credits will need to be taken by farmers from commercial banks in order to cover the establishment cost of new orchards, i.e. the period during which investment and recurrent expenditures exceed incomes from sale. Calculations show that loans per hectare range from INR 1.2 to 2.9 million during an establishment period of between 4 and 7 years. During this period, interest due is added to the loan outstanding. On the basis of projected annual cash flows, a suitable repayment schedule has been estimated, assuming an 8% annual interest rate. Repayment is spread over 3 to 5 years depending on the species.

9. Profitability of orchards measured as follows:

- a) Overall profitability during the economic life of the orchard (25 years): Financial Internal Rate of return (FIRR) range from 16% to 35%. New apple orchards are more profitable than existing ones.
- b) The Financial Net Present Value (FNPV) per hectare corresponds to an aggregation over 25 years of costs and benefits discounted at an annual rate of 6%. While the FNPV of existing orchard is estimated at INR 0.6 million without project to INR 1.4 million to INR 8.4 million depending on the species.
- c) Annual profitability is estimated at full development (i.e. after 10 years) both in absolute and relative terms by calculating the net return per ha (in INR). Net return per ha is expected to increase from the current INR 177,000 for traditional orchards to higher results ranging from INR 297,000 to 1,221,000 (in the case of the most productive apple orchard).

Crop Budget	Loan Size (INR/ha)	Loan duration: grace + repayment	Financial IRR	Financial NPV (INR/ha)	Net Return per ha and full bearing (INR/ha)
Traditional Orchard	n.a.	n.a.	15%	0.6 million	177,000
SOM of Apple Orchard	n.a.	n.a.	n.a.	n.a.	228,000
New Plantations of...					
Apple M111	2.7 million	7 years +	21%	5.0 million	940,000

		5 years			
Apple M106	2.7 million	6 years + 4 years	22%	5.2 million	896,000
Apple M9	3.0 million	4 years + 4 years	26%	8.4 million	1,221,000
Stone Fruits	1.6 million	5 years + 4 years	24%	3.8 million	570,000
Cherry	1.3 million	4 years + 3 years	35%	6.6 million	852,000
Pears	1.9 million	5 years + 4 years	18%	2.2 million	385,000
Citrus	1.2 million	6 years + 4 years	16%	1.4 million	297,000
Mango	1.9 million	6 years + 4 years	18%	2.2 million	418,000

(all figures are rounded)

Farm Models

10. According to an economic survey of HP in 2014-2015 by the economics and statistics department, the average farm size is very small at 1 ha. Three typical farm models were developed to assess the impact of project interventions on representative small farmers, who are the main target of the project. These models consist of: (i) a farm in the main orchard area of HP benefitting from SOM and replantation of part of the existing orchard; (ii) a farm in Northern HP, where most of the area expansion would take place and would benefit from area expansion of apple and stone fruits; (iii) a farm in the sub-tropical southern part of HP that would convert some of its land to citrus and mango production as a result of the project. The current farm size and their cropping patterns represent an average derived from the State HP statistical data and the impact has been calculated based on the above crop budgets.

11. The main financial impact of the project are summarized in the following Table (figures are in INR and rounded to the thousand INR). In summary:

- a) The project could bring substantial financial benefits, with farm incomes increasing by between 44% in the case of improvement of existing orchard and 137% in the case of area expansion;
- b) This would however require important investment by farmers representing several times their current incomes, implying access to commercial loans that are available in HP. In order to allow access by small and marginal farmers to these activities, the eligibility for project support should be for relatively small areas for area expansion, which have been proposed between 0.1 and 0.5 ha;
- c) Repayment of these loans would be spread during 10 to 12 years, including a grace period between 5 and 6 years. During the establishment period, the loan would cover the maintenance cost of the trees that are not yet bearing fruits. Farmers would experience a slight loss in income during that period due to the conversion of some of their annual crops in new orchards. However, this loss is compensated by the incomes from the remaining part of the farm (still the bulk of the farm) as well as some expected benefits from irrigation used for

vegetable production intercropped in the young orchard, as observed in the State when a new irrigation scheme is built but that have not been accounted for in these models.

