Document of
The World Bank

Report No: 77688-PK

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 49.4 MILLION
(US$ 76.4 MILLION EQUIVALENT)

TO THE

ISLAMIC REPUBLIC OF PAKISTAN

FOR A

SINDH AGRICULTURAL GROWTH PROJECT

June 11, 2014

Sustainable Development Department
Agriculture, Irrigation and Natural Resources Sector Unit
South Asia Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective February 28, 2014)

Currency Unit	=	Pakistan Rupee (PKR)
PKR 100.00	=	US$1
US$ 1.5474	=	SDR 1

FISCAL YEAR
July 1 – June 30

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AI	Artificial Insemination
CF	Conversion Factor
CSR	Composite Schedule Rate
CPS	Country Partnership Strategy
CVs	Curriculum Vitae
DG	Director General
EFP	Environmental Focal Person
ERR	Economic Rate of Return
ESMF	Environment and Social Management Framework
EU	European Union
FM	Financial Management
FY	Fiscal Year
GDP	Gross Domestic Product
GRM	Grievance Redressal Mechanism
GoSindh	Government of Sindh
Ha	Hectares
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
ICT	Information and communication technology
IDA	International Development Association
IFC	International Finance Corporation
IFR	Interim Financial Report
IPM	Integrated Pest Management
IPMP	Integrated Pest Management Plan
JICA	Japan International Cooperation Agency
M	Million
MD	Managing Director
MIS	Management Information System
MPG	Milk producer groups
NCB	National Competitive Bidding
NPV	Net Present Value
OP	Operational Policy
ORAF	Operational Risk Assessment Framework
P&DD	Planning and Development Department
PC-1	Planning Commission Form 1
PDO	Project Development Objective
PIP	Project Implementation Plan
PIFRA	Project to Improve Financial Reporting and Accounting
PIU	Project Implementing Unit
PMU	Project Management Unit
PMCU	Project Management and Coordination Unit
PSC	Project Steering Committee
QCBS	Quality and Cost Based Selection
QPR	Quarterly Progress Report
SA	Social Assessment
SAGP	Sindh Agricultural Growth Project
SOPs	Standard Operating Procedures
TA	Technical Assistance
TPV	Third Party Validation
WB	World Bank

Regional Vice President:	Philippe Le Houérou
Country Director:	Rachid Benmessaoud
Sector Director:	John Henry Stein
Sector Manager:	Simeon Ehui
Task Team Leader:	Tahira Syed

PAKISTAN
Sindh Agricultural Growth Project

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DATA SHEET

Pakistan: Sindh Agricultural Growth Project

PROJECT APPRAISAL DOCUMENT

South Asia Region

Agriculture, Irrigation and Natural Resources Unit

Basic Information

Date:	June 11, 2014	Sectors:	Animal production (30%), Crops (30%), Agricultural extension and research (15%), Agro-industry, marketing, and trade (20%), Rural/Inter-urban (5%)
Country Director:	Rachid Benmessaoud		
Sector Manager/Director:	Simeon Ehui / John Henry Stein	Themes:	Rural services and infrastructure (55%), Other rural (20%), Rural policies (15%), Rural markets (10%)
Project ID:	P128307	EA Category:	B partial assessment
Lending Instrument:	Investment Project Financing (IPF)		
Team Leader(s):	Tahira Syed		

Borrower: Islamic Republic of Pakistan, Economic Affairs Division

Responsible Agencies: (i) Department of Agriculture, Government of Sindh; and (ii) Department of Livestock and Fisheries, Government of Sindh

1. Contact:	Ahmed Bukhsh Narejo	Title:	Secretary, Agriculture, Supply and Prices Department
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2. Contact:	Zafar Shaikh	Title:	Secretary, Livestock and Fisheries Department
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Project Implementation Period:	Start Date: August 2014	End Date: June 2019	
Expected Effectiveness Date:	August 31, 2014		
Expected Closing Date:	June 30, 2019		

Project Financing Data(US$M)

[ ] Loan	[ ] Grant	[ ] Other
[X] Credit	[ ] Guarantee	

For Loans/Credits/Others

Total Project Cost :	88.7	Total Bank Financing	76.4
Total Cofinancing :	0.0	Financing Gap :	0.0

Financing Source	Amount(US$M)
BORROWER/RECIPIENT	
IBRD	
IDA: New	76.4
IDA: Recommitted	
Others (Farmers' contribution)	12.3
Financing Gap	
Total	88.7

Expected Disbursements (in USD Million)									
Fiscal Year	FY 14/15	FY15/16	FY 16/17	FY 17/18	FY 18/19				
Annual	9.4	17.3	18.1	18.1	13.5				
Cumulative	9.4	26.7	44.8	62.9	76.4				

Project Development Objective(s)

To improve the productivity and market access of small and medium producers in important commodity value chains.

Components

	Cost (USD Millions)
A: Capacity Building and Institutional Development	18.6
B: Investment for Agricultural Growth	47.8
C: Project Management and Monitoring and Evaluation	10.0

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 [NA]
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [NA]
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

Description of Covenant	Recurrent	Due Date	Frequency
Establishment of Project Management Unit in Department of Agriculture		July 31, 2014	
Establishment of Project Management Unit in Department of Livestock and Fisheries		July 31, 2014	

Establishment of Project Coordination Unit in Planning and Development Department		July 31, 2014	
Establishment of the Project Steering Committee			Throughout the project
Project to be implemented pursuant to the safeguard instruments (namely, the ESMP and IPMP)	Yes		Throughout the project
Project to be implemented in accordance with the Operations Manual	Yes		Throughout the project
Annual Work Plans and Budgets to be prepared for the Project for each subsequent fiscal year	Yes	No later than April 30 of each year	Annually
Establish and maintain the arrangements for Internal Auditing for the Project		July 31, 2014	

I. STRATEGIC CONTEXT

A. Country Context

1. Starting in the late 1960s, the Green Revolution introduced unprecedented technological and economic transformation and growth in Pakistan's agriculture sector; however, that growth has steadily declined for the past two decades–from 5.4 percent in the 1980s to 3.2 percent in the 2000s. The aggregate numbers hide extreme volatility—e.g., 6.5 percent growth in 2004 compared to only 0.6 percent in 2010. Agriculture in Pakistan has reached a point of diminishing marginal returns from the technologies and resources at its disposal, and insufficient investment in agriculture research and extension has left the sector ill-equipped to cope with climate shocks, reduce rural poverty, or compete in the marketplace.

2. In recent decades, agriculture's contribution to Pakistan's GDP has declined; however, it still accounts for 21.6 percent of value added. Agriculture GDP consists of 32.8 percent major crops, 11.1 percent minor crops, 53.2 percent livestock, 2.9 percent fisheries and forestry.[1] Through its production, agriculture contributes 60 percent to the country's export earnings, and, despite strong urban growth, 64 percent of the population still lives in rural areas and 45 percent of the nation's labor force still work in agriculture. Despite declining productivity growth, Pakistan is among the top 20 global producers in over 48 different agricultural commodities. The country produces over 108 million tonnes of agricultural commodities worth over US$13 billion annually.

3. In July 2011, the 18th Amendment of Pakistan's Constitution introduced devolution of many government services, including agriculture, to the provinces. With this, many national programs either ended or moved to each province, as did the responsibility for areas like policy development and food security. The provinces now face significant challenges in taking on additional roles that were previously under federal responsibility in addition to the research, extension, and marketing support challenges they already managed.

4. The top agriculture producing provinces in Pakistan are Punjab and Sindh, which account for 81 percent of agriculture GDP, most of which comes from rice and wheat production. The public expenditure in the sector consists of a skewed pattern which largely accounts for recurring costs including overheads and operational budget costs. Program development is limited with little to no expenditure allocated for sector policy development and implementation. A detailed public expenditure review of the agriculture and its subsectors is much needed to not only determine the level and composition of public spending in the sector but also define contours of Bank's dialogue and engagement with provincial authorities on enhancing efficiency and efficacy of public sector's sectoral expenditures. This project will focus on Sindh Province, which contributes 23 percent to agriculture GDP, has a high unmet productive potential. The project will also promote the role of private sector participation in the agricultural development and sector growth through public-private models for agribusiness development and support services.

[1] Major crops include cotton, wheat, rice, maize, sugarcane; minor crops include fruits, vegetables, barley, pulses, tobacco, and oil seeds.

B. Sectoral and Institutional Context

5. Sindh Province has 23.8 percent of Pakistan's population, 18 percent of its land area, and 14 percent of its total cropped area.[2] About 30-35 percent of Sindh's population lives below poverty line, and a majority of the poor are rural. Landholding patterns in Sindh are highly skewed from national norms, with a median farm size of around 11.33 hectares, as compared with 2.83 hectares in Punjab. According to one estimate in 2005, wealthy landlords in Sindh, who held farms in excess of 100 acres and who accounted for less than 1 percent of all farmers in the province, owned 150 percent more land than the combined holdings of 62 percent of small farmers with landholding less than 5 acres. Large landowners dominate production of the four major crops in Sindh—rice, wheat, sugar cane, and cotton. These crops are heavily regulated and receive extensive government subsidies through price support structures that often favor one segment of the value chain over another. There is currently no overall sectoral strategy, however the Government has developed some sub-sector strategies and plans and have held a series of dialogues with development partners including the Bank for preparing its sector strategy.

6. The SAGP will focus on horticulture—particularly chilies (92 percent of national production), onions (33 percent), and dates (about 50 percent)—and milk production because they have a small farmer focus, have significant involvement of women in production and processing, and, from a national perspective, Sindh enjoys the greatest competitive advantage in these pro-poor production value chains. Horticulture is largely unregulated, includes more private sector actors than the major crops, and has received little donor attention in the past. When donors have invested, they have focused largely on mangos and bananas—the two most profitable horticulture crops, which are often grown by large landowners. Investing in horticulture is seen to offer the best potential for increased small producer incomes, new employment opportunities in production and processing, improved resource productivity, and enhanced micronutrient availability in the market.[3] The one exception to this strategy is the planned intervention in the rice value chain, which will target a cluster of small and medium sized producers to help them reduce the post-harvest damage and loss from poor practices.

7. The first order constraint identified in the analysis of the targeted value chains is the quality of production and the high level of post-harvest losses, so SAGP will first focus on improving that quality. The interaction between producers and other actors along a value chain varies by commodity. In milk, producers generally produce directly for processors. In horticulture, they may link with either traders or processors. In all of targeted value chains, there are several private sector actors (traders and processors) who are actively seeking high-quality products for domestic and international markets. Despite the presence of many value chain actors, 25 percent of Pakistan's fruits and vegetables produced annually go to waste between the farm and the consumer. Only four percent of Pakistan's total fruit and vegetables are exported and at far lower prices (less than 41% of the world average) due to poor quality and the reliance on traditional low end markets. In milk production, losses climb to about 30 percent in the summer due to lack of infrastructure and equipment. Since milk production declines by 50 percent in the summer, this lead to huge shortages and high prices.

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[2] Sindh's cultivated area is 3.1 million hectares.

[3] Dr. Muhammad Jameel Khan, Advisor for Agriculture Planning, Government of Pakistan Planning Commission. 2011. "Agricultural Growth and Productivity Enhancement". Presentation made at the Roundtable Dialogue on Agriculture and Water in Pakistan.

8. The introduction of good agricultural practices and modest investments in relatively simple technology could substantially increase the quality of production and the potential for increased trade and higher incomes. For example, chili exports from Pakistan are banned by the European Union (EU) due to unacceptable levels of aflatoxin. In dates, only 20-30 percent of the production is in high value table dates (khajoor) and only 10 percent of those are Grade A, 60 percent are Grade C. The majority of dates grown are dried dates (chuhara), the majority of which are exported to India to be used in religious ceremonies, where they are thrown into the Ganges. Improved tissue culture, orchard management, and harvesting practices, could increase the production of Grade A table dates, thus increasing income.

C. Higher Level Objectives to which the Project Contributes

9. The Government of Pakistan (GoPak) and Government of Sindh (GoSindh) have both highlighted commercial agriculture and market linkages as priority investments for the sector. GoSindh has also prioritized investments in support of small and medium farmers and in value chains that will positively impact women. This project responds to the 2010-13 Country Partnership Strategy (CPS) (Report No. 53553 approved on July 30, 2010) which stated that the Bank will engage in providing technical assistance to help Pakistan in its agricultural policy analysis and design with a view to increasing agricultural competitiveness and expanding rural livelihoods. The project is also well aligned with the new 2015-2019 Pakistan Country Partnership Strategy (Report No. 84645) that was approved on May 1, 2014. The project directly contributes to Result Area 2: private sector development – in particular to outcome 2.2: increased productivity in farms. Under this Result Area, the Bank proposes to complement continued support for irrigation investment programs with investments to boost agricultural productivity and value addition.) The project will improve private sector participation in marketing infrastructure and facilitate reform in local marketing regulations and policies to enhance competitiveness. Collaboration with agribusinesses and International Finance Corporation (IFC) will be actively explored to boost the sector growth and build comparative advantage for small and medium farmers. The Sindh Agricultural Sector Development Strategy will form a key contribution to longer-term sector growth and setting priorities for investment and future programming for Government as well as development partners including the Bank.

10. The project contributes to Pillar III: Improving Infrastructure to Support Growth in the 2010-2013 Pakistan Country Partnership Strategy and the Progress Report (CPS-PR). Under this pillar, the Bank proposes to complement continued support for irrigation investment programs with investments to boost agricultural productivity and value addition. It also fits with the key principles of engagement, in particular focusing limited resources on strategic areas, engagement with the provinces, and leveraging partnerships for shared objectives. The project will complement the activities of the following on-going Bank-supported operations: Pakistan Poverty Alleviation Fund; Sindh Water Sector Improvement Project Phase I; Sindh On-farm Water management Project; Sindh Skills Enhancement Project.

11. The project will also address the need for a holistic vision and planning process to improve the performance of the agriculture sector by facilitating the formation and operation of an interdepartmental Project Steering Committee, which will include the Secretaries of Agriculture, Livestock & Fisheries, Finance, and Planning, as well as representatives of farmer

organizations, the private sector, and civil society. The Project Steering Committee (PSC) will be facilitated by a Project Coordinator to manage impact evaluation, third-party monitoring, and feasibility studies.

II. PROJECT DEVELOPMENT OBJECTIVES

A. Project Development Objective

12. The proposed Project Development Objective (PDO) is *to improve the productivity and market access of small and medium producers in important commodity value chains.* This will be achieved by: (i) investing in knowledge and technology for producers, sub-sectors of crops and livestock; and (ii) strengthening public sector institutions to enhance the enabling environment for sustained sectoral growth.

B. Project Beneficiaries

13. The proposed project would contribute to more inclusive growth by prioritizing support to small and medium sized producers who are trying to compete in horticulture markets. The project would reach to approximately 112,000 farmers covering over 66,000 ha. A substantive number of these farmers would be women involved in the agricultural processes on-farm for pre- and post-harvest practices for the selected commodities. The project will use a value chain approach to provide direct investment support to the farmers and producers groups for: (i) development of more effective and efficient farming systems; (ii) introduction of technology packages for increased productivity and value addition, and; (iii) improved market access. These services will be made available with a defined focus on how they reach the women in agriculture. The project will be provincial in scope but specific activities may be concentrated geographically based on agro-ecological conditions or natural clustering of economic activities. It is expected that beneficiaries will be able to establish effective and efficient production systems and create market linkages.

C. PDO Level Results Indicators

14. The key performance indicators for the SAGP include:

- Average yields for selected commodities by targeted beneficiaries yields.
- Percent increase in aggregate sales of selected commodities for targeted beneficiaries.
- Number of beneficiaries disaggregated by gender.

III. PROJECT DESCRIPTION

A. Project Components

15. The SAGP would contribute to more inclusive growth by prioritizing support to small producers with commercial potential. The project would be implemented over a period of five years and would have the following components:

16. **Component A: Capacity Building and Institutional Development (US$ 18.6 million):** The project will finance capacity building of producers through technology development, technology dissemination, training and exposure. The project would also provide institutional development for the implementing agencies and support strategic planning for Sindh's agricultural sector.

17. **Sub-component A.1: Capacity Building of Producers (US$ 6.7 million).** The project will finance training and capacity building for farmers, which will be based on training needs assessment carried out by the departments and their technical assistance providers. Training topics will include, but not limited to, good agricultural practices, agribusiness management, negotiating in the market, basic accounting, record keeping, etc. This will be done through inter-alia demonstration plots, public information campaigns, face-to-face training, and farmer-to-farmer study tours, and exposure visits. For each value chain, the respective department will sponsor stakeholder forums to facilitate dialogue with and among value chain actors that will increase the market orientation of departmental activities as well as build capacity of the departments to carry out stakeholder engagement for other crops in the future.

18. **Sub-component A.2: Modernization of Extension Services and Agricultural Research (US$ 8.9 million).** This subcomponent will finance: (a) technical assistance to the implementing departments; (b) modernization of extension services and facilities; and (c) competitive fund for adaptive research.

19. *Technical assistance and capacity building.* The project will finance the extended presence of a technical assistance consultant/firm who will (a) assist with the planning and management of implementation of investments in Component B, and (b) designing and delivering effective capacity building components. Additional technical assistance and training will be financed through twinning arrangements with international agencies.

20. *Modernization of programs and facilities.* Both the Agriculture Department and the Livestock & Fisheries Department have facilities that were affected by the 2010 and 2011 floods, and the project will provide a modest amount of financing to facilitate their rehabilitation. In addition, it will provide support to establish and/or rehabilitate facilities critical to fulfilling the requirements of the project including, the agricultural research centers, artificial insemination training center, and semen production units.

21. *Modernization of extension services by introducing ICT-based technologies.* The project will finance information and communication technology (ICT)-based technologies and services for delivery of agriculture extension and marketing for farmers/producers. These would include information going out to small producers and other stakeholders through the use of mobile phone and other ICT tools including 24/7 call center and interactive websites and other communication tools.

22. *Competitive research fund.* The project will finance a program of competitive research grants supporting research on crop agriculture, livestock, and fisheries. The program would be managed Department of Agriculture, in collaboration with Sindh Agriculture University at Tando Jam. The research proposals will be reviewed based on agreed criteria outlined in the Operational Manual. Recipients of grants would ensure that adequate financial management arrangements are in place for the grant funds.

