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USAID FIRMS PROJECT

Sales and Labor Multiplier Study for Peach Value Chain



November 2013

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Data Page

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Abstract

USAID through its Firms Project has provided significant assistance to the peach value chain in Pakistan. The results of the assistance showed significant improvement in the sales and employment generation. The documentation of these results was limited to the improvement made at the producers or/at farm gate level. This study was commissioned by the USAID Firm project with an objective to develop a model to estimate the economic impact of interventions throughout the entire value chain peach sector in Pakistan. The study collected and analyzed data from different stakeholders in the peach value chain and calculate a multiplier for the change in sales and jobs with necessary assumptions and qualifiers that provided USAID a level of confidence for attribution to its investments

Acronyms

| | |
|-------|--|
| DM | Distribution Margin |
| FTE | Full Time Equivalent |
| EU | European Union |
| IR | Intermediate Result |
| KP | Khyber Pakhtunkhwa |
| LOE | Level of Effort |
| M&E | Monitoring and Evaluation |
| MD | Man-day |
| MSMEs | Micro, Small and Medium Enterprises |
| MT | Metric Ton |
| PHC | Pre-Harvest Contractor |
| PPT | Power Point Presentation |
| PKR | Pakistani Rupee |
| PMP | Performance Management Plan |
| SIA | Strategy into Action |
| SME | Small and Medium Enterprises |
| SMEDA | Small and Medium Enterprises Development Authority |
| SMS | Short Messaging Service |
| SOW | Scope of Work |
| TFO | Technical Field Officers |
| US | United States |
| USD | United States Dollar |
| USAID | United States Agency for International Development |
| USG | United States Government |

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Exchange Rate

1 USD = 98.36 PKR

Executive Summary

Global Scenario

Peach is a popular fruit across the globe and world peach production is continuously increasing. Total volume of peach production is 21.51 million MT; China dominates the global peach production with an annual production of 11.50 million MT that accounts for 53 percent of the world's total peach production¹. Europe is the second largest producer of peach that produces 14 percent of the world's peaches. This is combined with the peach production of countries such as Italy and Spain, Turkey, Chile and Argentina. Russia is enjoying the reputation of being the world's biggest importer of peaches and nectarines during the last five years. Germany, France, Poland, United Kingdom and Italy are the largest EU importers with Germany on the lead.

Regional Market Perspective

Pakistan has consistently shown an increasing trend in production and peach cultivation area during the last two decades. On a five year average basis, the peach cultivation area has increased from 3,600 hectares in 1993 to 15,500 hectares in 2009-2010, whereas peach production increased from 36,800 MT to 72,300 MT. In Khyber Pakhtunkhwa (KP), there has been a tremendous increase in cultivation area from 900 hectares to 5,900 hectares. Production in the region has increased from 10,100 MT to 50,300 MT during the aforementioned period. In Balochistan, while the cultivation area has increased from 2,600 to 9,500 hectares, production has decreased from 25,900 to 21,600 MT.

Khyber Pakhtunkhwa contributes 70 percent share to Pakistan's total peach production. Swat district is the leading peach producing area and a number of varieties are produced here; these are commonly identified with numbers ranging from 01 to 08. These numbers denote time of maturity and are assigned in ascending order. Due to different maturity timelines, the availability of fruit is reasonably long, ranging from early May to mid-September. Fruit placed in cold stores further extends the availability period for about fifteen days.

Challenges for Peach Sector

Despite its increasing popularity in Swat, the peach sector faces several constraints including poor agricultural practices, lack of technical know-how, unreliable input supplies and planting material, scarcity of proper equipment, orchard management and post-harvest handling of produce, often resulting in a high waste ratio of about 25 percent.

Project Initiative

In 2012, the USAID Firms Project started working with 440 peach growers in 11 geographical clusters in Swat to help them upgrade their skills, increase revenues, and create jobs. The USAID Firms Project's M&E team collected data from peach growers to capture the outcome of project's activities in the sector. The data collected by the project's M&E team demonstrated an annual increase of USD 2 million in producer SMEs revenue as a result of the project's interventions. Building on those results, the USAID Firms Project started working with 440

¹ Source: Food and Agriculture Organization

additional peach growers to upgrade their skills, reduce wastage, and increase production and revenue in 2013. The project will also offer exporting and linkage assistance to a small number of producer SMEs who grow exportable varieties of peaches to help them penetrate foreign markets.

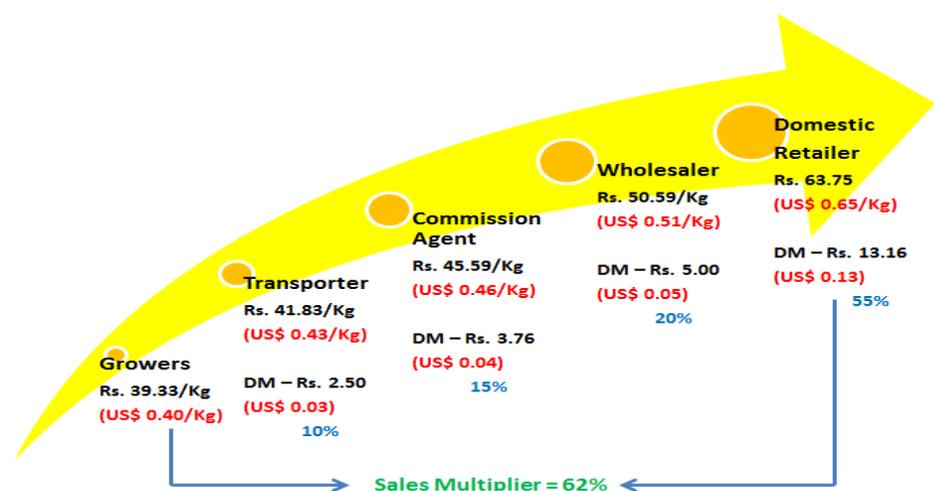
The Study

The overall objective of the study was to conduct a value chain analyses to measure the potential impact of the USAID Firms Project on the peach value chain. Information and data from different stakeholders in the peach value chain was collected and analyzed in order to calculate a multiplier for the change in sales and jobs with necessary assumptions.

A framework was designed by using the Strategy into Action (SIA) approach. In order to gather authentic information, interviews with 80 peach growers and related value chain actors were conducted. In addition, visits to eight major fruit and vegetable markets.