	Model 1	Model 2	Model 3
Description	SOM and replantation of existing orchard	Area expansion in apple and stone fruits (on 0.2 ha)	Area expansion in citrus and mango in the sub-tropical area (0.2 ha)
Farm Size	0.9 ha	1.10 ha	0.75 ha
Annual Income w/o project	49,000	71,000	41,000
Average Annual Income with project (*)	108,000	169,000	780,000
Increase in annual income (in %)	+44%	+137%	+96%
Credit requirements	137,000	455,000	309,000
Grace period + repayment period	10 years	12 years	10 years

(*) Average net income over the 25 years life of the orchard

Nursery Model

12. The import of planting material and production of in-country clonal root stock seedlings represents about 12% of total project cost and therefore requires a careful financial analysis. It is to be performed by the SPV, which is expected to become a commercial enterprise that is financially viable after a few years. The analysis is provided in Appendix Table 1. The process (and consequent costs incurred) consists of: (i) Establishing / rehabilitating 35 PCDO centers throughout the State; (ii) importing the original rootstock material; (iii) reproducing it in stool beds to be established and operated by SPV by the project; (iv) establishing and running budwood banks for reproducing grafting material of various varieties; (v) establishing and running nurseries where grafted material is maintained for 1 year to produce whip plants or two years to produce feather plants, which are both sold to the farmers.

13. The financial analysis shows that:

- a) The SPV starts to generate positive cash flow after project year (PY) 3. However, this is insufficient to cover operating expenses for PY4 that would still require project support. After PY4, the SPV is self-financing and should not anymore be supported by the project;
- b) Their long term profitability is good. The Financial Internal Rate of Return (FIRR) over a 20-year period is estimated at 39% if feather plants and whip plants are sold at a price of INR 150 and 100 per unit respectively;

- c) The SPV is competitive compared to importing whip and feather plants as the above prices are only about 1/3rd of the current import price. This would dramatically increase affordability by small and marginal farmers;
- d) A sensitivity analysis shows that if the selling price of feather and whip plants is reduced to INR 100 and 50 respectively, the SPV would still be financially viable, with a FIRR calculated at 26%.

Value Addition from Component B

14. Component B supports the rehabilitation and development of various types of businesses and enterprises that are expected to add value to horticulture primary production through better packaging and grading, storage and processing. Simple financial analysis of four representative enterprises was undertaken enterprises that show positive financial results:

- a) About 30 Common Service Centers (CSCs) are expected to be developed by Farmers Production Organizations (FPOs) with the support of the project. A typical CSC would provide 4 main services to their members, including supplying inputs, grading, packaging and marketing of various fruits and vegetables. Current practices show that CSCs charge the following for apples: 2.5 INR/kg for grading, 8.5 INR/kg for packaging, and 1 INR/kg (2% of selling price) and the following for tomatoes: 0.75 INR/kg for grading, 0.25 INR/kg for crating, and only 0.1 INR/kg for marketing with a wholesale price of 5 INR/kg. The project would support some initial cost such as the refurbishment of some of their facilities and the purchase of simple equipment as well as training. With an expected throughput of about 2,000 tons after a few years, the CSCs are expected to be financially viable, with a FIRR of 31% and a FNPV of INR 8.6 million.
- b) The project will support the establishment and financing of an estimated 125 micro and small enterprises through its Agri-Business Promotion Facility (ABPF). Such enterprises could include small scale fruits and vegetables processing units or high value production schemes such as bee keeping, protected (greenhouse) cultivation, flower production. Based on existing examples, a simple model was developed for the production of fruit pulps, pickles, chutneys, sauces, jams and jellies. With an initial investment of INR 7.2 million, the small processing enterprise would generate an annual net income of INR 2.9 million. The FIRR is estimated at 43%;
- c) The project is financing the rehabilitation of 5 Controlled Atmosphere (CA) stores and the construction of 4 additional ones. The total cost is estimated at INR 727 million (US\$ 11 million) and the increased capacity projected at 10,500 tons of fruits (mostly apples), of which half is requested to be used by individual farmers (who are charged INR 1.75 per kg per month), while the remaining half is used by the managers of the CA stores. Benefits would consist of value addition to fruits that could be stored for 5-6 months before being sold off-season with a 50% price premium. The FIRR of the CA stores is calculated at 24.1%.
- d) Finally, HPMC would rehabilitate 5 existing processing plants and build 4 new ones. They would produce apple juice concentrate out of lower quality apples (grade C) purchased from farmers at a price of INR 3 per kg. The FIRR has been estimated at 29%.