23. **Sub-component A.3: Strategic Planning for the Agricultural Sector (US$ 3.0 million):** The project will finance the: (a) development of Sindh Agricultural Development Strategy; and (b) preparation of feasibility studies for future investments.

24. *Sindh Agricultural Development Strategy*. The project will finance development of the provincial Strategy to set the long-term development and growth vision for Sindh's agricultural sector. To more accurately forecast needs of the sector relative to pricing, climate smart agriculture, competitiveness and consumer demand, etc. The project will finance economic modeling, public expenditure review, private sector development, and sectoral results framework to inform future investment planning as part of preparing background studies. The Strategy development process will be managed by the office of the Project Coordinator (see Component C) and guided by the Project Steering Committee (PSC).

25. *Preparation of feasibility studies for future investment plans*. The project will finance preparation of studies on additional crop and livestock value chains including, but not limited to, fisheries and aquaculture, meat production and marketing, seed production and food storage, etc. The studies will feed into discussions for future investment project preparation. The approval of topics to study will be accorded by the PSC and the Project Coordinator will manage the implementation and dissemination feasibility studies.

26. **Component B: Investment for Agricultural Growth (US$ 47.8 million):** This component finances specific investments in the horticulture and dairy value chains and a targeted investment to reduce post-harvest loss among small-holder rice growers. The component would also finance a demand driven innovation fund to support farmers and producers with technology innovations in the selected value chains. Selection criteria for farmers and producer groups to receive project interventions and detailed procedures for funds transfer and managing contributions are included in the Operational Manual.

27. **Sub-component B.1: Horticulture Value Chains (US$ 23.2 million).** The project will finance investments in three (3) horticulture crops – dates, onions and chilies. The key focus will remain on adopting good agricultural practices for production and post-harvest handling of the selected crops.

28. *Dates crop.* The project would finance investments for increased *productivity* through good agricultural practices for improved crop husbandry, tools for pre- and post-harvest processes including, mats for spreading dates in the sun, disease control kits, moisture testing meters, conductivity meters, tree pruner, pollinator guns, harvesting tool, solar dryers, hand carts, plastic crates, tarpaulin sheets, etc. would be provided to small and medium growers on a 30-70 percent cost sharing basis. To support *market access*, technology would be provided on a 70-30 cost sharing basis with the farmer or farmer group providing their 30 percent of the cost to Department of Agriculture, which would then notify a supplier in close proximity to the farmer/farmer group to deliver the implement/tool. The kind of technology to be provided along with the eligibility criteria is included in the Operations Manual.

29. *Onion crop.* The project would provide extension services for increased *productivity* through correct plant husbandry, both as a pure stand and an intercrop, fertilizer application, spraying techniques, weed and disease control, harvesting, curing and drying. The integrated pest

management extension would focus on developing an environmentally sensitive approach to pest management. Under pest and disease management, thrips, damping off, bulb rotting and downy mildew would be of primary concern. The project would also finance technology packages for increase *market access* which may include, but not limited to, onion diggers, curing and storage facilities to increase shelf life, mechanical dryers, seed threshers, and ancillary equipment, etc. The financing of the tools and equipment will be provided on cost sharing where growers will contribute 30 percent.

30. *Chili crop.* The project will focus on increased *productivity* through improving agricultural practices including introduction of polyester drying mats, along with similar sheets to cover the crop to prevent dew formation on the harvested crop would be provided to famer and grower associations on 30 percent cost sharing bases. The reduction in aflatoxins is directly in response to improving *market access* by addressing the urgent need of improved food safety of the chili crop for domestic market as well as for facilitating opening of exports to more desirable markets, thus boosting farmer incomes and foreign exchange earnings. Rehabilitation and up gradation of the Kunri chili research station in district Umerkot would also be financed. The project would facilitate a public-private partnership involving the Chili Growers Association to establish a common facility center in Kunri, which will house equipment and other implements to improve post-harvest handling of chilies. Project financing of the facility will be contingent on an approved business plan and secured cofinancing. Depending on the size of the facility, IFC support would be sought during implementation.

31. **Sub-component B.2: Rice Post-harvest Loss Management (US$ 7.0 million).** To increase *productivity* and stem the loss of 30-40% of the rice crop due to poor processing practices, this subcomponent will finance threshers for farmers and paddy dryers for small mill operators. In addition, the project will provide soil and moisture testing kits, conductivity meters, etc. Financing for the threshers and dryers would be provided on 50 percent cost sharing basis (in accordance with current government practice) to groups of farmers, small mill operators, and individual medium-scale farmers. The remaining smaller technology inputs would be provided on a 70-30 cost sharing basis. To support the *market access*, the project would also promote knowledge sharing and learning from other rice producing countries for potential market linkage for Sindh's rice.

32. **Sub-component B.3: Dairy Value Chain (US$ 15.0 million):** The project will increase *productivity* of milk commodity through introducing improved animal health and husbandry practices, nutritional services, hygienic milk collection and testing of milk quality, milk quality monitoring and recording, and storage. Approximately 153 milk producers groups (MPGs) will be formed in 8 districts to improve their *market access*. The project will target small and medium milk-producing households, but since women are involved in at least 80 percent of production management, the project will provide services exclusively targeting women (e.g., extension messages, female extension agents, etc.). The number of MPGs per district will vary according to the animal population and market linkage. Essentially, each MPG would have a production capacity of 1,000 liters each day. Initial targeting will focus on identified "milk pockets" in the 8 districts. Through meetings in these targeted areas, producers will be informed of the project and given the rules for forming an MPG. The mobilization of MPGs will be done by the private sector milk processors and the district level project implementation unit. In addition,

arrangements for producers to access markets will vary based on the existence of a competitive field of private sector actors. They could include, direct tie-ups with traders or processors that allow the MPG to negotiate with different actors on a competitive basis.

33. **Sub-component B.4.: Demand Driven Innovation Fund (US$ 4.0 million).** The project would establish a demand driven innovation fund to respond to the needs for small inputs that supplement the project objectives of improved productivity and market access. The identification, planning and selection criteria along with procedures for financial management arrangements to implement the Fund are included in the Operational Manual. The idea behind the fund is that there are equipment/technologies that are needed by select individuals or groups, but not all; that there are innovative ideas that the project designers have not thought of; and that there are local enterprise opportunities that can provide services to farmers on a sustainable basis if they are helped in meeting the capital costs of setting up their business. The Fund will focus on co-financing technologies that are not suitable for all producers, but rather could be used by a group of producers or by an entrepreneur who can use the technology to provide services to the local producer population.

34. **Component C: Project Management and Monitoring and Evaluation (US$ 10.0 million):** This component would finance costs for: (i) Project Management Units (PMUs), Project Coordinator's office and Project Implementation Units (PIUs); (ii) third party monitoring; (iii) implementation of Environment and Social Management Framework (ESMF) and Pest Management Plan (PMP) and development of Social Assessment; and (iv) rigorous Impact Evaluation to attribute causality to project interventions. The operational costs would also include costs financing of communications strategy and awareness campaigns through print and electronic media; grievance redressal mechanism (GRM) including interactive voice response and complaint tracking system; and management information system (MIS).

B. Lessons Learnt and Reflected in Project Design

35. The project design draws on lessons learned from previous projects in the horticultural sector executed by the World Bank in other countries of the South Asia region. There are risks here of the relevance of the lessons because the Bank has not been involved in the agricultural sector in Pakistan for a considerable time. Following key lessons are incorporated in the design of SAGP:

36. The project design should ensure that activities are demand driven and do not follow an agenda that extends down from the project to the farmer. A good case in point is the establishment of farmer groups or cooperatives. Often these are made pre-requisites for beneficiary participation. However such structures rarely survive past the duration of the financial support that usually underpins their establishment.

37. Project management should be located as close to the focus of project activities as possible to ensure a good understanding of the problems encountered and an ability to react to beneficiary demands more effectively.

38. An effective and streamlined procurement system that delivers goods and services to the project team in a timely manner, and at prices that are not inflated by the procurement process, is

essential. This is particularly important when farmers are making contributions towards the purchase of goods and services.

39. Requiring contributions from farmers towards the cost of productive investments is important to ensure commitment and ownership of project supported activities. Additionally, sustainability of outcomes is best achieved by including farmers directly in project activities.

C. Alternatives Considered and Reasons for Rejection

40. Under agriculture, the emphasis of the proposed initial subproject is on horticulture crops and post-harvest management in rice. However, horticulture, though showing impressive growth in the agricultural sector is a minor contributor to provincial GDP when compared to the four major agricultural crops of wheat, rice, sugarcane and cotton. Alternative design scenarios were considered; these included:

41. **Alternative 1: No investment project.** The 'no-project' alternative is not acceptable since in that scenario, no direct investment would strategically promote sectoral growth for agriculture and its subsectors. Additionally, investments in agricultural sector with a focus on reaching to the small and medium farmers have been ad hoc at best. As a result, promotion of horticulture while remains a priority for the GoSindh, few resources are available to address the subsectors many challenges that limit its growth.

42. **Alternative 2: Focus on different horticulture crops.** Mangos and bananas are both economically valuable crops in Sindh, and offer a moderate export potential if varietal selection were improved. However, these crops are primarily grown by larger farmers, who are able to access the required investment capital for production units that are economically viable. In addition, both crops have received significant prior support from donors and government and appear to be thriving. Nevertheless, their contribution to the economy of Sindh is lower than that of dates, onions and chilies.

43. **Alternative 3: Focus on the major crops.** Wheat, rice, sugarcane and cotton are the backbone of the Sindh agricultural economy. However, to make an impact in these crops would need considerable amounts of investment, and would be beyond the scope of the first phase of this program, which was tasked with showing measurable impact in the first six years. A second consideration is that fact that the major four crops all receive considerable government subsidies in one form or another and operate in distorted market following political rather than economic imperatives.

D. Project Financing

Lending Instrument

44. The Investment Project Financing (IPF) is the financing instrument for this project.

Project Cost and Financing

45. The total estimated project cost is US$ 88.7 million, of which US$ 76.4 million will be financed by an International Development Association (IDA) Credit. The remaining US$ 12.3 million will be financed through farmers' contribution.

46. The project will allow retroactive financing of approximately US$ 1.0 million for critical activities undertaken by the Borrower during project preparation. The period of retroactivity will be 12 months from credit signing starting August 1, 2013.

Project Costs (US$ million)

Project Components	IDA Financing	% of total cost	Farmers' Contribution	% of total cost	Total Cost
A. Capacity Building and Institutional Development	**18.6**	**21**	**-**	**-**	**18.6**
A.1. Capacity Building of Producers	6.7	8	-	-	6.7
A.2. Modernization of Extension Services	8.9	10	-	-	8.9
A.3. Strategic Planning for Agriculture and Livestock Sector	3.0	3	-	-	3.0
B. Investments for Agricultural Growth	**47.8**	**54**	**12.3**	**14**	**60.1**
B.1. Horticulture Value Chains	23.2	26	8.9	10	46.1
B.2. Rice Post-harvest Loss Management	7.1	8	2.8	3	9.9
B.3. Dairy Value Chain	13.4	15	0.5	0.5	13.9
B.4. Demand Driven Investment Fund	4.1	5	-	-	4.1
C. Project Management and Monitoring and Evaluation	**10.0**	**11**	**-**	**-**	**10.0**
C.1. Operational costs	8.8	10	-	-	8.8
C.2. Third party monitoring	0.4	0.5	-	-	0.4
C.3. ESMF and PMP Implementation, social assessment, grievance redressing mechanism, communication	0.5	0.6	-	-	0.5
C.4. Impact Evaluation	0.3	0.3	-	-	0.3
Total Project Costs	76.4	86	12.3	14	88.7
Interest During Implementation					
Front-End Fees					
Total Financing Required	**76.4**	**86**	**12.3**	**14**	**88.7**

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

47. The Department of Agriculture and the Department of Livestock and Fisheries will jointly be responsible for implementing the project and for ensuring that the project development objectives are met. The two Departments will be responsible for implementation of their respective components as well as project management. The project would largely be implemented through the existing structures of the two Departments for delivering local agriculture and livestock extension and research services. However, both Departments would be augmented with additional technical and project management capacities to support the implementation.

48. The implementation arrangements comprise of three tiers: (i) project oversight and coordination at provincial level; (ii) project management at departmental levels; and (iii) project implementation at districts level.

Provincial Level Oversight and Coordination

49. A provincial level the Project Steering Committee (PSC) will guide, monitor, and supervise the implementation of the Bank project. The PSC will be chaired by the Additional Chief Secretary and will provide overall decision making and policy guidance on aspects relating to agricultural sector development and growth for its contribution to the provincial GDP. The PSC would review progress and will meet every quarter or as needed. The PSC would review progress and will meet every quarter or as needed. The PSC may be expanded to include additional members as needed. The PSC members will include:

- Additional Chief Secretary, Planning and Development (chair)
- Secretary Finance
- Secretary Agriculture
- Secretary Livestock
- Representatives of Private Sector Stakeholders
- Project Coordinator (member secretary)
- Project Director Agriculture PMU
- Project Director Livestock and Fisheries PMU
- Any other member/members the Committee may co-opt

50. The PSC would be supported by a full-time Project Coordinator. The Project Coordinator would be responsible for consolidated monitoring and evaluation of the project. The quarterly reports prepared by the PMUs would be consolidated by the Project Coordinator. In addition, the Project Coordinator would prepare Annual Reports with Project Implementation Plans (PIP). The project M&E consultants would report to the Project Coordinator. The Sindh Agricultural Development Strategy will also be managed by the office of the Project Coordinator with under the guidance of the Project Steering Committee (PSC). And the Project Coordinator will be responsible for managing the implementation and dissemination feasibility studies.

Project Management

51. ***Project Management Unit:*** Two Project Management Units (PMUs) would be established in the Department of Agriculture and Department of Livestock respectively headed by Project Directors who are appointed by the Government. The position of a Project Coordinator will be established to ensure that joint monitoring, reporting and coordination takes place with the help of two Departments.

52. The PMUs would be responsible for overall project management, monitoring and supervision, as well as fiduciary and safeguards implementation and compliance. The PMUs will have project management and implementation staff with adequate qualification and expertise. The PMUs and where needed, would be provided with additional technical support through consultants.

Project Implementation

53. ***Project Implementation Units:*** At the district level, Project Implementation Units (PIUs) will be established to provide support staff, training and equipment to build capacity and strengthen the arrangements already in place, mainly the existing Research and Extension wings

of the Department of Agriculture and Department of Livestock. The PIUs would be provided with capacity building so that they can access and use a greater range of information products, decision tools, and manage field demonstrations. A total of eight (8) PIUs will be established – two each in Hyderabad, Mirpurkhas, and Sukkur and one each in Larkana and Thatta districts. Other districts will be included during implementation as and when the need arises. The PIUs would have adequate staff to ensure all implementation responsibilities are properly resourced. The PIUs will be responsible for the operational management and implementation of the specific sub-components. The PIUs will report to respective PMUs for day-to-day management and implementation of project sub-components and will be supported by implementation as well as fiduciary staff of the PMUs.

B. Results Monitoring and Evaluation

54. The PMUs will have overall responsibility for all results monitoring and evaluation. The PMUs will prepare quarterly report that will be consolidated by the Project Coordinator and submitted in an appropriate format to the GoSindh PSC, and the Bank no later than one (1) month after the end of each quarter. The quarterly report would cover the progress and implementation status of all project components progress on capacity building and training, activities of the project consultants, progress and results of special studies, other technical, environmental and social, procurement and financial management issues. These reports would be in addition to the quarterly interim financial statements, including: (a) comparison of actual physical and financial outputs with forecasts, and updated six-months project forecasts; (b) project financial statements, including sources and application of funds, expenditures by category statement, and designated account reconciliation statement; and (c) a procurement management report, showing status and contract commitments, overall procurement plan for the next six months. The interim financial statements would be submitted within 45 days after the close of each quarter by each implementing agency.

55. The Project Coordinator will also prepare annual Project Implementation Plans (PIP). The PIPs will be consolidated with inputs from the two PMUs and will be prepared by no later than March 31 of each year of project implementation. The PIPs will cover the period of planned Fiscal Year (July 1 to June 30) and will include: (a) the work plans for each component, with funds required for implementation with breakdown by components/activities; (b) an updated disbursement profile; and (iii) project targets for the planned year.

56. The project would hire M&E consulting firm with a proven track record. The M&E consultants would report to the Project Coordinator and provide support on: (a) monitoring the project results framework including key performance indicators (KPIs); (b) completing a baseline survey for each component; (c) carry out impact evaluation studies for each intervention tier; and (d) establish a Project Management Information System (MIS). The M&E activities would provide continuous feedback to the GoSindh and PSC on the project's performance and its overall impact and of various components, so that corrective actions could be undertaken in a timely manner.

57. In addition, an impact evaluation would be carried out with the objective of establishing the net contribution of the project to the sustainable livelihoods of the targeted families "before" and "after" the project and/or "with" and "without" the project. This impact evaluation would

also feed into preparation of the next phase or follow on of the project. A Mid Term Review (MTR) would be undertaken half way through the project implementation period and an Implementation Completion Report (ICR) would be submitted to the Bank no later than six months after the closing date of project.

C. Sustainability

58. Sustainability under the SAGP has several dimensions. First, is the sustainability of individual investments which includes that in principle, investments under the SAGP are included as part of a broader effort to enhance agriculture sustainability at the farm level. This applies to overall agricultural and in particular horticultural practices initially in the selected crops and scaled up to future investments in other crops. Second is the sustainability of the investments across a given crop cluster which will depend on the quality of the SAGP planning process, the timely execution of activities and the incentives that farmers have in implementing activities. Third, as there are trade-offs between the project support accessed by farmers within different parts of the province, it is expected demonstrative effect will engage additional farmers to participation, in the longer-run, in the sectoral growth programs of the GoSindh and other development partners. In addition, the sustainability of the sector growth agenda will be ensured by the Sindh Agriculture Development Strategy which would address key constraints in promoting extension and marketing issues from small and medium farmers' perspective and hence enable public policy lessons and possible transfer of these towards scaling-up of sectoral investments. All of this will also be linked directly to the quality of the M&E system in capturing results as well as lessons in the SAGP and effectively communicating these to stakeholders including policy and decision makers, development partners and direct and indirect beneficiaries.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk	**Rating**		**Rating**
Stakeholder Risk	M	Project Risk	
Operating Environment Risk		▪ Design	H
▪ Country	H	▪ Social and Environmental	M
▪ Sector and Multi-Sector	M	▪ Program and Donor	L
Implementing Agency Risk		▪ Delivery Monitoring and Sustainability	M
▪ Capacity	H		
▪ Governance	H		
Overall Preparation Risk	**H**	**Overall Implementation Risk**	**H**

* H – High; S – Substantial; M – Moderate; L – Low.