Key Findings

As the peach produce moves from farm to the end consumer, economic gains are generated at each stage of the value chain. There are some direct returns associated with the trade of the produce which result in shape of margins. In addition, employment is also generated at each stage of the activity.



The following trend represents, five important value chain actors, and how cost drivers influence the final price at each actor level.

The table below elaborates the profit margins at each actor level involved in the peach value chain and costs involved at each actor level. Total cost of each intermediary was deducted from the gross margin to calculate the net profit margin.

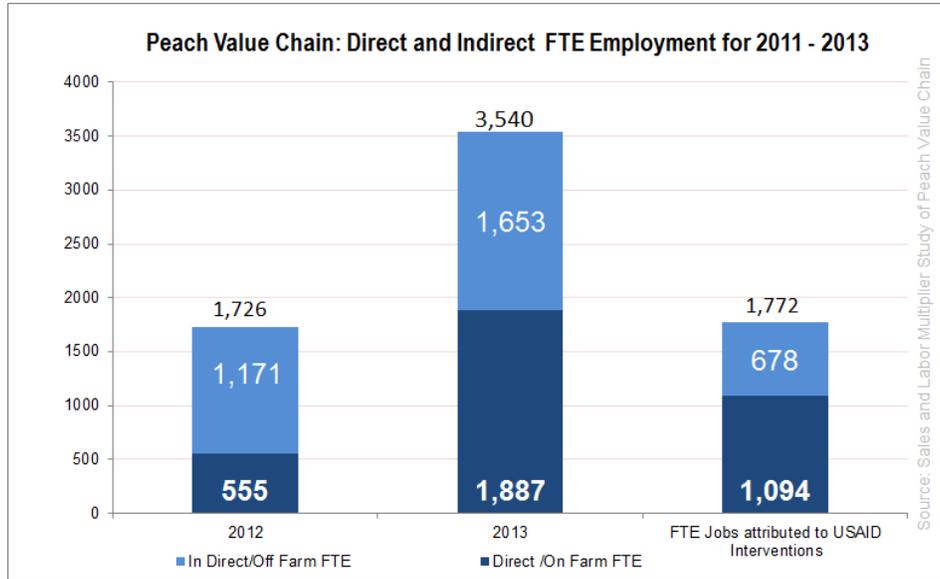
| | | Swat Peach | | |
|-------------------------|----------------------------|-------------|--------------|-------------|
| | | US\$/Kg | PKR/Kg | % |
| Retailer | Average Selling Price | 0.65 | 63.75 | |
| | Average Buying Price | 0.40 | 39.50 | 62% |
| | Gross Profit | 0.25 | 24.25 | 38% |
| | Other Costs | 0.08 | 8.30 | 13% |
| | Net Profit | 0.17 | 15.95 | 25% |
| Wholesaler | Average Selling Price | 0.40 | 39.50 | |
| | Average Buying Price | 0.35 | 34.50 | 87% |
| | Gross Profit | 0.05 | 5.00 | 13% |
| | Other Costs | 0.03 | 2.50 | 6% |
| | Net Profit | 0.02 | 2.50 | 6% |
| Commission Agent | Commission Earned | 0.04 | 3.76 | |
| | Gross Profit | 0.04 | 3.76 | 100% |
| | Other Costs | 0.02 | 1.88 | 50% |
| | Net Profit | 0.02 | 1.88 | 50% |
| Transporter | Truck Rent | 0.03 | 2.50 | |
| | Gross Profit | 0.03 | 2.50 | 100% |
| | Other Costs | 0.01 | 1.35 | 54% |
| | Net Profit | 0.02 | 1.15 | 46% |
| Peach Grower | Average Selling Price | 0.40 | 39.33 | |
| | Average Cost | | | |
| | Production Cost | 0.13 | 12.42 | 49% |
| | Harvesting Cost | 0.05 | 5.00 | 20% |
| | Packaging | 0.08 | 8.08 | 32% |
| | | 0.26 | 25.50 | 100% |
| | Gross Profit | 0.14 | 13.83 | 35% |
| | Other Costs | | | |
| | Transportation | 0.05 | 4.63 | 52% |
| | Commission & other charges | 0.04 | 4.27 | 48% |
| | 0.09 | 8.89 | 100% | |
| Net Profit | 0.05 | 4.94 | 13% | |

The value chain can be divided in two distinct activities: production and marketing. Labor involved in production and returns associated with that were directly calculated. For the purpose of estimation of FTE employment generation during marketing of produce, the labor activities were recorded from harvesting point till the produce is retailed to the consumers.

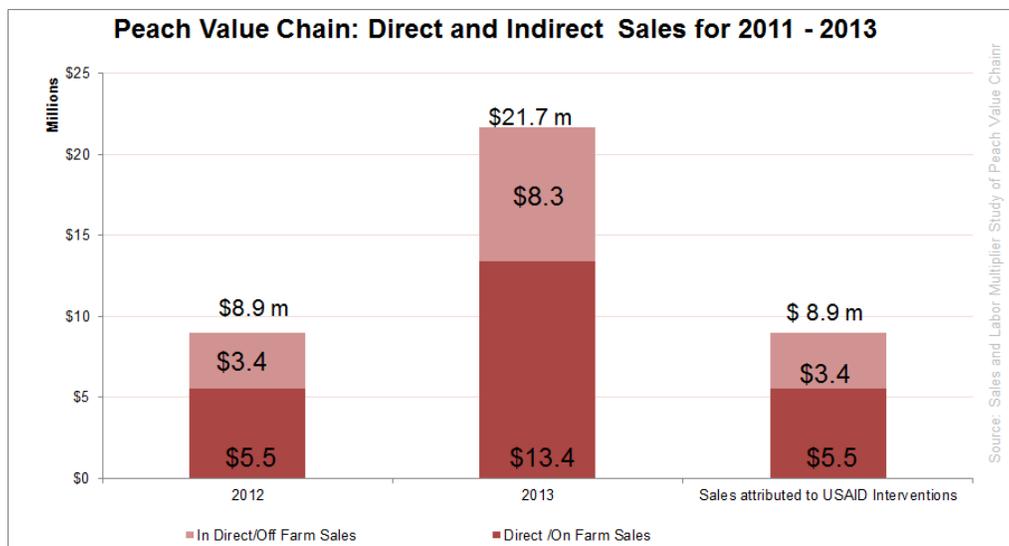
On the basis of price structure, cost drivers and employment generation in the whole value chain cycle, labor and sales multipliers have been calculated. As these multipliers are calculated on a percentage basis, they can be applied to the data either related to past, present or future. These multipliers are valid for the current value chain cycle and will be different in case there is some substantial structural change in the value chain system. These multipliers can be used for any increase in production.