Marketing Costs

15. Marketing costs include three or four major elements depending on cases: (i) assembling, grading and packaging; (ii) transportation (from production field to packaging site and in most cases from there to the New Delhi wholesale market); (iii) commissions from various agents along the chain; (iv) cost of CA stores or cold storage (for a small percentage of fruits).

16. Marketing costs without the project (current situation) were estimated by the agro-economic research Centre (AERC) in 2012⁴⁰ and were updated to 2015 price as shown in the following Table. These marketing costs correspond to the difference between the wholesale price realized in the Delhi market and the price actually perceived by the producer, the difference corresponding to the various elements listed in the following Table. As a key performance indicator, this difference is expected to decrease from the current 25% of wholesale price to an estimated 18% with the project. These benefits have been incorporated in the crop budgets.

Item	Current Value (in INR per 20 kg)	Expected Impact of the Project	Expected Value with project
Assembling, grading and packaging	138	Decrease as a result of better organization of FPOs and market construction	
Transportation cost	83		
Commissions from various agents	100	More transparent markets, more competition, more traders in HP	
Total Marketing Cost	321	Combination of above	
Total Marketing Cost (in % of wholesale price)	25%	Combination of above	18%

Macro Impact of the project

17. The production of fruits is expected to substantially increase as a result of scientific orchard management, improved irrigation and plantation of intensive orchards. At full bearing of the new plantation (i.e. after about 12 to 15 years), the incremental production of fruits is estimated at annually 569,000 tons (Table 23). This represents an increase by about 66% of the 2013-2014 HP production estimated at 866,000 tons. This substantial increase might eventually lead to a decrease in consumer price which, however might be limited due to two main factors: (i) in the meantime, demand and consumption of fruits is expected to continue to increase; (ii) HP only represents a share in the domestic supply of fruits. For instance, this share is about 15% for apples. Increased production as a result of the project estimated at 291,000 tons would represent about 40% of 2013-2014 HP production (738,000 tons) but only 6% of national production. For other fruits however, even if increased production as a result of the project is more limited, the percentage increase might be more important and impact on prices should be monitored by the project implementation team.

18. In economic terms, the horticulture sub-sector is currently estimated to contribute 7% of the total State GDP. Its INR 63 billion contribution (in 2012) results from apple production (INR 30 billion – 47%), vegetables (INR 25 billion – 40%) and other fruits (INR 8 billion – 13%). It is

⁴⁰ Impact of High Density Apple Plantation Under Horticulture in Himachal Pradesh (AERC – 2012).

estimated that as a result of the project, horticulture GDP would increase by about INR 13 billion annually, corresponding to 21% of horticulture GDP, or 39% of the fruit GDP.

Labour and Job Creation

19. The horticulture sub-sector has become a major source of employment in the State. Its contribution to agriculture employment is reported to have increased from less than 1% in 1983 to about 28% in 2010. The project would further provide employment opportunities in two ways:

- a) Through area expansion of 18,200 ha of fruit orchard that require between 200 and 400 working days per hectare and per year depending on the fruit species. This includes hired skilled labor for pruning plus unskilled labor that is expected to be family labor for half of it and hired unskilled labor for the other half of it. Assuming an average labor force works on average 200 working days per year, this would correspond to the net creation of about 27,000 full time jobs;
- b) Through the various agri-business enterprises established under the project. Based on assessment of the performances of existing enterprises, the Government of India estimates that an investment of INR 1 crore (INR 10 million) in the agro-processing sector generates on average 19 full time employment. By applying this average, the project would create a total of an estimated 9,219 permanent jobs, including: (i) 7,125 jobs from ABPF enterprises (75 micro enterprises investing INR 1 crore each plus 50 small enterprises investing INR 6 crores each); an estimated 780 jobs from the new and rehabilitated CA stores, and; (iii) about 1,314 jobs from the 9 agro-processing plants supported by the project (investing INR 7.7 crores each, i.e. creating 146 employment each).

20. The project would therefore generate an estimated 36,200 full time employments, including 27,000 from component A and 9,200 from component B.