B. Overall Risk Rating Explanation

59. The project is rated as "High" given that the Bank engagement in the sector comes after a long period of absence from policy and direct investments. The sector growth is constrained by a number of factors including unclear land and water rights, insufficient scale of transition to modern technologies and farm inputs that directly affect productivity, limited access to farm capital and credit, low levels of public sector investments, and limited coordination in policy and research functions of the public sector agencies. This scenario is further exacerbated by a weak

policy environment that limits private sector participation. The detailed ORAF with full explanation of risks is enclosed in Annex 4.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analyses

60. Economic and financial analysis has been carried out, independently for the agriculture as well as for the livestock components, considering the investments proposed under the project. Both, the stand alone components proved the project is economically and financially viable.

61. The analysis for agriculture component was carried out by developing crop budgets to show the production costs and revenues expected from the project targeted cropping activities in both scenarios: *with* and *without* the project interventions. Data for recommended production technology and inputs usage and, for attainable crop yields was collected from different sources including farmers, government and private sectors. It was concluded that project investments are financially feasible provided at least 50 percent of the beneficiary farmers adopt improved practices. It is envisaged that the investment suggested for improvement of agriculture would increase the annual net economic benefit for beneficiary farmers by approximately 27.5 percent, from Rs 9.8 billion to Rs 12.5 billion. For this component, the Economic Rate of Return (ERR) is estimated at 22 percent with Net Present Value (NPV) of Rs 4.6 billion (US$ 46 million) with 12 percent as discount rate.

62. The analysis for livestock component was carried out by estimating the benefits of artificial insemination (AI) and of marketing improvement envisaged under the project. The project will finance formation of approximately 153 milk producers groups (MPGs). It will target small and medium milk-producing households. Since women are involved in at least 80 percent of production management, the project will provide services exclusively targeting women (e.g., extension messages, female extension agents, etc.). On average one MPG will cover 5 villages, 40 animals in each village. Essentially, each MPG would have a production capacity of 1,000 liters of milk each day (approximately 5kg of milk per animal). For this component, the Economic Rate of Return (ERR) is estimated at 25.4 percent with Net Present Value (NPV) at about Rs 686 million. Sensitivity analysis also proves robust economic returns for the livestock component of the SAGP.

B. Technical

63. Currently three horticulture crops, one major crop and milk value chains are selected for investments through this project. In addition, a key focus of the project remains on capacity building of various agricultural stakeholders including farmers, producers, agribusinesses and public sector agencies in particular the research and extension wings of the two Departments. The project also intends to address the enabling environment for promoting market growth and reforms and specifically proposes development of the Sindh Agricultural Development Strategy. The Strategy will define the overall strategic vision of the provincial government for sector growth as well as identify through various analytical pieces, the reforms agenda where policy issues need to be addressed for promoting viable growth in this sector.

64. The project design also include institutional strengthening and capacity building of the implementing agencies – Department of Agriculture and Department of Livestock and Fisheries and in particular augments the capacity and knowledge within the research and extension wings of these Departments. The project would also finance a limited pilot of competitive agricultural research fund and preparation of proposals for future investments. The objective would be to build a sufficient pipeline of ideas and viable investment plans that are fully assessed for their economic and financial feasibility as well as meet the overarching goals of sectoral growth and outreach to direct and indirect beneficiaries.

C. Financial Management

65. Government's existing financial management arrangements would be followed for the project except for fund flow that would be managed using Designated Accounts for the implementing agencies. Funds would be provided on the basis of forecast for six months and expenditure reported on a quarterly basis. Form and content of the Interim Financial Reports (IFRs) are discussed and agreed during appraisal.

66. Most of the financial management staff in the two implementing departments do not have accounting qualifications but have been performing these functions for many years. Adequately qualified financial management staff would be recruited for the PMUs and PIUs. Hiring of staff is a condition for negotiations.

67. There are no internal audit arrangements in either the Department of Agriculture or the Department of Livestock and Fisheries. Therefore these functions would be outsourced. It was agreed that internal audit arrangements would be in place by July 31, 2014. Audit for the project would be conducted by the Auditor General of Pakistan and audited financial statements provided to the Bank within six months of the close of each financial year. Previous years' audit reports of the two departments did not highlight any major accountability issues. Since the two implementing agencies have not done a Bank financed project, there are no overdue audit reports.

D. Procurement

68. Procurement for the proposed Project would be carried out in accordance with the World Bank's "Guidelines: Procurement Under International Bank for Reconstruction and Development (IBRD) Loans and IDA Credits" dated January 2011; and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated January 2011, as well as the provisions stipulated in the Credit Agreement. For each contract to be financed by the Credit, the different procurement methods or consultant selection methods, estimated costs, prior review requirements, and time frame are to be agreed between the Recipient and the Bank Project team in the Procurement Plan. The Procurement Plan will be updated at least quarterly or as required to reflect the actual Project implementation needs and improvements in institutional capacity. A General Procurement Notice will be published for contracts subject to international competition.

69. For each contract to be financed by the project, the different procurement methods or consultant selection methods, estimated costs, prior review requirements, and time frame are to be agreed between the Borrower and the Bank Project team in the Procurement Plan. A procurement plan will developed and appraised during appraisal mission. The Procurement Plan

will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. A General Procurement Notice shall be published as soon as procurement plan is prepared.

70. PMUs at Agriculture and Livestock departments will be responsible for conducting procurements under this project. There is a need to place adequate human resources within both departments for providing advice and guidance on processing procurements using Bank's procedures and guidelines.

E. Safeguards

71. While most of the sub-projects are expected to be capacity building interventions with no significant social or environmental impacts, some value chain interventions, agricultural machinery usage and pesticide usage associated with the project can have adverse impacts that need to be mitigated at the planning stage. The potential impacts could be impacts related to construction of storage facilities to enhance value chain, health and safety incidents resulting from usage of thrashers, tractors and other machinery deployed in agriculture sub-projects.

72. To screen for and mitigate these impacts, an Environmental and Social Management Framework (ESMF) is prepared by the project entity. The framework includes screening procedures and details of instruments to be used for assessing the impact of each sub-project type. For projects that are well defined at this stage, the ESMF includes mitigation measures, screening checklists as well as the capacity building and institutional measures needed to ensure implementation of the mitigation measures. The ESMF has been disclosed and placed at the regional offices of the agriculture department and livestock and fisheries department as well as copies sent to relevant institutions.

Social

73. No social safeguards policies will be triggered: no land acquisition or involuntary resettlement will be funded or take place under the project. All planned project interventions will take place on individual's own land where the project targets individual producers. In case any minor areas of land will be needed for a project targeting a group of beneficiaries, such as construction of value addition facilities (such as cold storage, collection and processing centers), the land should either be: (a) private land obtained through compensation paid by the community (i.e., transaction between willing buyer and willing seller) or (b) land obtained through private voluntary donations, provided the donation will have minimal livelihood impact on the concerned person (less than 10 percent). Community purchases and private voluntary donations will be fully documented as required by the ESMF.

74. In adequately targeting intended beneficiaries (small and medium farmers), the project has developed a consultation framework and a capacity development strategy as a part of the overall value chain assessment manual. SAGP will also explore opportunities for inclusive growth to engage sharecroppers, tenants, landless, and women in project activities. The inclusiveness and quality of their participation (such as additional man days generated by the project activities) will be monitored through the project MIS.

Environment

75. While most of the sub-projects are expected to be capacity building interventions with no significant social or environmental impacts, some value chain interventions, agricultural machinery usage and pesticide usage associated with the project can have adverse impacts that need to be mitigated at the planning stage. The potential impacts could be impacts related to construction of storage facilities to enhance value chain, health and safety incidents resulting from usage of thrashers, tractors and other machinery deployed in agriculture sub-projects.

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Annex 1: Results Framework and Monitoring

Project Development Objective (PDO): To improve the productivity and market access of small and medium producers in important commodity value chains.

Indicators	Core	Unit of Measure	Baseline	Cumulative Target Values**					Frequency[4]	Data Source/ Methodology[5]	Responsibility for Data Collection[6]	Description (indicator definition etc.)
				YR 1	YR 2	YR3	YR 4	YR5				
PDO Level Results Indicators*[7]												
Increase in yields for selected commodities by targeted beneficiaries yields (in '000' tonnes)	☐	'000 tonnes	Dates 263 Onions 660 Chilies 172	0%	5%	10%	15%	20%	Annually	Annual Survey	M&E Consultants, PMU and PC	Measure production per hectare, per tree, or per animal depending on commodity
Percent increase in aggregate sales of selected commodities for targeted beneficiaries.	☐	%	Current volume of sales by commodity	0%	5%	10%	15%	20%	Annually	Farmer Survey	M&E Consultants, PMU and PC	Measure % of sales by commodity.
Number of beneficiaries disaggregated by gender	☑	#	Zero	0%	5%	10%	15%	20%	Annually	Progress report	M&E Consultants, PMU and PC	Direct & indirect beneficiaries
Intermediate Results Indicators*												
Component A: Capacity Building and Institutional Development												
Number of farmers/producers who receive training and knowledge services (gender disaggregated)	☐	#	Women – zero						Six monthly	Progress report	M&E Consultants, PMU, PIUs and PC	Training events organized and participants records available
			Men – zero									
User satisfaction of the	☐	%	Women – zero	10%	50%	60%	70%	80%	Annually	Farmer Survey	M&E Consultants,	Farmer feedback

[4] A – Annual; QS – Quarterly Summary

[5] AS – Annual Survey; AOR – Annual Outcome Report; FS – Farmer Survey; GLM – Geo Locational Monitoring; IE – Final Impact Evaluation Report; EoP – End of Project; MT – Mid Term; PR – Progress Reports; SS – Specific Surveys

[6] M&E – Monitoring and Evaluation Unit; Cs – Components; TP – Third Party; SM – Supervision Mission

[7] The RF&M table presents the main indicators. Information on a series of other indicators including some that are linked to impact, and which will not be observed at their consolidated state during project implementation, will be collected.

Indicators	Core	Unit of Measure	Baseline	Cumulative Target Values**					Frequency[4]	Data Source/ Methodology[5]	Responsibility for Data Collection[6]	Description (indicator definition etc.)
				YR 1	YR 2	YR3	YR 4	YR5				
modernized extension services (gender disaggregated)			Men – zero								PMU, PIUs and PC	at the time of information dissemination
Approval and dissemination of the Sindh Agricultural Development Strategy developed	☐	Yes/NO	None	-		Yes	-	-	Annually	By mid term	M&E Consultants, PMU and PC	Series of consultations and background papers available
Number of commodities for which special studies are available	☐	#	Zero	0	1	2	3	5	Annually	Progress report	M&E Consultants, PMU and PC	Topics approved by PSC. Studies available with detailed business and investment plans for financing by GoSindh, WB or others
Component B: Investments for Agricultural Growth												
Percentage of farmers achieving 20% reduction of on-farm pre and post-harvest losses and wastage for selected commodities	☐	%	Dates 35% Onions 15% Chilies 25% Rice 40%	0%	5%	10%	15%	20%	Annually	Annual Survey	M&E Consultants, PMU and PC	The number of farmers who report reduction of pre- and post-harvest losses Y-O-Y
Percent of high grade produce of selected commodities by targeted beneficiaries.	☐	Grade %	Current grade by commodity	0%	5%	10%	15%	20%	Annually	Annual Survey	M&E Consultants, PMU and PC	Measure % of produce per grade. (data to become available by March 2014)
Clients (farmers) who have adopted an improved agricultural technology promoted by the project (number)	☑	#	Women – zero						Six monthly	Progress report	M&E Consultants, PMU and PC	Change of technology and practices by farmers/producers
			Men – zero									
Number of milk producers organized into groups (disaggregated by gender)	☐	#	Women – zero						Quarterly	Progress report	M&E Consultants, PMU, PIUs, and PC	Numbers in project areas
			Men – zero									
Component C: Project Management and Monitoring and Evaluation												
Grievance redressal mechanism established and being tracked	☐	-	None	1	-	-	-	-	Annually	Progress report	M&E Consultants, PMU, PIUs, and PC	Establishment and monitoring of the functioning of

Indicators	Core	Unit of Measure	Baseline	Cumulative Target Values**					Frequency[4]	Data Source/ Methodology[5]	Responsibility for Data Collection[6]	Description (indicator definition etc.)
				YR 1	YR 2	YR3	YR 4	YR5				
												GRM. This will be measured by number of complaints received and responded as well as timeliness of response.
Number of client (farmers) days of training provided (disaggregated by gender)	☑	#	Women – zero						Quarterly	Progress report	M&E Consultants, PMU, PIUs, and PC	Numbers in project areas
			Men – zero									

Annex 2: Detailed Project Description

PAKISTSAN: Sindh Agricultural Growth Project

77. The SAGP would contribute to more inclusive growth by prioritizing support to small producers with commercial potential. The project would be implemented over a period of five years and would have the following components:

78. **Component A: Capacity Building and Institutional Development (US$ 18.6 million):** The project will finance capacity building of producers through technology development, technology dissemination, training and exposure. The project would also provide institutional development for the implementing agencies and support strategic planning for Sindh's agricultural sector.

79. **Sub-component A.1: Capacity Building of Producers (US$ 6.7 million).** The project will finance training and capacity building for farmers, which will be based on training needs assessment carried out by the departments and their technical assistance providers. Training topics will include, but not limited to, good agricultural practices, agribusiness management, negotiating in the market, basic accounting, record keeping, etc. This will be done through inter-alia demonstration plots, public information campaigns, face-to-face training, and farmer-to-farmer study tours, and exposure visits. For each value chain, the respective department will sponsor stakeholder forums to facilitate dialogue with and among value chain actors that will increase the market orientation of departmental activities as well as build capacity of the departments to carry out stakeholder engagement for other crops in the future.

80. **Sub-component A.2: Modernization of Extension Services and Agricultural Research (US$ 8.9 million).** This subcomponent will finance: (a) technical assistance to the implementing departments; (b) modernization of extension services and facilities; and (c) competitive fund for adaptive research.

81. *Technical assistance and capacity building.* The project will finance the extended presence of a technical assistance consultant/firm who will (a) assist with the planning and management of implementation of investments in Component B, and (b) designing and delivering effective capacity building components. The consultant/firm will have a results-based contract that will specify the delivery of the activities listed above as well as building the capacity of staff in each Department to continue implementing new approaches and procedures after the project intervention. Additional technical assistance and training will be financed through twinning arrangements with international agencies (such as, the International Livestock Research Institute; Food and Environment Research Agency, FERA-UK; etc.) and national agricultural research systems. Training methods may include, off-site residential training programs, in-service training for departmental staff, and national/international study tours.

82. *Modernization of programs and facilities.* Both the Agriculture Department and the Livestock & Fisheries Department have facilities that were affected by the 2010 and 2011 floods, and the project will provide a modest amount of financing to facilitate their rehabilitation. In addition, it will provide support to establish and/or rehabilitate facilities critical to fulfilling the requirements of the project including, the agricultural research centers at Tando Jam and

Mirpurkhas, chili research station at Kunri, onion research center at Tando Jam, date research center at Khairpur and establishing linkages with existing date tissue culture facility in Karachi, an artificial insemination training center of Sindh Agriculture University at Tando Jam, and a semen production unit at Karachi (cow) and Rohri (buffalo). Rehabilitation of additional facilitates will focus on targeted districts.

83. *Modernization of extension services by introducing ICT-based technologies.* The project will finance ICT-based technologies and services for delivery of agriculture extension and marketing for farmers/producers. These would include information going out to small producers and other stakeholders through the use of mobile phone and other ICT tools including 24/7 call center and interactive websites and other communication tools. The program of ICT-based extension services will be focused on the targeted commodities and groups in Component B. Based on performance of the services, the ICT-based extension service may expand to additional commodities. The modernization of extension services will also include: (i) undertaking a Supply Chain analysis; and (ii) establishment of E-Marketplace.

84. The *Supply Chain analysis* of farm to fork would consist of multiple layers of intermediation, mostly without any qualitative value addition. This makes the chain inefficient, resulting into costlier food products to the consumers. This project can serve as a vehicle to have a fresh look at the supply chain management with a view to improve marketing efficiency and enhance farmers 'price realization and reach with a positive impact on the prices to consumers. The Supply Chain Management analysis will help in reviewing the people, logistics, intermediaries, warehousing, hedging, seasonal demands/ production and will identifying a Value Chain. This will be an exploratory work, and the primary concern in this analysis is the identification of stakeholders in the whole supply chain, the information they sought and supplied, the media used for storage and distribution, identification of redundancies and inefficiencies in information flows. The analysis will aim on not only "what is happening" but will also cover "why it is happening". The analysis will result in a set of actions which are critical to improve the overall Supply Chain. Using this project as a vehicle those actions can be implemented for supporting Agricultural Growth in Sindh.

85. Establishment of *E-Marketplace* would include developing a common web based portal to give a direct reach of local agricultural and livestock farmers to the national and international markets. The local farmers can post the type, quantity and price for their products through SMS on this e-marketplace. As soon as the information is posted, the portal will auto generate email/ SMS and send it to all buyers registered on the system. In addition to sending the information, the portal/ e-marketplace will display the information for the non-registered buyers. On seeing this information the buyers will bid for the product. There will be system defined closing date, and when it passes the system automatically inform the local farmer through SMS for highest bid received for his product with buyer contact information. Once this E-Marketplace is developed, the project can help in doing regional road shows for introducing the portal to buyers for registration. Buyers can also post their requirement for a specific product on this portal and the system automatically collects the available supply posts by farmers for specific product and can suggest Buyers for options based on his location, requirement and timing. This system can be more intelligent and can support in improving the direct reach of farmers/buyers.

86. *Competitive research fund.* The project will finance a program of competitive research grants supporting research on crop agriculture, livestock, and fisheries. The program would be managed Department of Agriculture, in collaboration with Sindh Agriculture University at Tando Jam. The research proposals will be reviewed based on agreed criteria outlined in the Operational Manual. Most of the funded research programs would be required to be able to yield results within the lifetime of the project.