Employment opportunities have been divided in two categories: on-farm and off-farm opportunities. Direct or on-farm opportunities involve operations being performed at the farm

from the production stage till the produce is sold to the first buyer. Indirect or off-farm opportunities are those which are a result of operations starting from the point of purchase till the produce is sold to the consumer or sent to the export point. FTE jobs attributed to USAID interventions are shown in the chart below:



Similarly, sales data has been divided in two categories i.e. direct and indirect sales. Direct or on-farm sales include total sales value of the produce received by the producer at the farm or the first selling point. The sale value of produce over and above the sale value of producer is called indirect or off-farm sale. Indirect sales can be calculated by multiplying the direct sales with sales multiplier. Performance of SME farms has been shown in the chart below:



Recommendations

As tourists flock to the beautiful Swat Valley, they are attracted to the available varieties of ripe peaches known for their juicy content and taste. The peach sector provides sizeable business to the orchard owners, while a large number of workers draw income from this trade too.

In recent years natural calamities have wreaked havoc on agriculture, effecting sales and jobs in the Swat region. The main constraints to growth include lack of infrastructure, poor access to inputs, market linkages, credit facilities, untrained workforce, and poor agricultural practices impacting the quality and yield of the produce.

The USAID Firms Project has successfully trained peach farm SMEs in Swat under a revitalization program that aims to develop these SMEs and facilitate them in gaining access to greater revenues and market linkages; and make overall infrastructure improvements to strengthen the sector. USAID's assistance to the peach sector includes trainings, infrastructure, supplies, technical support, tools, and certifications for peach farm SMEs of Swat under a cost sharing agreement.

In order to coordinate the effort, cluster leaders have been appointed to ensure a smooth flow of operations with farm SMEs. These interventions will help peach farm SMEs in adopting best management practices and peach farming techniques, attaining larger scale production, increasing yield, and tapping into competitive new markets.

If the same model is applied to the peach sector of the region, overall economic impact will increase. It will benefit the growers and other related actors involved in the value chain. In addition, there will be noticeable growth in employment and economic gains for labor.

1. Introduction

1.1 Background:

KP produces 70 percent² of Pakistan's peaches and Swat being a leading peach producing area has a major share in it. The sector employs a large number of full and part-time SMEs that grow a range of peach varieties. Peaches are traditionally sold in local markets and through middlemen in Peshawar, Islamabad, Lahore, Karachi and other parts of the country. The SMEs generally sell their annual production through established domestic market channels. However, there was very little export of peaches from Swat and the orchards are not linked to export markets.

In Swat, the peach season starts in May and ends in September with several varieties of the fruit harvested each year. Some of the late maturing varieties are sold at better prices in the market than others. The sector has a huge commercial demand in the market for both fresh and processed forms of peach.

This sector faces several constraints including lack of formal training for farmers and related actors of the value chain, scarcity of proper equipment, limited access to markets, and an absence of a formal link between peach growers and actors producing value-added products such as peach pulp. Other factors that reduce potential revenues for SMEs include a high-waste ratio of 25 percent, a lack of utilization of C and D grade fruits, and the absence of export certification or established export channels.³

1.2 USAID Firms Project Initiative on Peach Sector Development:

In 2012, the USAID Firms Project started working with 448 peach growers in 11 geographical clusters in Swat to help them upgrade their farm management and produce handling skills, increase revenues, and create jobs. The USAID Firms Project's M&E team collected data from peach growers to capture the outcome of project's activities in the sector. The data collected by the project's M&E team demonstrated an annual increase of USD 2 million during 2012 in producer SMEs' revenue as a result of the project's activities. Building on those results the USAID Firms Project started working with 440 additional peach growers to upgrade their skills, reduce wastage, and increase production and revenue in 2013. The project will also provide necessary assistance and export linkages to a small number of producer SMEs who grow exportable varieties of peaches to help them penetrate export markets.

In 2012, the project completed a feasibility study that demonstrated a high demand for pasteurized peach pulp production in Swat by middle-tier companies that produce consumer pulp products. As a result of the study's positive findings, the project included a plan to assist one pulping unit in Swat during 2013-14. This activity integrated the value chain vertically by

² Source: Agricultural Statistics of Pakistan 2010-11.

³ USAID FIRMS Project SOW for Peach Value Chain Study

linking peach growers to pulping facilities which would allow them to utilize C and D grade fruit and meet peach pulp demand.⁴

1.3 USAID Firms Project's Focus: Swat's Peach Sector:

The USAID Firms Project initiated its Peach Program in 2012 to address the following major areas:

- Workforce development, trainings and capacity building are major components of the peach value chain development strategy.
- In-kind assistance to peach farmers including pruners, shears and harvesting kits that include a ladder, harvesting bag, plastic collection bins, water proof tarpaulin and corrugated cartons.
- Market linkages for the farmers to sell their produce at better prices.
- Develop strategy for viable and cost-effective means of transporting peaches to local and international high-value markets.
- Pulping units to process C and D grade peaches.

The USAID Firms Project has undertaken the following initiatives:

Workforce Development, Trainings, and Events

In 2012, the USAID Firms Project conducted 22 trainings on pre and post-harvest best management practices for 448 peach growing SMEs in 11 clusters to build their capacity and increase revenue and jobs. This resulted in USD 2.1 million in additional sales and 121 new full time equivalent (FTE) employments.

In 2013, the project trained 440 additional peach farming SMEs on proper pre and post harvesting techniques, to help them decrease their pre and post-harvest losses. Proper post-harvest handling increases production and ensures that better quality peaches reach the local markets. Trainings were also conducted on important pre-harvest activities such as pruning, irrigation, and fertilizer application.

In-kind Assistance

In 2012, the project provided pruning and harvesting kits and corrugated cartons to 448 peach SME farms so that they could apply their knowledge of pre and post harvesting best practices. In 2013, the USAID Firms Project supported 440 SME farmers in order to support the best practices trainings. The project will continue to provide the same assistance to an additional 462 SME farmers in 2014 as well. These kits will help SMEs practice proper tree and canopy management and ensure minimal damage to trees. The harvesting kit plays an integral role in implementing proper harvesting techniques. It includes a harvesting ladder, small pruning shears, harvesting bags, plastic collection bins, and a waterproof tarpaulin.