Mitigation to Climate Change – Greenhouse gas emission

21. The team undertook a greenhouse gas (GHG) balance calculation using the EX-ACT tool (EX-Ante Carbon balance Tool). This calculation shows that the project has a positive impact leading to a decrease in of GHG emission of a total of 7.5 million tons equivalent CO₂ (tCO₂eq) during project life, corresponding to an annual decrease of about 0.25 million tCO₂eq. These benefits arise from the increase in permanent orchard cover and its resulting carbon sink as well as improvements in crop management as consequence of the adoption of micro irrigation, good agriculture practices, targeted fertilizer and pesticide use, energy efficient cooling systems and steel or prefabricated building materials that are recyclable. They would be progressively realized through project life. Following recent (2014) World Bank guidance, these benefits have been valued at a social value of carbon that is increasing over time in real value from US\$30 per tCO₂eq in 2015 to US\$65 per tCO₂eq in 2040.

Economic Analysis

22. The purpose of the economic analysis is to assess the economic performance of the project from the country point of view. It was derived from the financial analysis through the following process:

- a) Converting financial prices into economic values that reflect real economic costs and benefits after removal of any price distortions. This is the case for apples, pears and mango which domestic market is protected against increasing imports which are subject to high import duties corresponding to 54%, 39% and 34% respectively for apples, pears and mango;
- b) Replace financial prices into economic in the financial models;
- c) Aggregate economic costs and benefits for the entire project and compare them with a without project scenario (what would have happened without the project) in order to obtain annual economic streams of net incremental costs resulting from project activities. The Without project Scenario has been assumed as the following:
 - i) Productivity of existing orchards would remain constant and equal to the 10-year average that has shown no particular trend beyond important inter-annual variations due to climate inequalities;
 - ii) The area on which new orchards would be established would continue to be used as follows (with no irrigation facilities): (i) 75% currently under annual grain crops (mostly wheat); (ii) 25% under marginal use for extensive livestock grazing.
- d) Add project economic costs that were not included in the above models because they did not directly generate quantifiable benefits but that are considered necessary enabling expenses enabling the realization of project benefits. These include costs of components A2 (irrigation, training and capacity development, centers of excellence), A3 (research activities), B2 (strengthening HPMC facilities), C (market development and sector stewardship) and D (project management, ICT, M&E and knowledge management), i.e. about 60% of project costs;
- e) Deduct the forgone revenues from land that is used for new orchard plantation. Based on preliminary assessment, this land is believed to be currently occupied by grain for 50% of it and by extensive pasture / fallow for the remaining 50% of it;
- f) Add minor additional benefits from irrigation on land that has not been accounted for in fruit development. The productivity of vegetables on this land is expected to increase by about 50% compared to the current situation;
- g) Add GHG benefits (see above); and
- h) Undertake a sensitivity analysis in two steps: (i) incorporating some risks related to the project; (ii) adding the benefits of the reduction of GHG emission.

23. The Economic Rate of Return (ERR) calculated over 25 years is estimated at 17.2%. The Net Present Value (NPV), assuming a 6% annual discount rate is calculated at INR 47.6 billion, or US\$ 721 million. Without counting GHG benefits, the ERR is calculated at 16.3 percent and the NPV at USD 643 million.

24. Sensitivity Analysis. Some of the risks that could affect project performance are: (i) an underestimation of some of the investment costs such as for instance the cost of irrigation improvement or other infrastructure that have been roughly estimated at appraisal. A 20% increase in cost has been applied; (ii) Project benefits can be affected by an overestimation of performances from new planting material or by climate events though the adoption of climate resilient technologies would mitigate this risk. Yet, a decrease in 20% of project benefits has been applied; (iii) a delay in implementation of the project, e.g. as a result of slower than expected establishment of the SPV nurseries or slower than expected adoption of some new

technologies promoted by the project. A 2 year delay in the realization of project benefits. The following Table summarizes the sensitivity analysis that shows that the economic performance is only marginally affected by these risks as the ERR remains reasonable and the NPV only decreases by 23.7%.

25. Finally, if the reduction of GHG emission is valued at US\$ 30 per ton as mentioned above, the ERR and NPV increase to 20.1% and US\$ 963 million respectively.

Table: Sensitivity Analysis

Scenario:	ERR	NPV (INR billion)	NPV (US\$ Million)
Base Case	17.2%	47.6	721
Costs + 20%	16.7%	46.6	706
Benefits – 20%	16.6%	37.1	562
Benefits delayed by 2 years	15.9%	36.3	551