87. **Sub-component A.3: Strategic Planning for the Agricultural Sector (US$ 3.0 million):** The project will finance the: (a) development of Sindh Agricultural Development Strategy; and (b) preparation of feasibility studies for future investments.

88. *Sindh Agricultural Development Strategy*. The project will finance development of the provincial Strategy to set the long-term development and growth vision for Sindh's agricultural sector. The Strategy will outline the holistic agenda to improve the efficiency and competiveness of Sindh's agriculture sector while promoting pro-poor rural development. To more accurately forecast needs of the sector relative to pricing, climate smart agriculture, competitiveness and consumer demand, etc. The project will finance economic modeling, public expenditure review, sectoral results framework to inform future investment planning and other background studies. The Strategy development process will be managed by the office of the Project Coordinator and guided by the Project Steering Committee (PSC). The Strategy preparation process will also include facilitation of the PSC interactions, and targeted exposure visits for senior officials to identify new information and directions in the Strategy development. The facilitation, analysis, and exposure visits will be procured by the Agriculture Department.

89. *Preparation of feasibility studies for future investment plans*. The project will finance preparation of studies on additional crop and livestock value chains including, but not limited to, fisheries and aquaculture, meat production and marketing, seed production and food storage, etc. The studies will feed into discussions for future investment project preparation. The approval of topics to study will be accorded by the PSC as per pre-determined criteria with which to appraise study proposals and the Project Coordinator will manage the implementation and dissemination feasibility studies.

90. **Component B: Investment for Agricultural Growth (US$ 47.8 million):** This component would finance specific investments in the horticulture and dairy value chains and a targeted investment to reduce post-harvest loss among small-holder rice growers. The component would also finance a demand driven innovation fund to support farmers and producers with technology innovations in the selected value chains. Selection criteria for farmers and producer groups to receive project interventions and detailed procedures for funds transfer and managing contributions are included in the Operational Manual.

91. **Sub-component B.1: Horticulture Value Chains (US$ 23.2 million).** The project will finance investments in three (3) horticulture crops – dates, onions and chilies. The key focus will remain on adopting good agricultural practices for production and post-harvest handing of the selected crops.

92. *Dates crop.* The project would finance investments for increased *productivity* through good agricultural practices for improved crop husbandry, tools for pre- and post-harvest

processes including, mats for spreading dates in the sun, disease control kits, moisture testing meters, conductivity meters, tree pruner, pollinator guns, harvesting tool, solar dryers, hand carts, plastic crates, tarpaulin sheets, etc. would be provided to small and medium growers on a 30-70 percent cost sharing basis. To support *market access*, technology would be provided on a 70-30 cost sharing basis with the farmer or farmer group providing their 30 percent of the cost to Department of Agriculture, which would then notify a supplier in close proximity to the farmer/farmer group to deliver the implement/tool. The kind of technology to be provided along with the eligibility criteria is included in the Operations Manual.

93. For the longer-term development of the date crop, the project will invest in 150 demonstration farms of 10 acres each over the period of the project. Setting up the demonstration farms will involve: (a) importing tissue culture of improved varieties; (b) establishing a tissue culture laboratory; (c) promoting nursery enterprises. The funds for establishing model farms and nursery enterprises will be provided to interested growers on 30/70 percent cost sharing bases.

94. *Onion crop.* The project would provide extension services for increased *productivity* through correct plant husbandry, both as a pure stand and an intercrop, fertilizer application, spraying techniques, weed and disease control, harvesting, curing and drying. The integrated pest management extension would focus on developing an environmentally sensitive approach to pest management. Under pest and disease management, thrips, damping off, bulb rotting and downy mildew would be of primary concern. The project would also finance technology packages for increase *market access* which may include, but not limited to, onion diggers, curing and storage facilities to increase shelf life, mechanical dryers, seed threshers, and ancillary equipment, etc. The financing of the tools and equipment will be provided on cost sharing where growers will contribute 30 percent.

95. *Chili crop.* The project will focus on increased *productivity* through improving agricultural practices including introduction of polyester drying mats, along with similar sheets to cover the crop to prevent dew formation on the harvested crop would be provided to famer and grower associations on 30 percent cost sharing bases. The reduction in aflatoxins is directly in response to improving *market access* by addressing the urgent need of improved food safety of the chili crop for domestic market as well as for facilitating opening of exports to more desirable markets, thus boosting farmer incomes and foreign exchange earnings. Rehabilitation and up gradation of the Kunri chili research station in district Umerkot would also be financed. The project would facilitate a public-private partnership involving the Chili Growers Association to establish a common facility center in Kunri, which will house equipment and other implements to improve post-harvest handling of chilies. Project financing of the facility will be contingent on an approved business plan and secured cofinancing. Depending on the size of the facility, IFC support would be sought during implementation.

96. **Sub-component B.2: Rice Post-harvest Loss Management (US$ 7.1 million).** To increase *productivity* and stem the loss of 30-40% of the rice crop due to poor processing practices, this subcomponent will finance threshers for farmers and paddy dryers for small mill operators. In addition, the project will provide soil and moisture testing kits, conductivity meters, etc. Financing for the threshers and dryers would be provided on 50 percent cost sharing basis (in accordance with current government practice) to groups of farmers, small mill operators, and

individual medium-scale farmers. The remaining smaller technology inputs would be provided on a 70-30 cost sharing basis. To support the *market access*, the project would also promote knowledge sharing and learning from other rice producing countries for potential market linkage for Sindh's rice.

97. **Sub-component B.3: Dairy Value Chain (US$ 13.4 million):** The project will increase *productivity* of milk commodity through introducing improved animal health and husbandry practices, nutritional services, hygienic milk collection and testing of milk quality, milk quality monitoring and recording, and storage. Approximately 153 milk producers groups (MPGs) will be formed in 8 districts to improve their *market access*. The project will target small and medium milk-producing households, but since women are involved in at least 80 percent of production management, the project will provide services exclusively targeting women (e.g., extension messages, female extension agents, etc.). The number of MPGs per district will vary according to the animal population and market linkage. Essentially, each MPG would have a production capacity of 1,000 liters each day. Initial targeting will focus on identified "milk pockets" in the 8 districts. Through meetings in these targeted areas, producers will be informed of the project and given the rules for forming an MPG. The mobilization of MPGs will be done by the private sector milk processors and the district level project implementation unit. In addition, arrangements for producers to access markets will vary based on the existence of a competitive field of private sector actors. They could include, direct tie-ups with traders or processors, or community chilling units that allow the MPG to negotiate with different actors on a competitive basis.

98. The MPGs would be able to access services including: (i) information and training on market oriented dairy farming, balanced feeding, appropriate breeding practices and disease control; (ii) 1,000 liter milk chillers and operating knowledge; (iii) milk quality testing equipment and training to maintain verifiable records of quantity of milk collected and sold, as well as records of income and expenditure. The Department will provide hand-holding support to an MPG that manages its own chiller installation, to ensure long-term sustainability of the asset. A dairy nutritionist would be available as part of extension services to advise least cost concentrate mixtures, the quality evaluation of procured feed/rations and the development of an appropriate feeding strategy. Women entrepreneurs would be identified in consultation with famers to be trained at animal husbandry and extension workers and these women would be provided with some equipment and goods (milk testing kits, concentrate mixture) which they acquire on lending terms from the project and use as income generation as part of their extension delivery. Any investments in equipment or other technology for production and storage would be provided through matching grants with a cash or in-kind contribution from the MPG on a 70/30 cost sharing basis.

99. **Sub-component B.4.: Demand Driven Innovation Fund (US$ 4.1 million).** The project would establish a demand driven innovation fund to respond to the needs for small inputs that supplement the project objectives of improved productivity and market access. The Fund will respond to demands including, but not limited to, market up-grading, on-farm water storage tanks, cattle sheds, feed platforms, etc. In addition, the Fund will also respond to the demands for technology innovation in the selected value chains. The potential list of technologies to be financed may include, but not limited to, upgrades in farm machinery, biotechnology, variable

rate technology, field documentation, etc. The identification, planning and selection criteria along with procedures to implement the Fund are included in the Operational Manual.

100. **Component C: Project Management and Monitoring and Evaluation (US$ 10.0 million):** This component would finance costs for: (i) Project Management Units (PMUs), Project Coordinator's office and Project Implementation Units (PIUs); (ii) third party monitoring; (iii) implementation of Environment and Social Management Framework (ESMF) and Pest Management Plan (PMP) and development of Social Assessment; and (iv) rigorous Impact Evaluation to attribute causality to project interventions. The operational costs would also include costs financing of communications strategy and awareness campaigns through print and electronic media; grievance redressal mechanism (GRM) including interactive voice response and complaint tracking system; and management information system (MIS).

Annex 3: Implementation Arrangements

PAKISTSAN: Sindh Agricultural Growth Project

A. Implementation Arrangements

101. The Department of Agriculture and the Department of Livestock and Fisheries will jointly be responsible for implementing the project and for ensuring that the project development objectives are met. The two Departments will be responsible for implementation of their respective components as well as project management. The project would largely be implemented through the existing structures of the two Departments for delivering local agriculture and livestock extension and research services. However, both Departments would be augmented with additional technical and project management capacities to support the implementation.

102. The implementation arrangements would comprise of three tiers:

i. Project oversight and coordination at provincial level;
ii. Project management at departmental levels; and
iii. Project implementation at districts level.

Provincial Level Oversight and Coordination

103. A provincial level the Project Steering Committee (PSC) will guide, monitor, and supervise the implementation of the Bank project. The PSC will be chaired by the Additional Chief Secretary and will provide overall decision making and policy guidance on aspects relating to agricultural sector development and growth for its contribution to the provincial GDP. The PSC would review progress and will meet every six months or as need to perform tasks including approval of annual work plans and review of project's financial reports and audit reports (internal and external). It would also look into mid-course correction, and issuing guidelines for smooth implementation of the project. The PSC members will include:

- Additional Chief Secretary, Planning and Development (chair)
- Secretary Finance
- Secretary Agriculture
- Secretary Livestock
- Representatives of Private Sector Stakeholders
- Project Coordinator (member secretary)
- Project Director Agriculture PMU
- Project Director Livestock and Fisheries PMU
- Any other member/members the Committee may co-opt

104. The PSC would be supported by a full-time Project Coordinator. The Project Coordinator would be responsible for consolidated monitoring and evaluation of the project. The quarterly reports prepared by the PMUs would be consolidated by the Project Coordinator. In addition, the Project Coordinator would prepare Annual Reports with Project Implementation Plans (PIP). The project M&E consultants would report to the Project Coordinator. The Sindh

Agricultural Development Strategy will also be managed by the office of the Project Coordinator with under the guidance of the Project Steering Committee (PSC). And the Project Coordinator will be responsible for managing the implementation and dissemination feasibility studies.

Project Management

105. ***Project Management Unit:*** Two Project Management Units (PMUs) would be established in the Department of Agriculture and Department of Livestock respectively headed by Project Directors who are appointed by the Government. The position of a Project Coordinator will be established to ensure that joint monitoring, reporting and coordination takes place with the help of two Departments.

106. The PMUs would be responsible for overall project management, monitoring and supervision, as well as fiduciary and safeguards implementation and compliance. The PMUs will have project management and implementation staff with adequate qualification and expertise. The PMUs and where needed, would be provided with additional technical support through consultants.

107. The PMUs will take the lead role in planning, coordinating and monitoring of project performance in line with the project implementation schedule, and facilitate regular decision making for quality and in time implementation of various components. The PMUs will also be responsible for ensuring that resources are budgeted as per approved Project Implementation Plans. The PMUs will have procurement and financial management responsibilities and will ensure that project accounts are managed and audited on time. Specific responsibilities of the PMUs would be:

- Preparing annual Project Implementation Plans (PIPs). The Agriculture and Livestock PMUs will prepare respective PIPs, which will be consolidated by the Project Coordinator into a single PIP for seeking approval of the PSC and sharing with the Bank task team

- Ensuring timely implementation according to the PIP including budgets, procurement plans and agreed quality controls

- Preparing procurement packages and overseeing technical quality of contracts

- Coordinating and providing technical and project management support to the field implementation teams at the respective Project Implementation Units

- Informing, supporting, coordinating and interacting with the key project partners and ensuring participation from project stakeholders as well as coordination with other development partners

- Reporting on the results of monitoring and evaluating all aspects of the project inputs, outputs and outcomes, as well as facilitating learning and stock taking for course correction during the project implementation

- Implementing and monitoring project risk management measures and accountability and information sharing mechanisms

- Disclosing project implementation information available through websites and other means of communication for enhanced transparency on project implementation and achievement of results

- Maintaining a robust grievance redressal mechanism which is fully communicated to the project stakeholders

108. The PMUs would be adequately staffed and would also be supported by additional technical assistance and monitoring support. The Project Coordinator's office would house the M&E consultants for the overall project and for tasks including baseline development, joint reporting and monitoring, management and information system (MIS) establishment and operationalization, etc.

Project Implementation

109. ***Project Implementation Units:*** At the district level, Project Implementation Units (PIUs) will be established to provide support staff, training and equipment to build capacity and strengthen the arrangements already in place, mainly the existing Research and Extension wings of the Department of Agriculture and Department of Livestock. The PIUs would be provided with capacity building so that they can access and use a greater range of information products, decision tools, and manage field demonstrations.

110. A total of eight (8) PIUs will be established – two each in Hyderabad, Mirpurkhas, and Sukkur and one each in Larkana and Thatta districts. Other districts will be included during implementation as and when the need arises. The PIUs would have adequate staff to ensure all implementation responsibilities are properly resourced. The PIUs will be responsible for the operational management and implementation of the specific sub-components. The PIUs will report to respective PMUs for day-to-day management and implementation of project sub-components and will be supported by implementation as well as fiduciary staff of the PMUs. Specifically the PIUs would be responsible for:

- Feeding into the preparation of Project Implementation Plans (PIPs) and annual budget projection and planning. The field PIPs will feed into preparation of the single PIP for seeking approval of the PSC and sharing with the Bank task team

- Ensuring timely implementation according to the PIP including budgets, procurement plans and agreed quality controls

- Providing detailed information for preparation of the procurement packages to respective PMUs as well as supervising contract implementation at field level

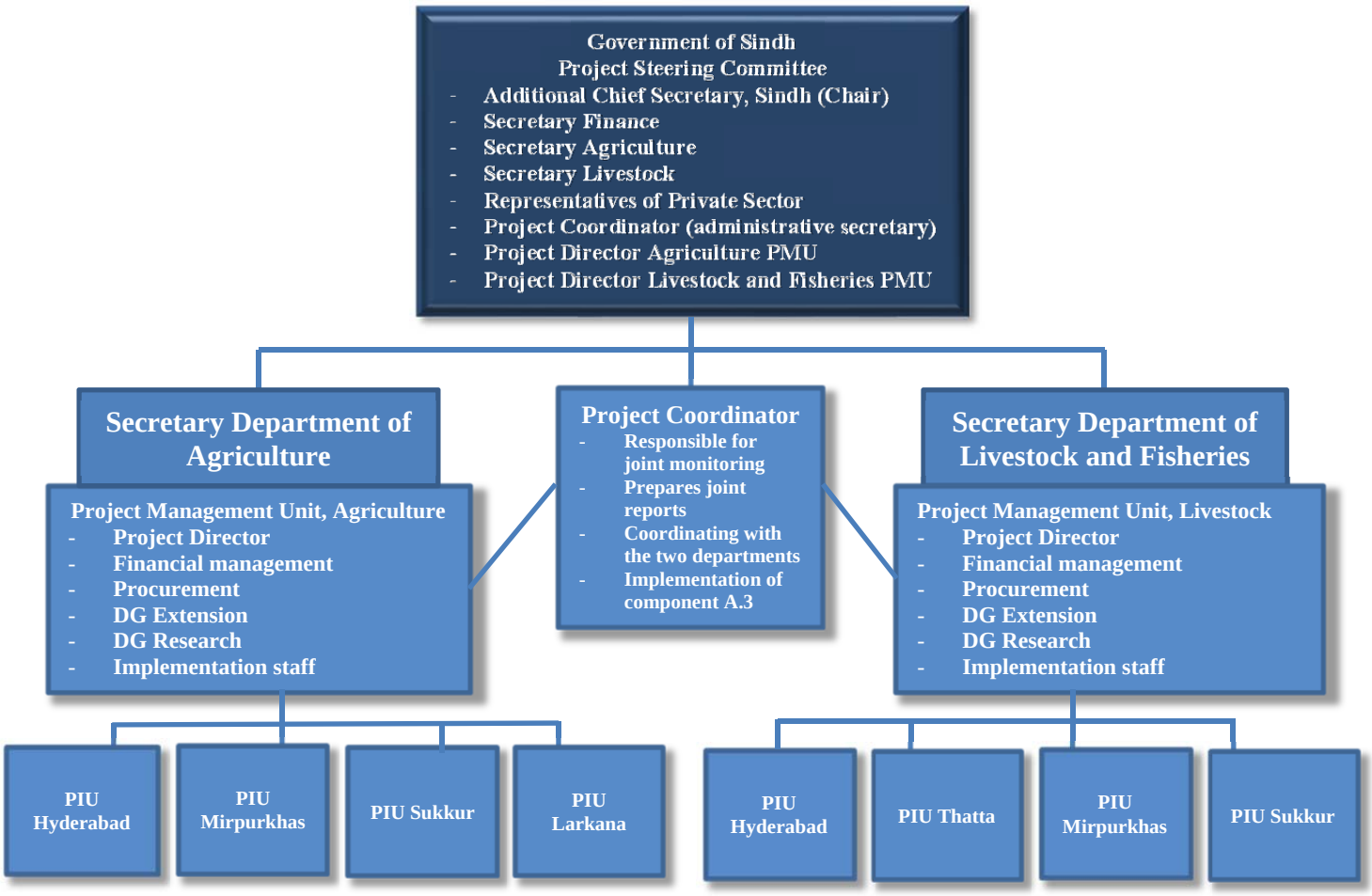
- Informing, supporting, coordinating and interacting with the farmers and producers at the district and sub-district levels

- Preparing regular, monthly and quarterly progress reports that feed into the overall project implementation reporting on the results of all aspects of the project inputs, outputs and outcomes

- Ensuring information availability to farmers and producers on project implementation and provide timely responses to requests for information from beneficiaries and other stakeholders

- Implementing the grievance redressal mechanism

111. The institutional and implementation arrangements are shown in the following flow chart:



B. Financial Management and Disbursement Arrangements

112. A review of financial management arrangements in the Research and Extension Wings of the Sindh Agriculture Department was carried out. Main findings are contained in the following paragraphs. The two Departments would implement their respective components.