Dos & Don'ts boards for trainings



Pruning and harvesting kits distributed to peach SMEs

⁴ USAID FIRMS Project SOW for Peach Value Chain Study

Export Potential Analysis, Training and Market Linkages

Swat peaches enjoy a very strong domestic market. Almost all varieties of Swat peaches are sold in the local, regional, and national markets. In 2011-2012, the USAID Firms Project M&E team collected data which demonstrated that 448 SMEs recorded total sales of USD 5.53 million, which is an increase of USD 2.1 million from 2011.

After SME farmers realized the increase in sales, some of them requested additional support for exporting. In 2013, the project will complete an export potential analysis for beneficiary SMEs that sell late-season peach varieties. These varieties have a longer shelf life making them well suited for exports. If the analysis identifies export potential, the project will carry out two activities in 2014 to support peach exports. First, a delegation of representatives from major exporters and SMEs will attend an international trade show to increase their market awareness and create market linkages. Second, the project will conduct a 'Producing for Exports' training to help upgrade the quality of fruit so it meets export standards.

Peach Pulping Unit

The peach sector suffers around 40 percent (estimated) post-harvest loss annually. One of the main constraints was lack of adequate pulping units that can purchase and process grade C and D peaches. The reduction in post-harvest losses can be achieved by utilizing fragile fruit with short shelf life for value-addition purposes.

According to a pre-feasibility study conducted at one of the pulping units in Mingora, Swat, 11 buyers reported an annual demand of 1,760 tons of peach pulp compared to the current production of 36 tons. As a result of that study, the project identified that this pulping unit in Swat could be upgraded on a cost share basis to meet peach pulp market demand.

In 2013 and 2014, the project will provide in-kind support to one peach pulping unit by providing pulping equipment and machinery and conducting trainings for the production staff of the pulping units. The pulping unit will upgrade its infrastructure to house the new equipment and meet environmental standards.

1.4 Peach Sector Constraints:

- **Farm-Level Constraints:** Lack of infrastructure, untrained workforce, traditional farm management practices, limited access to inputs, poor access to credit facilities are common problem areas for peach farms. These constraints are a significant detriment to growth, quality of fruit and yield.
- **Insufficient Technical Knowledge:** Approximately 23 percent of the valuable crop is lost at the post-harvest stage⁵. A substantial reduction in post-harvest losses is possible through the training of growers and others engaged in better farming, picking, and crop handling techniques.
- **Insufficient Packaging Expertise:** A dearth of proper sorting and packaging techniques results in the high percentage of post-harvest losses for the peach sector and this has a negative impact on the sales revenue.
- **Market Linkages:** Large buyers who demand bulk quantities of fresh peach from Swat are unable to form linkages with peach growers who operate individually. This restricts buyers from getting the produce from a large group of farmers, resulting in reduced profits.

⁵Khan, M., T. Rahim, M. Naeem, M.K. Shah, Y. Bakhtiar and M. Tahir. 2008. Post harvest economic losses in peach produce in district Swat. *Sarhad J. Agric.* 24(4): 705-711.

- **Inadequate Cold Chain Infrastructure:** Cold chain facilities for transporting the produce to distant markets are not available or utilized properly. Peach being a highly perishable fruit is required to be placed in cold stores to enhance its shelf life and avoid distress selling. Cold storage facilities available in the area do not fulfill the required standards which results in the increase of post-harvest losses.

1.5 Challenges:

Since its inception, the USAID Firms Project's Peach Program faced many challenges and appropriate measures were taken by the project team to address these. A brief description is given below:

Managing SMEs' Expectations

The project was already working in different sectors in the area and sizeable assistance had been provided to these sectors. Given this, peach growers were also expecting the same for their sector too. Initially, peach growers were reluctant when they learned that major emphasis of the project will be on provision of trainings and knowledge-sharing. Then the project teams convinced them that the trainings and knowledge sharing will be of great benefit for them and some tools and equipment would also be provided to the partner SMEs. Consequently, a majority of the producers expressed their interest to join the project activities.

Sharing Boom Sprayers

Originally the project planned to provide boom sprayers at the cluster level to be managed by a member and shared by other members for use. The idea was not accepted and members demanded that if it is given to one member, other members should also be provided with the same; members expressed unwillingness to go to other member's premises for the purpose. Consequently, the project did not continue with this plan.

Market Linkages

There was a plan in the program to promote domestic as well as export market linkages between producers and buyers. However, the producers expressed that they don't have any issues with domestic marketing of their produce as they have a sufficient number of buyers. Thereafter, the producers requested that the production side should be given more focus.

Selection of SMEs

In the beginning, the producers were reluctant to become part of the program but subsequently, after looking at the benefits of the program, the number of SME applicants increased.

2. The Study

2.1 Purpose of the Study:

The aim of this study was to gauge the extent of the Peach Program's contribution to two most key areas of the USAID Firms Project i.e. increase in sales and employment. The contribution to sales and employment will primarily stem from USAID Firms Project interventions in the fresh peach value chain as opposed to processed peach interventions which have been initiated in year 2013.

The overall purpose of the study of this value chain was to document the nature, context and extent of the impacts realized in all aspects of peach value chain by estimating the increase in sales and employment.

2.2 Objectives of the Study:

The overall objective of the study is to conduct a value chain analyze is to measure the potential impact of the USAID Firms Project on the peach value chain. For this purpose, the value chain analysis will measure the forward linkages (source of inputs and destination of output) and determine the added value.

The information/data from different stakeholders in the peach value chain was collected and analyzed in order to calculate a multiplier for the change in sales and jobs with necessary assumptions and qualifiers. This multiplier effect provides USAID a level of confidence for attribution of increase in sales and jobs to its interventions in the peach sector. As outlined in the Scope of Work (SoW) the study comprised of the following six objectives ([Annex-1](#)):

1. Defining and documenting the value chain for the peach sector in Pakistan.
2. Systematically documenting the USAID Firms Project's intervention in peach value chain.
3. Acquiring information on the distribution of economic gains across the peach value chain by various players.
4. Determining the labor multiplier and sales multiplier equations with assumptions for peach sector. These multipliers must be transferable for use by all stakeholders in the sector.
5. Determining specific enabling environment constraints that impact peach value chain specifically with regard to sales and employment.
6. Providing practical and realistic recommendations on how modification in the program interventions can create greater impact in generating sales and creating employment.

2.3 Scope of the Study:

The USAID Firms Project acquired the services of a team of two qualified individuals as short-term technical consultants i.e. Agricultural Economist and Business Analyst to appraise the economic impact of USAID Firms Project's interventions in peach value chain across district of

Swat. The consultants had to focus on the peach production areas within the provinces of KP while working with the support from Lahore and Karachi offices for the majority of the study period with frequent travel to other cities in order to interact with all the actors involved in Peach Value Chain.

The specifics of the study are outlined in the sections below and it was guided by the goals and relevant strategic objectives/intermediate results of the project as listed below:

Goal: Improved economic status of target populations

Program Purpose: Dynamic internationally and domestically competitive firms with accelerated sales, investment, and employment

Intermediate Result 1: Improved economic performance of target enterprises

3. Study Methodology

3.1 Methodology Approach:

In order to conduct the study in a systematic way, a framework was designed by considering the Strategy Formulation Process (Strategy into Action or SIA). This approach was originally designed by Professor Arnaldo Hax of the Sloane School of Management MIT. The key contents of the framework include Main Objective, Key Questions – Complex Variables, Simple Variables, Avenues of Exploration, Values, Methodology, Source, Assessment Instruments/Tools and Activity Area.

At first step the main objectives were split into key questions (complex variables). Key questions explained the items to be covered in the respective objective of the study. Key questions were further broken down into simple variables and avenues of exploration. These gave the detail of the key items to be covered during the study. In order to gather all the related information, methodology was developed which covered how and from whom the specific data/information would be obtained. It also explained the methodology to be adopted and tools to be used for the collection of the data/information. The locations selected for the activities were also mentioned in the strategy. Complete methodology framework is attached as [Annex-2](#).

In order to move forward, the following approach has been used to conduct the study:

- **Review of Reference Material**

All the relevant material, concept papers, proposals, baseline survey reports, M&E related documents, sales and employment trackers and project/strategy documents were reviewed to obtain the information regarding pre and post-project interventions scenario of the peach sector. This information also shed light on the different components of the USAID Firms Project's peach value chain development program, best practices adopted during the implementation of the program and achievements of each of the components of the program.

- **Meetings with the Project Team**

Relevant project staff was taken on board to collect the required information and five meetings were held with the M&E team, senior management and other members of the project. The meetings served the objective of collecting historical perspective on the inception, development and execution of the peach program, and learning about best practices adopted during the implementation phase, and major challenges faced by the program since its inception and strategies adopted to address these challenges.

3.2 Data Collection:

Major fruit and vegetable markets were visited and interviews with related actors of value chain were conducted. A brief description is given below:

- **Visit to Peach Farms**

Seven peach farms were visited to witness the harvesting, grading and packing practices, and to estimate the economic gain, sales and labor multipliers of the peach value chain.

- **Focus Group Discussions with Cluster Leaders**

Interviews and focus group sessions were held with the farm owners to get their views regarding project interventions, issues/problems faced during implementation, pre and post project interventions scenarios, impact of project interventions on sales and employment as well as their future plans. 22 cluster leaders representing over 880 farmers of the area participated in the focus group discussion. In addition, representatives of the peach pulping unit also participated in the same discussion forum ([Annex-3](#)).

- **Visit to Fruit and Vegetable Wholesale Markets**

Fruit and vegetable wholesale markets in Swat, Matta, Peshawar, Islamabad, Multan, Lahore, Faisalabad and Karachi were visited to study the peach value chain, actors involved in the value chain and their roles. ([Annex-4](#))

- **Meetings with Actors of the Peach Value Chain**

Interviews and focus group discussions were held with different actors of the peach value chain which includes farmers, pre-harvest contractors, transporters, commission agents (*Arhati*), wholesalers (*Pharia*), traders (*Ladania*), retailers, processors and exporters ([Annex-5](#)). Information regarding price structure and cost drivers with respect to each player was obtained to determine the distribution margin along the value chain.

- **Interview Guide.**

A questionnaire was prepared and shared with the M&E team and related peach team members for review and all interview instruments were approved by the USAID M&E Director before they were used in the field. These key questions were used to collect information from different stakeholders of peach value chain.

3.3 Data Analysis:

The major objective of the study was to estimate the labor and sales multipliers. For this purpose, required information regarding price structure, cost drivers and labor used to perform different activities at each stage of the value chain, was obtained from all across the value chain which includes input suppliers, producers, pre-harvest contractors, harvesting/packing labor, transporters, commission agents, wholesalers, traders and retailers.

The different type of information required included:

- Production, harvesting, transportation and labor costs.
- Price of different grades and packs of produce at different levels of the value chain.
- Labor required for performing different activities at each stage of value chain.

It was a difficult task to decide which particular information of a specific variable should be used as it was not a statistical analysis in which data from a large sample was collected and used for the purpose. Furthermore, there was a large range of information under each category of information mentioned above.

In order to get representative information, for the analysis, all the stakeholders of the value chain were interviewed through questionnaires, comprising key questions, approved by the M&E director of the USAID Firms Project. The information was verified from multiple sources. Some information was time specific like the price of produce being a variable. Similarly, there was no standardization in the grades and packing size of the produce which makes the situation more complex. Every producer was preparing different grades of produce depending on the quality of fruit and destination market. This aspect was covered by obtaining such information from different primary and secondary sources. In addition, a Focus Group Discussion (FGD) of 22 cluster leaders, representing 800 SME farmers, was held in Swat. During the FGD, each category of information was discussed at length and information was recorded after reaching consensus. On the basis of the information collected during field visits, FGD and from various secondary sources, representative information was estimated which was used for the purpose of analysis.

3.4 Limitations of the Study:

Calculating final figures to be used in the analysis, particularly in case of production costs, grades of produce and their recovery ratios and prices of different grades of produce, was an issue during the study due to absence of grading/packing standards and wide range of information under each category.

Although there were no serious security issues but movement of consultants was restricted due to deployment of army in the area and field work was wrapped up earlier than the planned date.

In order to utilize the model, certain information such as marketing strategies, baseline details related to cost of production needs to be collected beforehand. This model was applicable to two types of the marketing strategies. If another type of marketing strategy were to be added, the model would have to be updated accordingly.