FM Risk Assessment

113. The country risk level concerning Financial Management (FM) is Substantial. The initial project level risk, before mitigation, is assessed as Substantial. The project FM risk level is expected to reduce to moderate after the mitigation actions (recruitment of key staff and fully functional internal audit) have been undertaken.

Risk Analysis

Risk	Initial FM Risk	Risk Mitigation	FM Risk After Mitigation	Condition for Negotiations
Inherent Risk				
Country level	Substantial		Substantial	
Control Risk				
Budgeting	Moderate		Moderate	
Accounting	Substantial	Induction of key financial management staff	Moderate	Condition for Negotiations
Internal control	Substantial	Setting up internal audit arrangements	Moderate	To be in place by July 31, 2014
Funds flow	Moderate		Moderate	
Financial reporting	Substantial	Induction of key financial management staff	Moderate	
Auditing	Moderate		Moderate	
Detection Risk	Substantial	Ensuring internal audit at least once a year	Moderate	
Residual FM Risk Rating	Substantial		Moderate	

Institutional and Implementation Arrangements for Financial Management

114. The Department of Agriculture and the Department of Livestock and Fisheries will jointly be responsible for implementing the project and for ensuring that the project development objectives are met. The two Departments will be responsible for implementation of their respective components as well as project management. The project would largely be implemented through the existing structures of the two Departments for delivering local agriculture and livestock extension and research services. However, both Departments would be augmented with additional technical and project management capacities to support the implementation.

115. Although the Engineering Wing of the Agriculture Department has extensive experience working on Bank- and other donor-financed projects, the Research and Extension wings of the Department which would be participating in the project implementation would require capacity building in the area of financial management. On the other hand, the Livestock and Fisheries

Department does not currently have any experience with implementing a Bank operation. Here too, the relevant wings would require substantial capacity inputs to strengthen their financial management structures.

116. Project implementation and management including administrative, financial and procurement functions will be the responsibility of the implementing departments. The implementation arrangements will comprise of the following tiers:

- A provincial level Project Steering Committee (PSC) chaired by the Additional Chief Secretary will provide overall decision making and policy guidance for Project implementation.
- Two departmental level Project Management Units (PMUs) in the Department of Agriculture and Department of Livestock respectively headed by Project Directors appointed by the Government. The position of a Project Coordinator will be established to ensure that joint monitoring, reporting and coordination takes place with the help of two Departments.
- Eight district level, Project Implementation Units (PIUs) to as primary units of implementation. The PIUs would be provided with support staff, training and equipment to build their capacity and strengthen the arrangements already in place, mainly the existing research and extension wings of the Department of Agriculture and Department of Livestock.

117. The Operations Manual has been prepared for the project that includes detailed procedures for funds transfer and managing contributions.

Budgeting

118. Government's existing budget preparation and execution system would be used for the project. Districts would provide their annual requirements in respect of project activities along with the targets to be achieved. Respective Project Directors would review and consolidate for review by the Project Coordinator who would submit the overall budget through the two Secretaries to the Planning & Development Department (P&DD) for the approval by PSC.

119. At the two Departments, as per current practice statements showing budget and actual expenditure are submitted by the districts to the respective Director Generals (DGs). P&DD conducts a quarterly review of expenditure incurred and targets achieved. This practice may be continued for both participating Departments.

Funds Flow Arrangements

120. A segregated Designated Account would be opened for each of the departments (PMUs) into which Bank funds would flow. Funds would be disbursed by the Bank on the basis of forecasts for six months and account thereof would be submitted on a quarterly basis in the form of agreed Interim Financial Reports (IFRs). Funds would be transferred on the basis of monthly forecast from the DA to the Departmental (PIU) bank accounts to be opened for the purposes of the project on the basis of approved forecasts. PIUs would render account of the funds received and spent to the PMUs within fifteen days of the month end. Expenditure in respect of the Project Coordinator's office would be incurred from the Agriculture Department's Designated Account. Any project expenditure incurred by the directorates/wings would be financed from the

respective PMU Designated Accounts. Expenditure would be reported by component to facilitate preparation of IFRs by the respective PMUs. Bank accounts would be operated jointly by two signatories. Major procurements would be made at the PMU level for which designated procurement staff would be in place.

121. Procedure for operating of designated accounts issued by the Ministry of Finance has been shared with the participating Departments. Farmers' contribution, if any, would be deposited up front into the bank accounts at the district level. Contributions in kind would be evaluated and accounted for. The Grant recipients shall maintain a financial management system and prepare financial statements in accordance with consistently applied accounting standards acceptable to the Association, both in a manner adequate to reflect the operations, resources, and expenditures related to the research; and at the Recipient's, the Association's, or the Project Implementing Entity's request, have such statements audited by independent auditors acceptable to the Association, in accordance with consistently applied auditing standards acceptable to the Association, and promptly furnish the accounts and records as so audited to the Recipient, the Association, and the Project Implementing Entity.

Staffing

122. The following officials are currently in place in the Extension Wing:

- Director Administration & Accounts
- Deputy Director Administration & Accounts
- Accounts Officer
- Assistant Accounts Officers (3)

123. The following officials are currently in place in the Research Wing:

- Director Administration & Accounts
- Deputy Director Accounts
- Accounts Officer
- Budget Officer
- Assistant Accounts officers at Research Stations

124. A Superintendent and Assistant Accounts Officer are currently in place at the district level whereas Accounts Officers are in place at the directorate level. Most of the existing financial management staff does not have accounting qualification; however, they have been performing accounting functions over the years and have gained experience in maintaining the basic accounting records like cash book and expenditure ledgers.

125. A Finance Manager and Accounts Officer would be recruited for the Agriculture Department PMU from the market. Their terms of reference would be cleared with the Bank. An Accountant and an Accounts Clerk would be recruited for each of the PIUs that are four in number for the Agriculture component (Hyderabad, Larkana, Mirpur Khas and Sukkur). These positions have been provided for in the Planning Commission Form 1 (PC-1) and process for recruitment has been initiated.

126. Most of the financial management staff in the Livestock & Fisheries Department do not have accounting qualifications but have been performing these functions for many years. An

Accounts Officer would be recruited for the PMU of the Livestock and Fisheries Department to support the Section Officer (Budget & Accounts) already in place. An Assistant Accounts Officer each would be recruited for the eight districts participating in the project. Process for recruitment has been initiated. Four PIUs would be established each covering two districts. The PIUs would be based in one of the two districts. The three directorates that would also be incurring expenditure have basic financial management staff. The project expenditure incurred would be financed from the PMU Designated Account.

127. Appointment of Finance Manager, an Accounts Officer and an Accountant for each of the PIUs in the Agriculture Department and an Accounts Officer in the PMU and an Assistant Accounts Officer for each of the district PIUs in the Livestock and Fisheries Department would be a condition for negotiations.

128. It would be ensured that the financial management staff is not involved in procurement.

129. Project staff at various levels would be provided training in maintaining books of account and preparing financial reports for the project.

Internal Controls

130. At present, there are no internal audit arrangements in either Agriculture or Livestock and Fisheries Departments and it was agreed that this important element of financial management be out sourced. It was agreed that this would be done by July 31, 2014. TORs for this would be developed and cleared with the Bank prior to procuring these services. Process for outsourcing has been initiated. Internal audit would cover receipts, payments, inventory management and control environment. As per Government rules, every department has to carry out a physical check on an annual basis.

131. The implementing agencies will ensure that Bank's guidelines (dated January, 2011) on Prevention and Combating Fraud and Corruption in Bank Financed Projects are followed in the project.

Accounting

132. Government's existing cash basis of accounting would be used for the project. However, currently the financial management staff does not have a copy of the manuals developed under Project to Improve Financial Reporting and Accounting (PIFRA)'s New Accounting Model. Accounts would be maintained manually. Expenditure is reconciled with the District Accounts Offices on a monthly basis.

133. It has been discussed and agreed with the PIFRA Directorate that terminals would be made available to the two PMUs to enable them to perform accounting functions for the project in SAP using the New Accounting Model. PIFRA connectivity is already available in the two departments. However, some additional cost will be incurred for this additional connectivity. This has been provided for in the PC-1.

Payment Processing

134. Currently, Government's existing system is being used under which the payments are processed by the Agriculture Department and Livestock Department independently and passed/paid by the District Accounts Offices. Project payments would be initiated by the respective PIUs/PMUs, checked by their respective accounting staff and passed by the respective heads of PIUs/PMUs.

Inventory Management

135. Adequate inventory management arrangements would be required at the sub-project level to record seeds, fertilizers and pesticides. At the Agriculture Department, the ledgers are being maintained for fixed assets, however, a coding and tagging system need to be developed to adequately safeguard assets.

Payroll

136. The payroll system is computerized and processed by the Accountant General's office.

Financial Reporting

137. Format and content of IFRs would be discussed and agreed with the implementing agencies. IFRs showing sources and uses of funds, expenditure by activity, DA activity statement and forecast for the next six months would be submitted to the Bank within forty five days of the end of each quarter.

Monitoring and Evaluation

138. Monitoring of project activities would be done at three levels i.e. by the Departments, respective Secretaries and the Project Steering Committee.

Audit

139. Since the two implementing agencies have not previously implemented Bank financed project, there are no overdue audit reports. Project audited financial statements would be provided to the Bank within six months of the close of each financial year i.e. by 31 December every year. This would be monitored in the audit report compliance system (ARCS). As per Bank's Access to Information Policy, audited financial statements would be displayed on Bank's website. Implementing agencies would also be encouraged to display these on their respective websites.

140. Project's annual financial statements audited by the Auditor General of Pakistan would be provided to the Bank within six months of the close of each financial year. Audit reports for the two Departments were shared with the Bank for review to address any systemic issues.

141. Audit reports for FY'12 in respect of Animal Husbandry, Hyderabad and Animal Breeding of Livestock & Fisheries Department and Research Wing, Tando Jam and Extension Wing, Hyderabad of the Agriculture Department were shared with the Bank. Issues highlighted include:

Livestock & Fisheries Department

Animal Husbandry:

- Receipts not available for some payments
- Items purchased but not recorded in stock register
- Tenders not invited for emergency purchases
- Annual physical verification not conducted

Animal Breeding:

- Consumption of items not available
- Annual physical verification not conducted

Central Veterinary Diagnostic Laboratory:

- Consumption report not prepared for sotres
- Computers not entered in stock register
- Tenders not called

Agriculture Department

Agriculture Research Wing:

- Purchase of tractors - inspection report, delivery challan not available and entries not made in stock register
- Delivery challan not available, entry in stock register not made for seeds procured
- Expenditure not reconciled with the District Accounts office

Annual physical verification not conducted

Agriculture Extension Wing:

- Audit paras in respect of FY'11 not resolved
- Quotations not obtained for purchases
- Equipment/stores purchased but not recorded in stock registers

142. All the above observations have been contested and replies given. Departmental Accounts Committee meetings need to be held to resolve issues raised by the auditors. It will have to be ensured that due care is taken so that weaknesses highlighted above are not repeated in this project.

Disbursement

143. The proposed IDA Credit would be disbursed over a period of five years. Allocations of credit proceeds by disbursement category and corresponding percentages to be financed under the IDA Credit are shown in following table:

Expenditure Category	Amount of Credit Allocation (US$ Million)	% of Expenditures to be Financed
(Goods, Works, Consultants Services (including for audit), Research Grants, Training, and	76,400,000	100%

Incremental Operating Costs		
Total Financing	**76,400,000**	

144. The total project cost would also include farmers' contribution in the amount of US$ 12.3 million.

Retroactive Financing:

145. To meet urgent project preparation, and start up needs, and procurement of priority works, IDA could retroactively finance eligible expenditures incurred during the period of one year prior to the signing of the Credit Agreement, upto maximum of US$ 1.0 million starting August 1, 2013.

C. Procurement Arrangements

146. Procurements under all components of the proposed 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 & Grants January 2011"; "Guidelines: Selection and Employment of Consultants under IBRD Loans & IDA Credits & Grants by World Bank Borrowers January 2011", as well as the provisions stipulated in the Financing Agreement.

147. The general description of various items under different expenditure categories are described below. For each contract to be financed by the project, the different procurement methods or consultant selection methods, estimated costs, prior review requirements, and time frame are to be agreed between the Borrower and the Bank Project team in the Procurement Plan. A procurement plan has yet to be developed. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. A General Procurement Notice shall be published as soon as procurement plan is prepared.

Procurement of Works

148. Civil works are envisaged in the Livestock component of this project.

Procurement of Goods

149. Requirements under all components are largely identified. Contracts for goods under International Competitive Bidding (ICB) are not expected at this stage. Procurement methods for goods under the project will consist of shopping for contracts costing up to USD 50,000, National Competitive Bidding (NCB) for contracts up to USD 600,000, and ICB for contract costing more than USD 600,000. Direct contracting may be used for any urgently required goods after the Bank's prior approval.

Selection of Consultants

150. Details of firms to be hired are not identified yet. Contracts with consulting firms will be procured in accordance with Quality and Cost-Based Selection procedures or other methods given in Section III of the Consultants' Guidelines. Consulting services selection would be

carried out through Quality and Cost Based Selection (QCBS) for contracts with consulting firms costing more than USD 300,000 equivalent, and through Consultants Qualification (CQ) for contracts costing up to USD 300,000. Other methods as mentioned in Section III of Consultants' Guidelines shall be used as required.

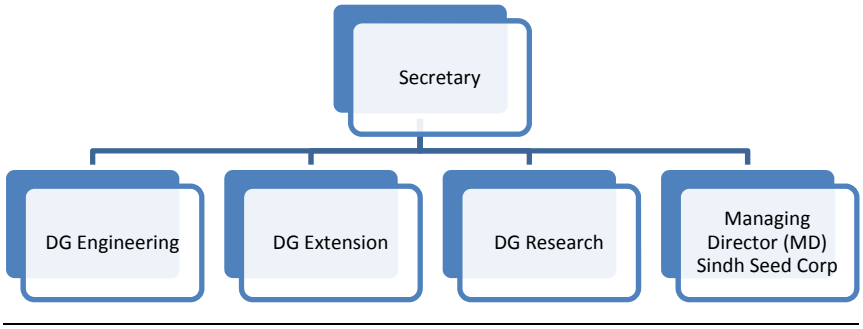
Individual Consultants

151. This is envisaged to include any full-time or part-time technical assistance required for the project. 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 through 5.3 of the Consultant Guidelines, which stipulate that the selection should be made through comparison of at least 3 curriculum vitae (CVs) that meet the requirements of the Terms of Reference, including those for qualifications and experience. Under the circumstances described in paragraph 5.4 of the Consultant Guidelines, such contracts may be awarded to individual consultants on a sole-source basis.

Assessment of the Agency's Capacity to Implement Procurement

152. PMUs at Agriculture and Livestock departments will be responsible for conducting procurements under this project. There is a need to place adequate human resources within both departments for providing advice and guidance on processing procurements using Bank's procedures and guidelines. The Bank has conducted the capacity assessment of the departments. The assessment reviewed the organizational structure, staffing and capacity for implementing the project. Department wise assessment is given below:

153. <u>Assessment of Agriculture Department:</u>



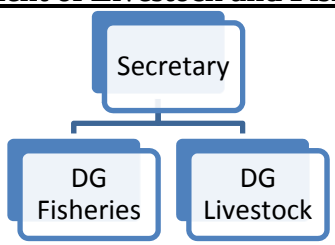
154. The department is headed by Secretary who is supported by Director General Engineering, Director General Extension, Director General Extension, Director General Research, and Managing Sindh Seed Corporation for execution of programs/schemes. There are three Wings in the department which are a. Engineering, Extension and Research. The department follows the Sindh Public Procurement Regulatory Authority Procurement Rules.

155. The procurement function of the department is centralized, however the process for procurement is processed through respective Wings/ Director General(s). Evaluation committees are notified by administrative departments for each Wing. The department is currently working with Bank on Sind On Farm Water Management Project through Engineering Wing. The

department publishes summaries of Procurement Processes on department's and Sindh Public Procurement Regulatory Authority (SPPRA)'s websites. Procurement Plans are being prepared and updated by the procuring staff. The plans are also being monitored for timely completion. All essential steps of Procurement Cycle are followed while processing procurements. The procurement staff at Director General (DG) Engineering's office is familiar with the Bank procurement procedures and guidelines. The department has mandatory condition for Suppliers to have a local agent in order to qualify to bid for Goods or Services. A list of registered/ qualified suppliers, contractors and consultants is also maintained by the department. Internal audit under Sindh On farm Water Management Project audits the procurement with appropriate implementation of remedial actions. Invitations for Bid (IFBs) for Procurement activities having estimated cost above PKR 1M are advertised in newspapers while others are posted at department's website. Items are being procured through quotations having estimated costs less than PKR 0.1M. Technical Evaluation Committees are separate for three wings while the Purchase Committee headed by Secretary is at the central level. Procurements through quotations are not sent to the Purchase Committee review and approval. The department uses the bidding document for NCB (agreed by the Bank) as their standard bidding document (SBD). The department's staff has also attended specific trainings organized by the Bank under Sindh On Farm Water Management (SOFWM) Project. There are also four stores managed by the department at Tandojam, Sukkur, Khairpur, and Larkana. Staff processing procurements have no financial powers, the award recommendations are processed through the notified Evaluation Committee. Adequate record keeping system is also present. The department follows Composite Schedule Rates (CSR) for variations and amendments in contract price. The procurement grievance redressal committee is also notified.

156. The agriculture department has adequate systems and procedures in place with some staff at the Engineering Wing having experience of processing Procurements using Bank's procedures and guidelines. However the Extension and Research Wings (who will be responsible for processing procurement under SAGP) will require focused capacity building and may also initially require cross support from staff at Engineering Wing for handholding support. There are some practices like pre-registration of suppliers/ contractors/firms, using CSR for variation in contract price, limiting bidders participation by mandating the requirement of local supplier etc. needs to be addressed while processing procurements for SAGP.