3.5 Study Timelines:

The study commenced in July 2013 and was completed by November 2013.

4. Peach Value Chain in Pakistan

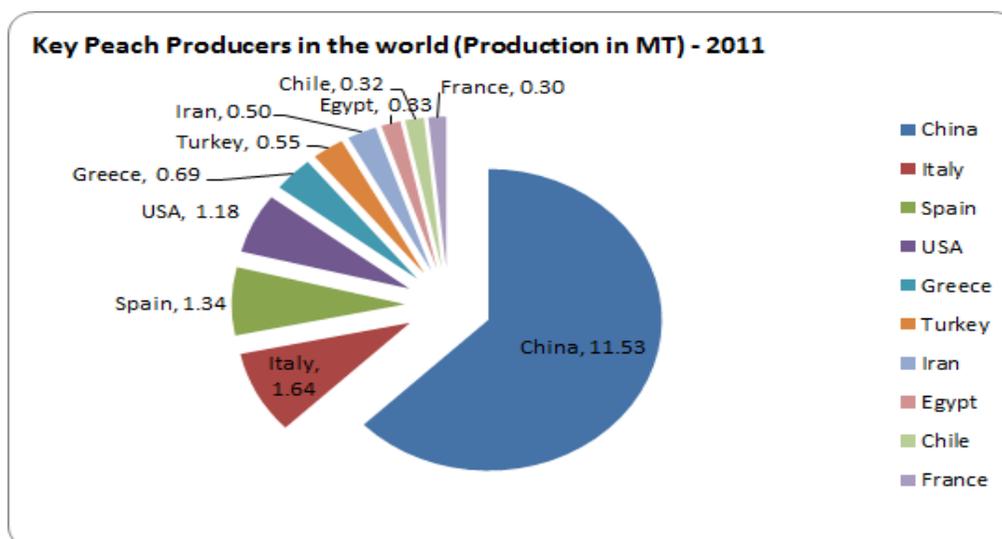
4.1 Global Picture:

During the last ten years, world production of peaches rose by about sixty percent and is expected to continue its decade-long climb in 2012/13, rising three percent from the previous year to a record 19.4 million (metric) tons. China accounts for nearly all that expansion due to increased plantations and yields. Trade has also increased, with global exports expected to reach a record of more than 660,000 tons.⁶

The world production is dominated by China, European Union and the United States. The Turkish, Chilean and Argentinean peach and nectarine productions are on the rise since the last five years. Russia is still the number one market for peaches and nectarines since the country doubled its imports during the last five years. Among the EU countries the Italian production has the first rank followed by the Spanish production. The total of the Greek production and the Turkish production equals the Spanish production. The EU countries import about one million MT of peaches and nectarines a year since the last seven years. Germany is the largest EU importer followed by France, Poland, United Kingdom and Italy. China makes up for 63 percent of global peach crops, while the U.S. and the European Union represent 32 percent combined.⁷

However, exports are only a very small percentage of total production at 5 percent, with shipments led by the European Union, the U.S., Chile and China. The exports from China and Chile have grown, but EU shipments have declined.⁸

Figure 1: Key Peach Producers in the World (Production in MTs) - 2011



⁶ Source: (FAS/USDA)

⁷ Source: French Ministry of Agriculture and the Statistical Division (FAOSTAT) of the Food and Agriculture Organization of the United Nations (FAO).

⁸ Source: FreshFruitPortal.com

4.2 Pakistan Peach Sector - An Overview:

A tremendous increase was observed in the cultivation area and production of peaches in Pakistan during the last two decades. The peach cultivation area has increased from 3,600 hectares in 1993 to 15,500 hectares in 2009-2010 (five year average) while the production was observed to be increased from 36,800 MT to 72,300 MT during the same period. Major share in increase in cultivation area and production was noted to be from (KP) province where the area increased from 900 hectares to 5,900 hectares and production from 10,100 MT to 50,300 MT during the period. In Balochistan, although the cultivation area has increased from 2,600 to 9,500 hectares, the production has decreased from 25,900 to 21,600 MT during the same period.⁹

KP produces 70 percent¹⁰ of Pakistan's peaches and Swat has a major share in this considering it takes the lead in peach producing. There are a number of varieties of peach being produced in Swat commonly recognized by numbers ranging from 01 to 08. Numbers have been assigned in ascending order representing the time of maturity of the fruit. Due to different times of maturity, the availability of fruit is reasonably long, ranging from early May to mid-September. Fruit placed in cold stores further extends the availability period for about fifteen days.

Despite the popularity of peach fruit in Swat, this sector faces several constraints which includes implementation of traditional agricultural practices, lack of technical know-how, unreliable input supplies and planting material, scarcity of proper equipment, lack of formal training on good agricultural practices, orchard management and post-harvest handling of produce, resulting in a high waste ratio of 25 percent and an appropriate marketing strategy.

The seasonality has a major role in the peach trade. The table below shows the Swat peach varieties harvesting months and availability of peaches to consumers and other related industries.

Table 1: Peach varieties of Swat and their maturity timelines

| Sr. # | Variety | Maturity Period |
|-------|---------------------------------|--------------------------|
| 1. | No. 1, Early GRAIN | May 08 – May 22 |
| 2. | No. 2, A-6 | May 23 – June 10 |
| 3. | No. 3, (No specific name) | June 10 – June 25 |
| 4. | No. 4, Carmon | June 25 – July 10 |
| 5. | No. 5, NJC (China) | June 27 – July 20 |
| 6. | No. 6, Elberto (Golden, Sohani) | July 10 – July 25 |
| 7. | No. 7, Maria Delezia | July 20 – August 10 |
| 8. | No. 8, Indian Blood | August 08 – September 15 |

A lot of variation in prices of fruit ranging from USD 0.61-0.71/crate (PKR. 60-70/crate) to USD 7.12/crate (PKR 700/crate under different grades and packs) was observed to be a regular phenomena. Prices were found to be at their peak during the start of season, as there was no other fruit in the market during Ramzan and at the end of the season while lowest prices were observed during peak supply season. Weather conditions also influence the harvesting schedule which enhances the supply in the markets resulting in depressed prices. Availability of other fruits in the market also has a negative effect on prices. Dumping of fruit in the wholesale markets was a common practice as no alternate marketing channel exists. Despite the high marketing cost of produce irrespective of whether the produce was of A grade or D grade

⁹ Source: Agricultural Statistics of Pakistan 2010-11.