157. <u>Assessment of Livestock and Fisheries Department:</u>



158. The department is headed by the Secretary supported by Director Generals Fisheries and Livestock. The department follows the Sindh Public Procurement Regulatory Authority Rules 2010. The procurement function is delegated at the DG office level, however the approval resides at the Secretary level. There are three committees involved in procurement process i.e.

Tender opening committee is headed by Director General Livestock, Tender Scrutiny Committee headed by the Secretary and the Purchase Committee also headed by the Secretary. On non-development side the department follows the annual plan to procure the items as per the need, whereas on the development side the procurement of the items have been made according to the Planning Commission Form 1 (PC-1). Technical Standardization Committee and Purchase Committee are responsible for the Procurement Plan and award of contracts. Civil Works are being carried out by the Works and Services Department of Government of Sindh. The department annually procures PKR 250M of Machinery Equipment, PKR 130M of Medicines, and PKR 263M under the head of cost of other stores. The department has experience of working with donors like EU, ADB and Japan International Cooperation Agency (JICA). Staff who handles Accounts is also responsible for handling Procurements. All essential steps of Procurement Cycle are being followed. The department has Standard Bidding Document which is inadequate to cover major aspects of a procurement process. Staff handling procurement is familiar with Public Procurement Rules but are unaware of Bank's procedures and guidelines. The department also maintains a list of pre-registered firms/suppliers. The staff did not attend any specific Procurement Training, not even for the Public Procurement Rules. There is a blacklisting mechanism for firms, but despite of initiation of blacking listing process for some firms none of them were blacklisted due to long drawn process. Adequate Record management is present which can be improved with few modifications. There are no standard operating procedures for internal processing of procurements.

159. The livestock department has adequate Procurement system and procedures to process their own procurements but they will be requiring extensive capacity building and hand holding to process procurement using Bank's procedures and guidelines. There is a need to separate the procurement function from the accounts. There is also a need to standardize their operating procedures for Procurement. Specific training sessions are required for ensuring the swift movement of the project.

Procurement Risk Management

160. The identified risks for procurement and contract implementation and mitigation measures are provided below. Given the readiness status of the project, the overall project risk for procurement is *High*:

- **Procurement Efficiency:** The project shall develop standard operating procedures (SOPs) for the overall procurement system of the department. This will not only facilitate the procurements under the project, but will go beyond the project interventions to enhance procurement efficiency at all implementation levels. Specifically, the Bank's will hold training sessions for the project Notification by Secretary to be issued for adopting the SOPs.

- **Complaints:** The departments in consultation with respective Wings would manage the complaint system. This system would include documentation and addressing of complaints within seven days. The departments shall keep the Bank informed by forwarding any complaints within three days of receipt. For International Competitive Bidding (ICB)/international selection of consultants, the Bank-prescribed complaint redressal mechanism will apply.

- **Procurement Plan:** The recipient will develop a procurement plan for project implementation that will provide the basis for the procurement methods. This plan will be made available in the project's database, Departments website, and the Bank's external website. The procurement plan will be updated annually in agreement with the project team annually or as required to reflect the actual project implementation needs and improvements in institutional capacity frequency of procurement supervision. In addition to the review supervision to be carried out from Bank offices, the capacity assessment of the Implementing Agency has recommended frequent supervision field missions to carry out post review of procurement actions. The procurement plan will be appended once prepared by Departments.

- **Central Procurement Resource:** A firm or individual to be hired at a central level to support the departments in guiding and building capacity based on the Bank's procurement procedure and guidelines.

- **Procurement at PIU level:** Currently the procurement is centralized at the PMU level at Department of Agriculture (DoA) and Department of Livestock and Fisheries (DoLF). In future if there will be a need to do some small procurements at the PIU level, then the Bank team will do an assessment of the PIU(s) capacity and implementation arrangement and will propose mitigation measures to eliminate any identified risks.

161. Besides helping the implementing entities in processing their procurement transactions, the Bank Procurement team will also like to contribute their experience and support in following two areas:

- Supply Chain analysis
- Establishment of E-Marketplace

Bank Review of Procurement

162. Thresholds for prior review of contracts under eligible expenditures are given in the table below. All other contracts will be subject to post review by the Bank. The Departments will send to the Bank a list of all contracts for post review on a quarterly basis. Post reviews, as well as the implementation reviews, will be done biannually [or every six months]. Such a review of contracts below threshold will constitute a sample of about 15-20 percent of the contracts.

Table 1: Procurement Actions

(Summary of the above identified issues and agreed actions)

	Issues	Action	Timeline	Responsibility
I	Procurement Efficiency	Training session SOPs to be preared and adopted	To commence soon after hiring of central procurement resource	Bank / Departments
ii	Complaints	Letter from Departments notifying independent complaint redressal	TBD	Departments

		mechanism		
Iii	Procurement Plan	Procurement Plans to be prepared	Well before negotiations	Departments
vi	Central Procurement Resource	Firm/Individual to be hired	Well before negotiations	Departments
iv	Supply Chain Analysis	Firm to be hired	Two months after effectiveness	Departments
v	e-marketplace	Firm to be hired	Three months after effectiveness	Departments
vi	Community Procurement	Simplified Guidelines for community procurement as and when the situation arises	Before initiating such procurements	Departments
Other measures (mentioned in Procurement section above) will be added after agreement of Depts				

Table 2: Thresholds for Procurement Methods and Prior Review

Prior Reviews Identified in Approved Procurement Plan

Expenditure Category	Contract Value (Threshold) US$	Procurement Method	Contracts Subject to Prior Review US$ thousand
1.Civil Works	Regardless of value	NCB	All
2. Goods	> 600,000	ICB	All
	< 600,000	NCB	First two contracts, thereafter as provided in Proc. Plan
	< 50,000	Shopping	First contract, thereafter as provided in Proc. Plan
	Regardless of value	Direct Contracting	All
3. Consulting Services			All TORs and Training Programs to be reviewed by Bank's TTL
-3.A Firms	>300,000	QCBS	All
	< 300,000	CQS	First contract by any process and thereafter as provided in Procurement Plan
	Regardless of value	Single Source	All
Individual Consultants		Comparison of 3 CVs	First contract and thereafter as provided in Proc. Plan

Annex 4: Operational Risk Assessment Framework (ORAF)

PAKISTSAN: Sindh Agricultural Growth Project

Appraisal Stage

1. Project Stakeholder Risks	**Rating**	**Moderate**		
Description: Presence of other development partners in the region may lead to overlap between the Bank project and other ongoing programs as well as duplication of efforts. Collaboration amongst government line departments as well as intra-department amongst various sections may be a challenge given their operational segregation. Low stakeholder involvement due to lack of awareness and risk of a top-down approach.	**Risk Management:** Regular meetings and coordination with the other development partners to check overlap and duplication. Mapping of activities by the government and various development partners.			
	Resp: Client & Bank	**Stage:** Prep & Imp	**Due Date :**	**Status:** Ongoing
	Risk Management: The concept of the programmatic approach not only fosters low overlap due to improved coordination and collaboration amongst government line departments, but also more fluid dialogue amongst donors. A combined Project Steering Committee at Planning and Development Department (P&DD) level will ensure coordination between the two line departments (Department of Agriculture and Department Livestock and Fisheries). Additionally, regularly (quarterly or six-monthly) held joint project review meetings will ensure that information on all aspects of project implementation including sub-project identification and selection is shared amongst all relevant sections of the two implementing agencies. There is good stakeholder involvement. The programmatic concept and approach is the outcome of a consensus led by the GoSindh and supported by civil society and other stakeholders. The need to prioritize investments with a results focus agreed during preparation, and a strong communications and information campaign to increase overall awareness of the project and generate a demand pull on decision makers and implementers from beneficiaries and other stakeholders should help avert a top-down approach.			
	Resp: Client	**Stage:** Imp	**Due Date:**	**Status:** Not yet due
2. Implementing Agency Risks (including fiduciary)				
2.1 Capacity	**Rating:**	**Substantial**		
Description: There is a general lack of technical and managerial capacities at the government line departments which needs to be addressed. While the Project Management and Coordination Unit (PMCU) will be responsible for coordination, the two PIUs will require strengthening in terms of implementation capacity including for procurement, contract management, safeguards, monitoring and evaluation, and financial management.	**Risk Management:** In addition to increasing technical capacity, the project will pay particular attention to building the capacity for procurement, contract management, safeguards, M&E, FM and technical and managerial issues for delivery of various components. Regular training of all project staff will be provided to handle staff turn-over in Project Management and Coordination Unit (PMCU) and PIUs through knowledge sharing and exposure to other Bank operations.			
	Resp: Client	**Stage:** Imp	**Due Date:**	**Status:** Not yet Due
2.1.1 Financial Management	**Rating:**	**Moderate**		

Description: Limited financial management capacities within the Department of Agriculture and Department of Livestock and Fisheries may lead to weak internal controls and oversight and verification for expenditures incurred at District and Taluka levels. Turnover and weak capacity of FM staff leading to delays in reporting and inadequate accounting records.	**Risk Management:** Appointing adequately qualified and experienced financial management staff, setting up of internal audit arrangements and use of the country FMIS should result in implementation of a comprehensive internal control framework, including segregation of duties, multi-tiered approval of payments and expenditures and minimum cash handling. In addition, the financial management will be done at the PIUs/PMUs with an oversight role for PMU/PSC to avoid fragmentation of bank accounts and dilution of payment controls.			
	Resp: Client	**Stage:** Implementation	**Due Date:**	**Status:** Not yet Due
	Risk Management: Hiring of qualified FM staff at PIUs will be ensured. The Bank team will maintain close coordination with the project management and the Office of Accountant General to ensure that any vacancies are promptly filled with competent staff. Bank staff will also provide regular guidance and training to the project staff to ensure adequate FM arrangements remain in place.			
	Resp: Client & Bank	**Stage:** Implementation	**Due Date:**	**Status:** Not yet Due
2.1.2 Procurement	**Rating:**	**Substantial**		
Description: Delayed and inefficient procurements and contract management. Lack of interest from consultants and contracting firms in participating. Uneconomical and non-transparent procurements.	**Risk Management:** Procurement staff shall be hired and Bank shall impart training.			
	Resp: Client	**Stage:** Prep	**Due Date:**	**Status:** Effectiveness
	Risk Management: Adequate packaging and dissemination.			
	Resp: Client	**Stage:** Imp	**Due Date:**	**Status:** Not yet Due
	Risk management: Web based dissemination and complaints redressal mechanism.			
	Resp: Client	**Stage:** Imp	**Due Date:**	**Status:** Not yet Due
2.2 Governance	**Rating:**	**High**		
Description: Possibility of political interference during the planning and implementation of project. The Project's effectiveness depends on the ownership of its public sector counterparts in Sindh. Any shift in the key positions within these two set ups can adversely affect the project milestones.	**Risk Management:** A Project Steering Committee (PSC) will be established which will be chaired by the Additional Chief Secretary (ACS). The PSC will not only oversee project's performance but will also make policy decisions as and when required. In addition, public disclosure of project documents and progress reports along with third party monitoring will minimize this risk.			
	Resp: Client	**Stage:** Imp	**Due Date :**	**Status:** Not yet Due
	Risk Management: While it is difficult to mitigate this risk in Sindh given the frequent changes in key positions, however, as these positions are always occupied by trained public sector officials, the project's continuity will not be impacted. In addition, any change to key positions in the PMCU and PIUs will be done in consultation with the Bank.			
	Resp: Client	**Stage:** Imp	**Due Date :**	**Status:** Not yet Due
3. Project Risks				
3.1 Design	**Rating:**	**High**		
Description: Inadequate information and baseline data for selected investment subprojects may affect the project preparation especially designing of actual interventions.	**Risk Management:** Initially the project preparation will be based on available information from Department of Agriculture and Department of Livestock and Fisheries and other sources. A Technical Team of sector experts will be placed within the PMCU to identify and develop subsequent investment			

The programmatic approach, although widely endorsed by both agriculture and livestock department, may still be challenging to implement given that there is little focus on inter-departmental coordination as well as coordination with other line departments. Individual line departments (agriculture and livestock and fisheries) may not be able to effectively identify and design future investment subprojects due to weak inter-departmental coordination.	subprojects. The Technical Team will identify the need for detailed assessments for information needs for horticulture, livestock and associated sub-sectors and prepare pre-feasibility and/or feasibility studies.			
	Resp: Client	**Stage: Prep &** Imp	**Due Date :**	**Status:** Ongoing
	Risk Management: This risk will be mitigated through establishing the PMCU which will ensure continuous and effective coordination between the two line departments so that the project performs as one program. Additionally, the joint project review and planning meetings as well as jointly held subproject selection meetings will ensure that implementation performance of all components is fully shared between the two PIUs.			
	Resp: Client	**Stage:** Impl	**Due Date :**	**Status:** Not yet due
	Risk Management: While the PMCU will be established to ensure effective coordination between Department of Agriculture and Department of Livestock and Fisheries, the process for identifying future investment subjections will remain demand driven and will therefore require a flexible design approach to respond to demands generated from the farmers. The Operations Manual will layout detailed procedures for identification, evaluation and selection processes for all investment subprojects as well as the mechanism for review of selected investments.			
	Resp: Client	**Stage:** Imp	**Due Date :**	**Status:** Not yet Due
3.2 Social & Environmental	**Rating:**	**Moderate**		
Description: The investment subproject under Component 2 of the project may potentially cause negative environmental and social impacts. The nature and significance of these impacts will depend upon the type, size and location of these interventions.	**Risk Management:** To assess the nature and significance of the potentially negative environmental and social impacts, and to determine appropriate mitigation measures environmental screening of the schemes will be carried out during the identification and design phase. The PIUs will be responsible for preparing subproject specific Environmental and Social Management Plans (ESMPs) to ensure compliance with the WB OP and national environmental requirements.			
	Resp: Client	**Stage:** Imp	**Due Date :**	**Status:** Not yet Due
	Risk Management: The PMCU will have dedicated Environment and Social staff while the PIUs will have appointed Environment and Social focal points to prepare the subproject specific ESMPs and follow screening procedures for social and environmental impacts during implementation. The ESMPs will also include capacity building programs to enhance the capacity of staff and beneficiary groups for effective implementation. The independent third party monitors will be engaged the PMCU for overall project monitoring as well as for safeguards performance.			
	Resp: Client	**Stage:** Imp	**Due Date :**	**Status:** Not yet Due
3.3 Program & Donor	**Rating:**	**Low**		
Description: Presence of multiple development partners engaged in agriculture and livestock sectors may create coordination issues.	**Risk Management:** The World Bank, FAO, and other development partners have established an Agricultural Coordination Forum to share information and better coordinate interventions across the country. This Forum will be provided regular updates on the implementation status of the project to check duplication with other interventions in Sindh.			
	Resp: Bank & Client	**Stage:** Prep	**Due Date :**	**Status:** Ongoing
3.4 Delivery Monitoring & Sustainability	**Rating:**	**Moderate**		

<table>
<tr><td rowspan="4">Description: Project implementation through separate PIUs may not sustain the project activities after the PIUs are dismantled, which may limit the sustainability of the overall sector-wide program.

Limited capacity for monitoring and evaluation in the PIUs may impact the measurability and monitoring of results.</td><td colspan="4">Risk Management: Before the close of this project sufficient coordination mechanisms will be introduced within Sindh Government for continued inter-departmental coordination and joint planning between agriculture and livestock and fisheries departments. These mechanisms, by extension, will also ensure that the long-term view of adopting a programmatic approach remains valid and as the need arises, stakeholders including, food department, fishers, etc. are able to join the sector-wide program. Continued support to this effect from P&D may be expected.</td></tr>
<tr><td>Resp: Client</td><td>Stage: Imp</td><td>Due Date :</td><td>Status: Not yet Due</td></tr>
<tr><td colspan="4">Risk Management: The PMCU will engage independent third party monitors to support the PIUs for M&E capacity building and implementation. In addition, monitoring and measurability of project indicators will also be effectively managed through supervision effort and designating staff at the PIU level.</td></tr>
<tr><td>Resp: Client</td><td>Stage: Imp</td><td>Due Date :</td><td>Status: Not yet Due</td></tr>
<tr><td colspan="2">Preparation Risk Rating: High</td><td colspan="3">Implementation Risk Rating: High</td></tr>
</table>

Annex 5: Economic and Financial Analysis

PAKISTAN: Sindh Agricultural Growth Project

A. Horticulture Component

163. Sindh has about 80,000 farmers planting 60,300 ha under chili production which results in about 167,700 tons, an average yield of 2.8 tons per ha. Production is sold to both domestic and export markets. Main problems relate to the use of poor quality seeds, cultural practices and diseases (mainly virus, collar rot and phytophthora root rot). Recently exports to the U.S.A were suspended because the detection of the Aflatoxin virus in the product. Onions are grown by about 52,000 ha in Sindh with average yields of about 12 to 14 tons/ha. Farm gate prices vary strongly according to quality and along seasons as inadequate handling practices and storing facilities prevail. Rice is grown in about 600,000 ha in Sindh representing 28 percent of the rice area in the country. Average yield is only 3.4 tons/ha which could be increased with the adjustment of simple production practices. Harvesting and post-harvesting handling need also improvement to reduce losses, enhance quality and obtain higher prices. Average production of dates in Sindh is about 265,300 tons annually from 32,600 ha and a yield of 8.15 tons/ha. After harvest, dates are cured in the sun on straw mats in open grounds alongside roads which result in contamination with molds and bacteria. Packing is usually done under unhygienic conditions.

164. The SAGP's horticulture value chains (Sub-component B.1) will include activities targeted at improving production and post-harvesting practices of selected commodities. The project would support adoption of good agricultural practices, such as varietal suitability, production technologies, post-harvest handling and marketing requirements. In parallel, investments in the horticulture and rice value chains will include key items related to support post harvesting aspects by financing the introduction of plastic crates, solar dryers and tarpaulin drying sheets for dates; demonstration curing sheds for onions; drying mats and cover sheets for chilies; and threshers and flat-bed driers for rice. These interventions would lead to higher crop yields and prices for their produce, as well as to reduce levels of current post-harvest losses.

Financial Analysis

165. Crop budgets were prepared to show the production costs and revenues expected from the project targeted cropping activities in both scenarios: *with* and *without* the project interventions. Data for recommended production technology and inputs usage and, for attainable crop yields was collected from different sources including the Directorate of Agriculture-Extension Wing as well as from the Directorate of Agriculture-Research Wing. Data from growers was also collected to look into their general current practice and for developing typical crop model budgets. From the reported attainable yield increases it was assumed that on average only 50 percent of the expected increase would be achieved after the project. Tables 1 to 4 in the Appendix present the detailed crop budgets, the yields and inputs assumptions, as well as the expected incremental financial margins expected under the existing conditions and after the project. The assumed yields, inputs and labor costs, and estimated margins are summarized in the following Table 1.

Table 1. Main Indicators and Expected Results for Main Crops (per ha)

Crop	Average Yields (tons/ha)		Gross Revenue ('000 Rs)		Input & Labor Costs ('000 Rs)		Net Income ('000 Rs)	
	Without	With	Without	With	Without	With	Without	With
Red Chilies	2.6	3.27	466	589	95	142	373	447
Onions	12	20	144	240	75	122	69	118
Dates	8.15	9.0	489	540	78	92	411	448
Rice	3.3	4.5	89	121	63	78	26	43

166. Table 5 in the Appendix presents the crop budget for the plantation of improved varieties-high density dates trees (300 trees per ha), which is also going to be supported with an incentive equivalent to 70 percent of the cost of planting as net income per year at maturity is 50 percent higher than the traditional density of 185 trees per ha.

167. The crop activities typical of each of the project areas will be used at project appraisal to analyze representative **farm models** for estimating the financial impact of project interventions on beneficiaries' average income. Production and income increases would result from the use of improved crop production technologies together with the enhanced post-harvest handling and marketing practices. For each of the main project crops selected, typical farm model– including representative cropping pattern and livestock activities - will be prepared to estimate the financial project impact at the beneficiaries' level. Preliminary estimates are shown in Table 2.

Table 2 Project Financial Impact at the level of Typical Farms in the Sindh Area

Farm Model Indicators		FM 1: Chili/..	FM 2: Onions ..	FM 3: Dates ..	FM 4: Rice..
Farm gross income (in '000Rs)	**before**	450	200	1,120	210
	after	720	300	1,250	250
Farm net income (in '000Rs)	**before**	280	80	840	70
	after	400	140	980	84

168. The estimated financial indicators show that the ***beneficiaries' net farm revenues would increase by about 15 to 75 percent*** as production technologies are adopted for the selected crops, and value for products is increased as the technical support and the productive investments allow for higher productivity levels and the quality enhancement for their products. *It can be safely concluded that the proposed project investments are feasible from the financial perspective provided that at least 50 percent of the target farmers adopt the proposed practices.*

Economic Analysis

169. The project would promote adoption of technologies and post-harvesting improvements together with providing agricultural implements. Few adjustments were made since market prices in Pakistan express adequately the real value of the goods and services. A Standard Conversion Factor (SCF) of 0.9 and specific Conversion Factor (CF) for rice, fertilizers and labor were used for the economic analysis. Based on 2012 export/import parity price estimations, the CF for rice is 0.83, while for urea, di-ammonium phosphate (DAP) and simple superphosphate (SSP) the CFs are 1.44, 1.22 and 1.11 respectively. For rural labor costs a CF of 0.75 was considered.

170. Table 3 shows the proposed expansion of the extension activities and expected benefits per crop to the targeted beneficiaries, the farmers assumed to adopt the recommended agricultural and post-harvesting good practices, and the resulting improved area for each of the four targeted crops involved.

Table 3 Estimated areas and farmers to be benefited by the project interventions

	Crop				Total
	Chili	Onion	Rice	Dates	
Farmer groups	2,068	2,224	2,000	532	6,824
No. of farmers per group	15	15	20	15	16.5
Targeted farmers	31,020	33,360	40,000	7,980	112,360
Expected rate of adoption	50%	50%	50%	50%	50%
Farmers adopting project practices	15,510	16,680	20,000	3,990	56,180
Cropped area per farm (in ha)	0.75	1.0	1.36	2.71	1.21
Area adopting improvements (ha)	11,632	16,680	27,200	10,813	66,325

171. Results for each of the four crops and for the crop growth subproject are presented in Tables 6 to 10 in the Appendix and summarized in the following Table 4.

Table 4 Expected Project Economic Results (in Rs million)

	Investments	Incremental Net Value of Production	ERR	NPV
Chili	3,100	849	18.2%	1,013
Onion	2,084	752	28.2%	1,749
Rice	1,603	294	14.2%	153
Dates	1,956	871	26.5%	1,742
Overall Project	8,743	2,766	22%	4,657

172. The proposed SAGP's Crop Growth subproject would increase the annual net economic benefit from the project beneficiaries by about 27.5 percent, from Rs 9.8 billion to Rs 12.5 billion. The analysis suggests that an Economic Rate of Return (ERR) is estimated at 22 percent and a Net Present Value (NPV) of Rs 4.6 billion (US$ 46 million equivalent) with 12 percent used as discount rate. These results are based on initial estimates of the investments needed for the sector growth. With the reduction in cost estimates it is expected that the benefit to the sector will remain the same and the ERR would be even higher.

Sensitivity Analysis

173. A sensitivity analysis to the main risks identified as significant will be conducted at project appraisal. The analysis will include: (i) a lower number of farmers adopting the recommended production and post-harvest technologies and practices; (ii) an increase in

project's implementation costs; and (iii) a general reduction of the prices of the products involved.

Red Chili Crop Model

Appendix 1 Table 1

FINANCIAL BUDGET (In Rs Per ha)	Existing Technology	April -- March New Technology			
	1 to 20	1	2	3	4 to 20
Revenue	468,000	468,000	495,000	561,600	588,600
Input costs					
Red Chili Seed	3,010	3,010	3,290	4,060	4,340
Urea	13,475	13,475	14,823	17,903	19,250
DAP	6,375	6,375	6,936	8,364	8,925
Sulphate of Potash	7,750	7,750	8,432	10,168	10,850
Farm Yard Manure	2,500	2,500	2,720	3,280	3,500
Pesticides	11,850	11,850	13,328	17,022	18,500
Herbicides	2,500	2,500	2,722	3,278	3,500
Tractor	9,000	9,000	9,960	12,240	13,200
Irrigation Fees	10,000	10,000	10,000	10,000	10,000
Dryer Mats & Cover Sheets	-	-	3,472	12,028	15,500
Sub-total Input costs	66,460	66,460	75,683	98,343	107,565
Income (Before Labor Costs)	401,540	401,540	419,318	463,258	481,035
Sub-total Labor costs	28,800	28,800	29,970	32,730	33,900
Income (After Labor Costs)	372,740	372,740	389,348	430,528	447,135

YIELDS AND INPUTS (Per ha)	Unit	Existing Technology	New Technology			
		1 to 20	1	2	3	4 to 20
Yields	MT	2.6	2.6	2.75	3.12	3.27
Operating						
Inputs						
Red Chili Seed	kg	8.6	8.6	9.4	11.6	12.4
Urea	bag	7	7	7.7	9.3	10
DAP	bag	2.5	2.5	2.72	3.28	3.5
Sulphate of Potash	bag	2.5	2.5	2.72	3.28	3.5
Farm Yard Manure	MT	2.5	2.5	2.72	3.28	3.5
Pesticides	lumpsum	11,850	11,850	13,328	17,022	18,500
Herbicides	lumpsum	2,500	2,500	2,722	3,278	3,500
Tractor	hour	15	15	16.6	20.4	22
Irrigation Fees	ha	10,000	10,000	10,000	10,000	10,000
Dryer Mats & Cover Sheets	farmer	-	-	0.056	0.194	0.25
Labor						
Plowing & Ridges	person/day	20	20	20	20	20
Crop Maintenance	person/day	36	36	38.1	43.2	45
Harvesting	person/day	40	40	62.7	69.3	72

Onions Crop Model

Appendix 1 Table 2

FINANCIAL BUDGET (InRs Per ha)	Existing Technology	April -- March New Technology			
	1 to 20	1	2	3	4 to 20
Revenue	144,000	144,000	165,600	218,400	240,000
Input costs					
Red Chili Seed	1,750	1,750	1,827	2,023	2,100
Urea	9,625	9,625	11,743	17,133	19,250
DAP	6,375	6,375	6,936	8,364	8,925
Sulphate of Potash	-	-	1,860	5,890	7,750
Farm Yard Manure	2,500	2,500	2,830	3,670	4,000
Pesticides	12,000	12,000	13,778	18,222	20,000
Herbicides	2,500	2,500	2,944	4,056	4,500
Fungicides	3,200	3,200	4,711	8,489	10,000
Irrigation Fees	10,000	10,000	10,000	10,000	10,000
Tractor	9,000	9,000	9,960	12,240	13,200
Sub-total Input costs	56,950	56,950	66,589	90,087	99,725
Income (Before Labor Costs)	87,050	87,050	99,012	128,314	140,275
Sub-total Labor costs	18,000	18,000	18,840	21,360	22,200
Income (After Labor Costs)	69,050	69,050	80,172	106,954	118,075

YIELDS AND INPUTS (Per ha)	Unit	Existing Technology	New Technology			
		1 to 20	1	2	3	4 to 20
Yields	MT	12	12	13.8	18.2	20
Operating						
Inputs						
Red Chili Seed	kg	5	5	5.22	5.78	6
Urea	bag	5	5	6.1	8.9	10
DAP	bag	2.5	2.5	2.72	3.28	3.5
Sulphate of Potash	bag	-	-	0.6	1.9	2.5
Farm Yard Manure	MT	2.5	2.5	2.83	3.67	4
Pesticides	lumpsum	12,000	12,000	13,778	18,222	20,000
Herbicides	lumpsum	2,500	2,500	2,944	4,056	4,500
Fungicides	lumpsum	3,200	3,200	4,711	8,489	10,000
Irrigation Fees	ha	10,000	10,000	10,000	10,000	10,000
Tractor	hour	15	15	16.6	20.4	22
Labor						
Plowing & Ridges	person/day	10	10	10	10	10
Crop Maintenance	person/day	30	30	32.	38.	40
Harvesting	person/day	20	20	20.8	23.2	24

Dates (Existing) Crop Model

Appendix 1 Table 3

FINANCIAL BUDGET (In Rs Per ha)	Existing Technology	April -- March New Technology			
	1 to 20	1	2	3	4 to 20
Revenue	489,000	489,000	500,400	528,600	540,000
Input costs					
Urea	15,400	15,400	16,170	18,480	19,250
DAP	12,750	12,750	13,311	14,739	15,300
Simple Super Phosphate	9,300	9,300	9,982	11,718	12,400
Farm Yard Manure	6,000	6,000	6,220	6,780	7,000
Pesticides	3,000	3,000	3,222	3,778	4,000
Herbicides	1,500	1,500	1,611	1,889	2,000
Packing for Dates	8,160	8,160	8,360	8,800	9,000
Sub-total Input costs	56,110	56,110	58,876	66,184	68,950
Income (Before Labor Costs)	432,890	432,890	441,524	462,416	471,050
Sub-total Labor costs	21,600	21,600	22,020	22,980	23,400
Income (After Labor Costs)	411,290	411,290	419,504	439,436	447,650

YIELDS AND INPUTS (Per ha)		Existing Technology	New Technology			
	Unit	1 to 20	1	2	3	4 to 20
Yields	MT	8.15	8.15	8.34	8.81	9
Operating						
Inputs						
Urea	bag	8	8	8.4	9.6	10
DAP	bag	5	5	5.22	5.78	6
Simple Super Phosphate	bag	3	3	3.22	3.78	4
Farm Yard Manure	MT	6	6	6.22	6.78	7
Pesticides	lumpsum	3,000	3,000	3,222	3,778	4,000
Herbicides	lumpsum	1,500	1,500	1,611	1,889	2,000
Packing for Dates	20 kg bag	204	204	209	220	225
Labor						
Crop Maintenance	person/da	24	24	24	24	24
Harvesting	person/da	52	52	54.	56.	58

Rice Crop Model

Appendix 1 Table 4

FINANCIAL BUDGET (In RsPer ha)	Existing Technology	April -- March New Technology			
	1 to 20	1	2	3	4 to 20
Revenue	89,100	89,100	96,390	114,210	121,500
Input costs					
Rice (Paddy) Seed	350	350	364	406	420
Urea	9,625	9,625	10,395	12,705	13,475
DAP	6,375	6,375	6,656	7,370	7,650
Sulphate of Potash	-	-	682	2,418	3,100
Farm Yard Manure	2,500	2,500	2,720	3,280	3,500
Pesticides	7,400	7,400	7,667	8,333	8,600
Herbicides	2,500	2,500	2,656	3,044	3,200
Irrigation Fees	10,000	10,000	10,000	10,000	10,000
Tractor	12,000	12,000	12,240	12,960	13,200
Sub-total Input costs	50,750	50,750	53,380	60,516	63,145
Income (Before Labor Costs)	38,350	38,350	43,011	53,695	58,355
Sub-total Labor costs	12,600	12,600	13,080	14,520	15,000
Income (After Labor Costs)	25,750	25,750	29,931	39,175	43,355

YIELDS AND INPUTS (Per ha)		Existing Technology	New Technology			
	Unit	1 to 20	1	2	3	4 to 20
Yields	MT	3.3	3.3	3.57	4.23	4.5
Operating						
Inputs						
Rice (Paddy) Seed	kg	10	10	10.4	11.6	12
Urea	bag	5	5	5.4	6.6	7
DAP	bag	2.5	2.5	2.61	2.89	3
Sulphate of Potash	bag	-	-	0.22	0.78	1
Farm Yard Manure	MT	2.5	2.5	2.72	3.28	3.5
Pesticides	lumpsum	7,400	7,400	7,667	8,333	8,600
Herbicides	lumpsum	2,500	2,500	2,656	3,044	3,200
Irrigation Fees	ha	10,000	10,000	10,000	10,000	10,000
Tractor	hour	20	20	20.4	21.6	22
Labor						
Plowing & Ridges	person/da	10	10	10	10	10
Crop Maintenance	person/da	12	12	12.8	15.2	16
Harvesting	person/da	20	20	20.8	23.2	24

Chili Development Subproject Model **Appendix 1 Table 6**

ECONOMIC BUDGET (AGGREGATED) (In Rs Million)	Without Project	With Project							
	1 to 20	1	2	3	4	5	6	7	9 to 20
Main Production									
Red Chili (Value)	5,476	5,476	5,476	5,476	5,555	5,828	6,181	6,534	6,887
Red Chili (Volume MT)	30,420	30,420	30,420	30,420	30,858.75	32,379.75	34,339.5	36,299.25	38,259
Production Cost									
Investment									
Purchased Inputs									
Extension Expenses (1st year)	-	-	66	66	66	66	-	-	-
Extension Expenses (2nd year - PTD)	-	-	-	23	23	23	23	-	-
Dryer Mats & Cover Sheets	-	-	482	482	482	482	-	-	-
Other Support Investments	-	-	5	28	28	28	-	-	-
Project Management (Horticulture Com	-	50	50	50	50	50	50	-	-
Facilitating Partner	-	13	13	13	13	13	13	-	-
Sub-Total Purchased Inputs	-	63	616	662	662	662	86	-	-
Labor									
Lead Farmers	-	-	15	20	20	20	5	-	-
Facilitators	-	-	50	67	67	67	17	-	-
Sub-Total Hired Labor	-	-	65	87	87	87	23	-	-
Sub-total Investment Costs	-	63	680	750	750	750	108	-	-
Operating									
Sub-Total Purchased Inputs	863	863	863	863	892	993	1,122	1,251	1,381
Sub-total Operating Costs	1,116	1,116	1,116	1,116	1,148	1,257	1,397	1,538	1,678
Sub-Total Production Cost	1,116	1,179	1,796	1,866	1,897	2,006	1,505	1,538	1,678
OUTFLOWS	1,116	1,179	1,796	1,866	1,897	2,006	1,505	1,538	1,678
Cash Flow	4,360	4,297	3,679	3,610	3,657	3,822	4,676	4,996	5,209

IRR = 18.2%, NPV = 1,013.29

Onion Development Subproject Model **Appendix 1 Table 7**

ECONOMIC BUDGET (AGGREGATED) (In Rs Million)	Without Project	With Project							
	1 to 20	1	2	3	4	5	6	7	8 to 20
Main Production									
Onion (Nasarpuri) Value	2,390	2,390	2,390	2,480	2,789	3,187	3,586	3,894	3,984
Onion (Nasarpuri) Volume '000 MT	199.2	199.2	199.2	206.7	232.4	265.6	298.8	324.5	332.0
Investment									
Purchased Inputs									
Extension Expenses (1st year)	-	-	55	55	55	55	-	-	-
Extension Expenses (2nd year - PTD)	-	-	-	19	19	19	19	-	-
Other Support Investments	-	-	280	280	280	280	-	-	-
Project Management (Horticulture Com	-	50	50	50	50	50	50	-	-
Facilitating Partner	-	13	13	13	13	13	13	-	-
Sub-Total Purchased Inputs	-	63	398	417	417	417	82	-	-
Labor									
Lead Farmers	-	-	12	17	17	17	4	-	-
Facilitators	-	-	41	56	56	56	14	-	-
Sub-Total Hired Labor	-	-	54	73	73	73	19	-	-
Sub-total Investment Costs	-	63	452	490	490	490	101	-	-
Operating									
Sub-Total Purchased Inputs	1,039	1,039	1,039	1,083	1,236	1,434	1,631	1,784	1,829
Sub-total Operating Costs	1,263	1,263	1,263	1,310	1,474	1,684	1,895	2,058	2,105
Sub-Total Production Cost	1,263	1,326	1,715	1,800	1,963	2,174	1,995	2,058	2,105
OUTFLOWS	1,263	1,326	1,715	1,800	1,963	2,174	1,995	2,058	2,105
Cash Flow	1,127	1,065	676	680	826	1,013	1,590	1,836	1,879