¹⁰ Source: Agricultural Statistics of Pakistan 2010-11.

quality, farmers are constrained to dispatch their total produce to the wholesale markets as they did not have a choice to divert the C and D grade produce to any processing facility as currently, there was no processing plant in the area. That's why the C and D grade produce does not even cover the marketing cost.

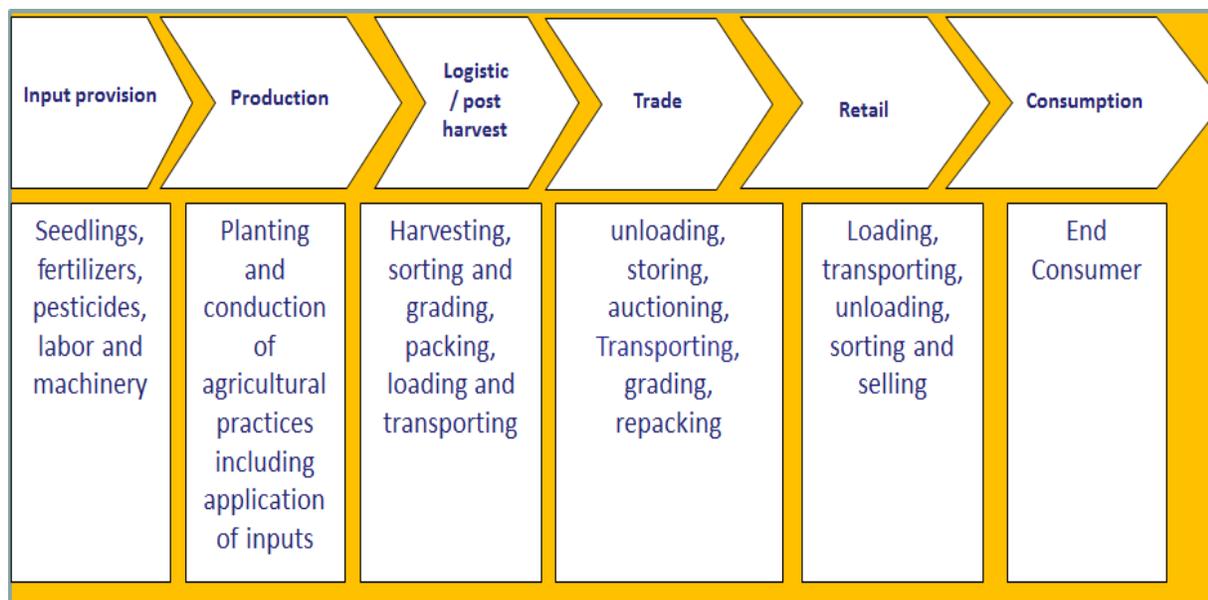
Storage: Fruit was also placed in cold stores but without any planning and technical know-how. Storage of produce was undertaken as a planned activity through which the fruit was graded and packed in wooden crates to avoid distress selling in the market in case of oversupply. Storage conditions are not as per requirements of produce and the cold store owner does not accept any responsibility in case of the produce is spoilt.

4.3 Peach Value Chain:

Peach Value Chain encompasses the full range of activities and services required to bring the produce from farm to sale in local, national or global markets. The peach value chain includes input suppliers, producers, market actors, processors and buyers. They are supported by a range of technical, business and financial service providers.

A value chain outlines the physical flows of production and commercialization and the enabling national and international institutional environment needed for an effective value chain development (contextual issues like trade agreements, national policy and regulatory environment and supporting markets, and research, training and assistance). The peach value chain can be categorized in two types; chains in which coordination was undertaken by buyers – 'buyer driven' – and those in which producers play the key role – 'producer driven'.

Figure 2: Mapping the Peach Value Chain



The value chain has benefits for to both rural producers and urban consumers. Most goods are produced by a sequence of interlinked actors and activities. Producers are perhaps the most apparent aspect of the value chain and are thus given special emphasis. Traders are equally important but they do not receive the same importance as producers enjoy.

A value chain also acts as a supply chain – one in which the actors know each other well and form stable, long-term relationships. They support each other so they can work together to increase their efficiency and competitiveness. They invest time, effort and money to reach a common goal of satisfying consumer needs. That enables them to increase their profits.

At each stage of the chain, the price of the produce escalates because each actor in the chain adds value – by growing, harvesting, sorting, grading, packaging, processing, labeling, transporting, storing, and putting it on shelves for buyers. These have a cost and each actor recoups by charging for the service.

The peach value chain includes nursery developers, input suppliers, growers, pre-harvest contractors, transporters, commission agents, wholesalers, traders, cold store owners, retailers, consumers, exporters and processors.

4.4 Key Actors of Peach Value Chain and their role:

Figure 3: Key Actors of the Fresh Peach Value Chain



A brief description of these actors, their roles and position in the value chain is given below:

Input Suppliers

Input suppliers play a significant role in the production of healthy and disease-free fruit through the supply of agro-chemicals, fertilizers, pesticides, weedicides and other such materials required for better yield and higher quality fruit production. Most of the peach growers expressed their dissatisfaction over the quality of products and services of majority of the agro-chemical input suppliers.

Nursery Developers

Unfortunately this was a weak link in the peach value chain as most of the producers expressed their concerns over the reliability of planting material provided by the nursery developers. Although some nursery developers claim to be registered with the relevant department, there was no certified planting material offering a guarantee for quality. Efforts are required in this regard if the quality of produce is to be improved.

Producers

Producers undertake the production activities while more than 60 percent sell the harvesting rights of their orchard to contractors. Selling time varies from just after the completion of harvest in August/September to the time when the fruit has almost attained its final shape in April. Approximately 40 percent producers are involved in self-marketing primarily with the expectation of getting better returns. The contracting system is largely popular due to the immediate cash needs of the producer for the preparation of orchard for next season and to meet other personal expenses. Moreover, there is a risk factor and producers aim to avoid the hassle of being involved in self-marketing while not having the expertise in dealing with the labor and marketing of produce. The terms of contracting out the orchard varies from owner to owner. If the orchard is contracted out just after the harvest, the production costs are born by the contractor and if it is sold at later stage, the owner bears all the production costs. However, growers do not receive regular payments and this is quite frequent. In particular, adverse weather conditions during harvest become an excuse for contractors to delay payments. The period of contract varies from one to three years depending on the cash needs of the producer.