IRR = 28.2%, NPV = 1,748.99

Rice Development Subproject Model

Appendix 1 Table 8

ECONOMIC BUDGET (AGGREGATED) (In Rs Million)	Without Project	With Project							
	1 to 20	1	2	3	4	5	6	7	8 to 20
Main Production									
Rice	2,026	2,026	2,026	2,068	2,211	2,395	2,579	2,722	2,763
Production Cost									
Investment									
Purchased Inputs									
Extension Expenses (1st year)	-	-	50	50	50	50	-	-	-
Extension Expenses (2nd year - PTD)	-	-	-	18	18	18	18	-	-
Other Support Investments	-	-	174	174	174	174	-	-	-
Project Management (Horticulture Compone	-	50	50	50	50	50	50	-	-
Facilitating Partner	-	13	13	13	13	13	13	-	-
Sub-Total Purchased Inputs	-	63	286	304	304	304	80	-	-
Labor									
Lead Farmers	-	-	11	15	15	15	4	-	-
Facilitators	-	-	38	51	51	51	13	-	-
Sub-Total Hired Labor	-	-	49	66	66	66	17	-	-
Sub-total Investment Costs	-	63	335	370	370	370	97	-	-
Operating									
Sub-Total Purchased Inputs	1,545	1,545	1,545	1,566	1,643	1,742	1,840	1,918	1,939
Labor	259	259	259	261	271	284	296	306	308
Sub-total Operating Costs	1,804	1,804	1,804	1,827	1,915	2,025	2,136	2,224	2,247
Sub-Total Production Cost	1,804	1,866	2,139	2,197	2,284	2,395	2,233	2,224	2,247
OUTFLOWS	1,804	1,866	2,139	2,197	2,284	2,395	2,233	2,224	2,247
Cash Flow	222	160	-113	-129	-74	-0	346	498	516

IRR = 14.2%, NPV = 153.46

Dates Development Subproject Model

Appendix 1 Table 9

ECONOMIC BUDGET (AGGREGATED) (In Rs Million)	Without Project	With Project							
	1 to 20	1	2	3	4	5	6	7	11 to 20
Main Production									
Dates (Value)	4,890	4,890	4,890	4,919	5,018	5,205	5,438	5,664	6,030
Dates (Volume '000 MT)	81.5	81.5	81.5	82.0	83.6	86.7	90.6	94.4	100.5
Production Cost									
Investment									
Purchased Inputs									
Machinery and Irrigation Services	-	-	2	3	5	5	3	2	-
Seeds and Seedlings	-	-	14	15	15	15	1	-	-
Fertilizers	-	-	17	30	44	44	26	14	-
Herbicides	-	-	-	2	3	3	3	2	-
Extension Expenses (1st year)	-	-	14	14	14	14	-	-	-
Extension Expenses (2nd year - PTD)	-	-	-	5	5	5	5	-	-
Other Support Investments	-	-	288	288	288	288	-	-	-
Project Management (Horticulture Compone	-	50	50	50	50	50	50	-	-
Facilitating Partner	-	13	13	13	13	13	13	-	-
Sub-Total Purchased Inputs	-	63	399	421	438	438	102	18	-
Labor									
Labor	-	-	1	1	1	1	1	0	-
Lead Farmers	-	-	3	4	4	4	1	-	-
Facilitators	-	-	10	14	14	14	4	-	-
Sub-Total Hired Labor	-	-	14	19	19	19	5	0	-
Sub-total Investment Costs	-	63	413	440	458	458	108	18	-
Sub-total Operating Costs	829	829	829	838	871	933	997	1,054	1,098
Sub-Total Production Cost	829	892	1,242	1,278	1,329	1,390	1,105	1,072	1,098
OUTFLOWS	829	892	1,242	1,278	1,329	1,390	1,105	1,072	1,098
Cash Flow	4,061	3,998	3,648	3,641	3,689	3,815	4,333	4,592	4,932

IRR = 26.5%, NPV = 1,741.53

Project Summary **Appendix 1 Table 10**

ECONOMIC BUDGET (AGGREGATED)
(In Rs Million)

	Without Project	With Project								
	1 to 20	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**11 to 20**
Main Production										
Grains	2,026	2,026	2,026	2,068	2,211	2,395	2,579	2,722	2,763	2,763
Onion (Nasarpuri)	2,390	2,390	2,390	2,480	2,789	3,187	3,586	3,894	3,984	3,984
Red Chili (Local Sindh)	5,476	5,476	5,476	5,476	5,555	5,828	6,181	6,534	6,808	6,887
Dates	4,890	4,890	4,890	4,919	5,018	5,205	5,438	5,664	5,850	6,030
Sub-total Main Production	14,782	14,782	14,782	14,942	15,571	16,615	17,783	18,814	19,405	19,664
Production Cost										
Investment										
Purchased Inputs										
Machinery and Irrigation Services	-	-	2	3	5	5	3	2	-	-
Seeds and Seedlings	-	-	14	15	15	15	1	-	-	-
Fertilizers	-	-	17	30	44	44	26	14	-	-
Herbicides	-	-	-	2	3	3	3	2	-	-
Extension Expenses (1st year)	-	-	185	185	185	185	-	-	-	-
Extension Expenses (2nd year - PTD)	-	-	-	65	65	65	65	-	-	-
Dryer Mats & Cover Sheets	-	-	482	482	482	482	-	-	-	-
Other Support Investments	-	-	746	770	770	770	-	-	-	-
Project Management (Horticulture Compo	-	200	200	200	200	200	200	-	-	-
Facilitating Partner	-	50	50	50	50	50	50	-	-	-
Sub-Total Purchased Inputs	-	250	1,698	1,803	1,821	1,821	350	18	-	-
Labor										
Labor	-	-	1	1	1	1	1	0	-	-
Lead Farmers	-	-	42	56	56	56	15	-	-	-
Facilitators	-	-	139	188	188	188	49	-	-	-
Sub-Total Hired Labor	-	-	181	245	245	245	64	0	-	-
Sub-total Investment Costs	-	250	1,879	2,048	2,067	2,067	414	18	-	-
Operating										
Sub-Total Purchased Inputs	4,114	4,114	4,114	4,188	4,478	4,930	5,413	5,823	6,018	6,054
Labor	898	898	898	904	929	969	1,012	1,050	1,069	1,075
Sub-total Operating Costs	5,012	5,012	5,012	5,091	5,407	5,899	6,425	6,873	7,087	7,128
Sub-Total Production Cost	5,012	5,262	6,892	7,140	7,474	7,965	6,839	6,892	7,087	7,128
OUTFLOWS	5,012	5,262	6,892	7,140	7,474	7,965	6,839	6,892	7,087	7,128
Cash Flow	9,770	9,520	7,891	7,802	8,098	8,650	10,944	11,922	12,318	12,535

IRR = 22.0%, NPV = 4,657.27

B. Livestock Component

174. The project's cost-benefit analysis is conducted separately for major investment activities namely, Artificial Insemination (AI) and marketing improvement which together account for 86% of project costs. The benefits are reported for the overall project over the next 20 years. Costs are estimated in two ways; first, overall project costs (including administrative costs), second; those associated with project implementation including contingencies over the same period of time.

175. Overall project benefits over a time horizon of 20 years overcome overall project costs. At 12% discount rate, NPV of net incremental benefits are estimated at about Rs 686 million. Sensitivity analysis also proves robust economic returns for the livestock component of the SAGP.

176. The project will finance formation of approximately 153 milk producers groups (MPGs). It will target small and medium milk-producing households. Since women are involved in at least 80 percent of production management, the project will provide services exclusively targeting women (e.g., extension messages, female extension agents, etc.). The number of MPGs per district will vary according to the animal population and market linkage. On average one MPG will cover 5 villages, 40 animals in each village. Essentially, each MPG would have a production capacity of 1,000 liters of milk each day (approximately 5kg of milk per animal). The number of farmers adhering to the project will increase gradually as given in the (Table 5).

Table 5. Phased implementation plan for milk investment

	Project Year 2		**Project Year 3**		**Project Year 4**		**Project Year 5**	
	Target MPGs	**No. of Farmers**	**Target MPGs**	**No. of Farmers**	**Target MPGs**	**No. of Farmers**	**Target MPGs**	**No. of Farmers**
TOTAL	**55**	**2,200**	**18**	**720**	**50**	**2,000**	**30**	**1,200**

Target MPGs: 153 **Target Farmers: 6,120**

177. While artificial insemination will help to increase the animal stock over time, better veterinarian services are expected to boost milk yield per animal. AI will allow multiplying the number of animals per MPG during the project life time. A ratio of 5% death of calves is assumed based on the previous studies for Pakistan livestock sector (e.g. 100 Buffaloes, 200 Cows projects).

178. Currently, local breeds (cow and buffalo) give 4-5 kg of milk per animal, imported breeds 10-15kg. The world average for milk yield is 6.4kg per animal and convergence towards the world average is part of our assumption in the economic and financial analysis.

179. Chiller costs including generator for its operation is estimated approximately as Rs 1.150 million 2012 prices. Operational cost of the chiller is estimated based on the assumption as 70% on electricity and 30% on diesel operative generator. No cost of chiller operation is assumed for the winter (65) days during a year. Commercial electricity tariff, as levied by Hyderabad Electricity Company (HESCO) is accounted while calculating the electricity part (70%) of operational costs. Chillers are usually guaranteed for 10 years.

180. Labor cost in managing chillers is less important compared to the energy cost, one expert takes care of several chillers, like 5 villages (1 chiller per village) and also provides services throughout supply chain management, hence helps to improve the productivity and marketing. This component includes administrative as well as cleaning and minor repairs of the chiller and generator cost and represents about Rs 7,400 per month.

181. Current milk prices are around 60Rs/lt, these can rise to 70Rs/lt in summer where the milk demand is increased. However, as a conservative approach, the analysis assumed the milk prices as Rs 60 per liter constant over the year.

182. Different project components are expected to increase the number of milking animals, milk yield per animal and lessen the supply deficiencies as well as seasonal price fluctuations in the milk markets. The analysis shows that the net benefits from improved marketing component are quantifiable from day one while the AI techniques will generate benefits after five years from initiation of first time service.

183. Costs and benefits are estimated at 2012 prices over 20 years assuming 12% opportunity cost of capital. Total project benefits over a time horizon of 20 years. At 12% discount rate, NPV of net incremental benefits are estimated at about Rs 686 million. Sensitivity analysis also proves the ERR as robust. Table 6 summarizes the main results of the economic and financial analysis.

Table 6. Main results for the baseline and sensitivity analyses

	Scenario	ERR %	Base Case (BC) Ratio	NPV @ 12% Rs Million
1	Base case	25.4	1.35	686.13
2	Costs over run by 20%	22.1	1.25	978.83
3	Benefits reduced by 20%	18.4	1.10	528.85
4	Costs over run and benefit reduced by 20% simultaneously	15.1	1.00	303.84

Annex 6: Environmental and Social Safeguards

PAKISTAN: Sindh Agricultural Growth Project

184. Activities proposed to be financed through project investments are unlikely to have significant adverse environmental and social impacts. The project would essentially provide improvement extension services to farmers in order to improve productivity and market access for selected crops along a value chain approach. The project would also finance some on-farm activities to directly increase crop production through demonstrations of better farm practices to education farmers about sustainable farming practices including integrated pest and nutrient management. The project aims at inclusive growth by targeting small and medium farmers and engaging the vulnerable group in the project activities, including landless, tenants, and women. The dairy value chain would have exclusive focus on women producers.

185. Nonetheless, the project includes a number of activities which are small and some of these could have reversible impacts, both the social and environmental. Therefore, there is a need to identify and assess potential impacts which would help plan measures to avoid them through good project design and where they become inevitable there is a need to develop measures to mitigate them, both during project planning and implementation. Similarly, there is also a need to enhance the positive impacts and social and environmental benefits of the proposed activities of the project could be multiplied. This could be achieved by establishing procedures for enhancement measures. Considering this, the project aims at mainstreaming environmental and social concerns in the project planning and implementation.

186. In this context, an overarching Environmental and Social Management Framework (ESMF) has been prepared as a decision-making tool to ensure that project design and implementation is socially responsive and environmentally sound.

187. The potential negative environmental impacts of the project can include, but are not limited to; a) disturbance to ecologically sensitive flora and fauna if the project activity is located in an area with critical habitat; b) solid and liquid waste streams from the facilities to be established for post-harvest loss management and artificial insemination center, c) short term environmental impacts such as loss of flora from construction activity; d) safety risks due to transportation, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation and accidental releases; e) occupational health and safety hazards. Similarly, the potential negative social impacts identified include lack of participation particularly from landless and women farmer groups resulting in differential access to project benefits. While at individual sites, these may be small, cumulative impacts when seen as aggregates could be moderate to high and, therefore, requires appropriate mitigation and management measures, such as a rigorous targeting mechanism. SAGP will develop a consultation framework in targeting appropriate beneficiaries in an inclusive, participatory manner in designing and implementing sub-projects.

Safeguard Policies Triggered

188. This is a category B project. The safeguard policies on Environmental Assessment (OP/BP/GP 4.01), Natural Habitats (OP/BP/GP 4.04), and Pest Management (OP 4.09) are triggered.

189. **Environmental Assessment:** This is applicable given the project's focus on upgrading agricultural practices for selected crops with the potential to include additional crops in future. While issues related to solid waste generation are expected, potential adverse environmental impacts on natural resource use and management are expected to be limited.

190. **Pest Management:** While the project is not financing any direct procurement of pesticides and other agro-chemicals, it is likely that with better marketing opportunities in close proximity, farmers could tend to increase land-based productivity through application of fertilizers, pesticides and other agro-chemicals for increasing crop yields. Therefore, Pest Management is triggered. An Integrated Pest Management Plan is developed to address pesticide usage especially in the chilies crop besides other crops being considered in the project. The plan articulatea a strategy to incorporate integrated pest management (IPM) principles in project interventions specifically and in the agriculture sector in Sindh in general.

191. No social safeguard policies are triggered. While the project would invest in small infrastructure, such as milk chillers or processing equipment on cost sharing basis, these interventions will take place on (a) individual's own land, (b) private land obtained through compensation paid by a group of farmers (i.e., transaction between willing buyer and willing seller) or (c) land obtained through private voluntary donations, provided the donation will have minimal livelihood impact on the concerned person (less than 10 percent). Community purchases and private voluntary donations will be fully documented as required by the ESMF.

Stakeholders Consultation

192. As part of the development of the ESMF consultations are completed with key stakeholders. Additionally, as part of the investments design for agricultural crops, detailed consultations with the communities, farmers and producers groups were held. Feedback from these consultations is used in preparing ESMF. Overall, the proposed SAGP was considered to have a positive social impact by developing selected value chains through supporting farmer mobilization, extension services in enhancing production and productivity, post-harvest processing, value addition, and marketing by all stakeholders. However, in the agriculture sector, in particular, the project should ensure participation by small landholders, tenants, and women, who play a critical role in production and post-harvest processing. The project should strike a right balance between value chain development and social inclusion by developing and implementing a consultation framework to identify roles and opportunities for the marginalized populations.

Pest, Soil and Nutrient Management Strategy

193. Use of IPM may become imperative as continuous and indiscriminate use of agricultural chemicals leads to development of resistance in target insects, resurgence of pests, destruction of useful insects, pesticide residues, secondary outbreak of pests, health hazards and environmental pollution. The project focus on increasing crop productivity and diversification warrants a well thought out strategy to address pest, soil and nutrient management issues. An IPM plan is prepared to monitor the impacts of project activity on pesticide usage and to facilitate reduction in pesticide usage while increasing productivity.

Monitoring of Environmental and Social Management Framework

194. The project will have both internal and external monitoring mechanisms on social and environmental issues. Internal monitoring will be done both at the PMU and PIU levels. At the PMU level, Environmental Focal Persons (EFPs) will be nominated and an environmental and social specialist will be brought on-board to assist specifically in documentation and reporting. The EFPs with the help of environment specialist will carry out ESMF monitoring to ensure that the mitigation plans are being effectively implemented, and will conduct field visits on a regular basis. At the field level, more frequent ESMF monitoring will be carried out by the district level staff, under the guidance and supervision of EFPs and Environment Specialist. Monitoring checklists will be prepared on the basis of the mitigation plans for this purpose. Quarterly Progress Reports (QPR) shall document the progress of ESMF implementation. Finally, the project will engage specialists/firms to conduct external monitoring as third party validation (TPV) on an annual basis. In addition, the project should also monitor inclusiveness in targeting, such as % of marginalized populations (segregated by landless, tenants, and women) in training, % increase in their labor, and/or % increase in income among these populations.

Training and Capacity Building

195. Institutional and policy aspects form an important part of the ESMF and this includes training and capacity building of the key players. A training plan has been proposed in the ESMF that includes the details of the subject matter that the trainings will address as well as the audience. Besides the project staff, stakeholders shall be trained in salient and relevant aspects of the ESMF. The EFPs shall be responsible for capacity building in general and shall ensure implementation with support from the environment and social specialists. In addition, for each sub-project, a capacity building strategy should be developed to enhance participation by the marginalized group.

Grievance Redressal Mechanism

196. Project would develop an efficient and responsive grievance redressal mechanism (GRM) based on a responsive administration, with provisions of online tracking/monitoring in a time bound manner. The GRM should be easily accessible by the project beneficiaries and stakeholders of value chain development. On receipt of complaints, immediate action would be initiated to acknowledge the complaint and redress in reasonable time frame. In case of procurement related complaints, all complaints would be dealt at levels higher than that of the level at which the procurement process was undertaken. Any complaint received would be forwarded to the Bank for information and the Bank would be kept informed after the complaint is redressed. The departments would duly notify establishment and procedures for the grievance redressal mechanism.

ESMF Activities

197. Specific ESMF activities and expected outcome in the different stages of sub-project are given below:

Stages	ESMF Activities	Outcomes
Preparation	Preparation and disclosure of ESMF	ESMF submitted, approved and disclosed online as well as in hard copy form at all relevant offices and locations
Pre-Implementation	Preparation of Integrated Pest Management Plan (IPMP), Social Assessment (SA), and a consultation framework	Consultation framework and IPMP prepared and disclosed.
Implementation	Monitoring and preparation of various screening, monitoring and validation reports (QPR, TPV, ESMP etc.)	Submission of timely reports

Disclosure

198. The ESMF is disclosed on September 18, 2013 and copies shared with all relevant institutions. The ESMF is made available at the websites of GoSindh. Subsequently, the ESMF is also made available at the World Bank's InfoShop. Relevant project specific safeguard documents/mitigation plans to be prepared subsequently will be disclosed in a similar manner during implementation.