Pre-harvest Contractors (*Bekhar*)

The pre-harvest contractors (PHCs) perform a key role in the marketing of fruits. Usually, they maintain a close contact with the commission agents in the wholesale and terminal markets and the producers as well. While contracting an orchard, the PHC estimates the total volume of production on the basis of the area and total number of plants, and makes an assessment of expected costs to be incurred for supervision, harvesting, transportation, and marketing. The PHC also considers their own domestic consumption, in-kind payment to the orchard owner and post-harvest losses before making an offer to the producer. The finance for payment to the producer is obtained from commission agent and he is also taken into confidence regarding expected production and the price of orchard before the deal is finalized. Marketing of produce is mostly controlled by the commission agent who is providing the finance. PHCs operate in a climate of uncertainty and encounter all sorts of risks as they are solely responsible for the loss.

Labor for Harvesting

Labor for harvesting works in the form of a group. It includes general labor (harvesters) - performing the functions of harvesting, transporting the produce to the packing place and loading the truck, sorters/graders, packers and labor for finally closing and marking the cartons/crates. Each category of the harvesting labor is paid according to the skill required to complete the specific job. Packers are paid the maximum remuneration followed by sorters/graders and harvesters. Provision of food, tea and soap is also the responsibility of producer/PHC hiring the labor. The labor plays a very important role in the peach value chain as the quality of produce and its shelf life depends a lot on the way the harvesting labor performs its job.

Transporters

Transporters are service providers and they do not own the produce. They transport the produce from the point of production to its destination market. Trucks are a common mode of transportation used for domestic marketing and usually there is a loading capacity of six to eight tons (in case of peaches). Overloading is a common practice to minimize the cost of transportation. In Swat, there are many truck stands/loading points established in the peach

producing clusters. These loading points offer their services only to transport the local produce of fruits and vegetables. Basically these are assembly points where the produce is collected from different orchards, assembled into a truck load and dispatched to the destination market. These loading points act as an important link between producers and markets. Producers can send their fruit to any market even if the quantity is very small. In addition, the truck stand owner also provides the facility of financing to the producers/PHC on behalf of the commission agent. The finance is obtained from the commission agent based on a commitment to supply a certain quantity of produce, which is further distributed among the producers/PHC of the area. This is based on a condition that the PHCs will supply/market their produce through the commission agent and the produce will be sold through the commission agent from whom he has obtained the finance. The truck stand owner benefits from a profit margin when the produce is transported through his truck stand and is also paid PKR. 2-3 per crate by the commission agent, against the quantity supplied to him.

Commission Agents (*Arhti*)

Commission agents play a vital role in the value chain and link sellers with the buyers to fill the supply-demand gap. They have establishments at wholesale markets and are fully-equipped with telephone and other communication facilities. They also provide food and lodging facilities to the suppliers. Commission agents maintain contacts with inter-regional wholesale markets and possess comprehensive and accurate information. They also serve as buying agents for exporters and processors, ensure that the fruit is of the agreed quality and are responsible for supplier's payment to. They perform their activities on a commission basis, and do not, normally, accept title of goods. But whenever they find some margin in the trade or if the total produce brought by suppliers is not auctioned, they themselves buy the produce at the prevailing price of the market.

Commission agents also provide finance to the producers/PHCs with the condition to supply a certain quantity of produce. In case of loss to the PHC, the commission agent provides finance during the next season for the recovery of outstanding amount and the practice continues. Sometimes the advance amount is not recovered or the PHC may cheat the commission agent but the main interest of the commission agent is in the commission charged from the supplier at a rate of about 6-8 percent of the sales value of produce to covers all risks.

Wholesalers (*Pharia/Masha Khaur*)

Auction in the markets is done on a large scale, often beyond the requirement of the retailers. Wholesalers buy the lots in auction, carry the produce to their premises, re-pack the produce to improve its look, dispose the damaged pieces, and then display it for sale to the retailers and other buyers with some margin. They also supply the produce to processing industries. They maintain contacts with commission agents in the wholesale market and retailers in the local area and mostly buy from the commission agents on a credit basis, and make payment after the onward sale of the produce. Wholesalers have a good understanding of the trade and their role soon becomes similar to that of commission agents with the passage of time.

Traders (*Ladania*)

The produce is marketed in truckloads and the smaller markets do not have the capacity to absorb the full quantity. In order to maintain a regular supply to these markets, the fruit is purchased in auction by the traders (*Ladania*) and is further marketed to surrounding smaller markets.

Retailers

Retailers are the last link of the domestic marketing chain and they make their purchases of required quality and quantity mostly from the wholesalers. A small number of big retailers also

make their purchases directly from commission agents. The quantity and quality depends on the volume of their business, selling place and type of customers. A small number of fruit retailers occupy shops in the main business areas of the town. The majority of street fruit retailers sell the fruit in barrows (hand cart) consisting of a wooden platform mounted on four wheels, Suzuki vans or donkey carts. Moreover, a number of retailers are found standing at focal places of the town, particularly railway stations, bus stands, vicinity of courts, schools, and hospitals. There is a high degree of competition among fruit retailers because the objective is to get rid of the total purchased produce due to its perishable nature. Now formal fruit and vegetable shops, exclusively established for these commodities, have started emerging in big towns. The departmental stores have also established fruit and vegetable sections from where you can pick the quality of your choice. The prices in such shops/stores are a bit higher but the quality of produce is also better. Retailers buy fruit from the wholesalers on a 24–48 hour credit basis.

Processors

A very small portion of the produce is diverted towards processing to prepare value-added products which include pulp and juices. Pulp is the major value-added product prepared from peaches. Processors make purchases from the wholesale market through commission agent or a wholesaler who may act as a buying agent for them. Some processors also procure supplies from Matta, district Swat. The quality of produce purchased depends on the type of product to be prepared and the targeted buyers/market. Mostly C and D grade produce is procured for processing.

Exporters

Prior to the 2007-08 insurgencies in the Swat area, peaches were exported to Afghanistan, Bangladesh, Kenya, Kuwait, UAE and UK at good price. Currently, very little quantity is exported in an informal manner, mostly to UAE, and orchards are not directly linked to exporters/export markets. There is lack of awareness among the farmers regarding export protocols/certifications. Exporters usually procure the produce of their required quality from the wholesale markets.

4.5 Characteristics of Peach Market:

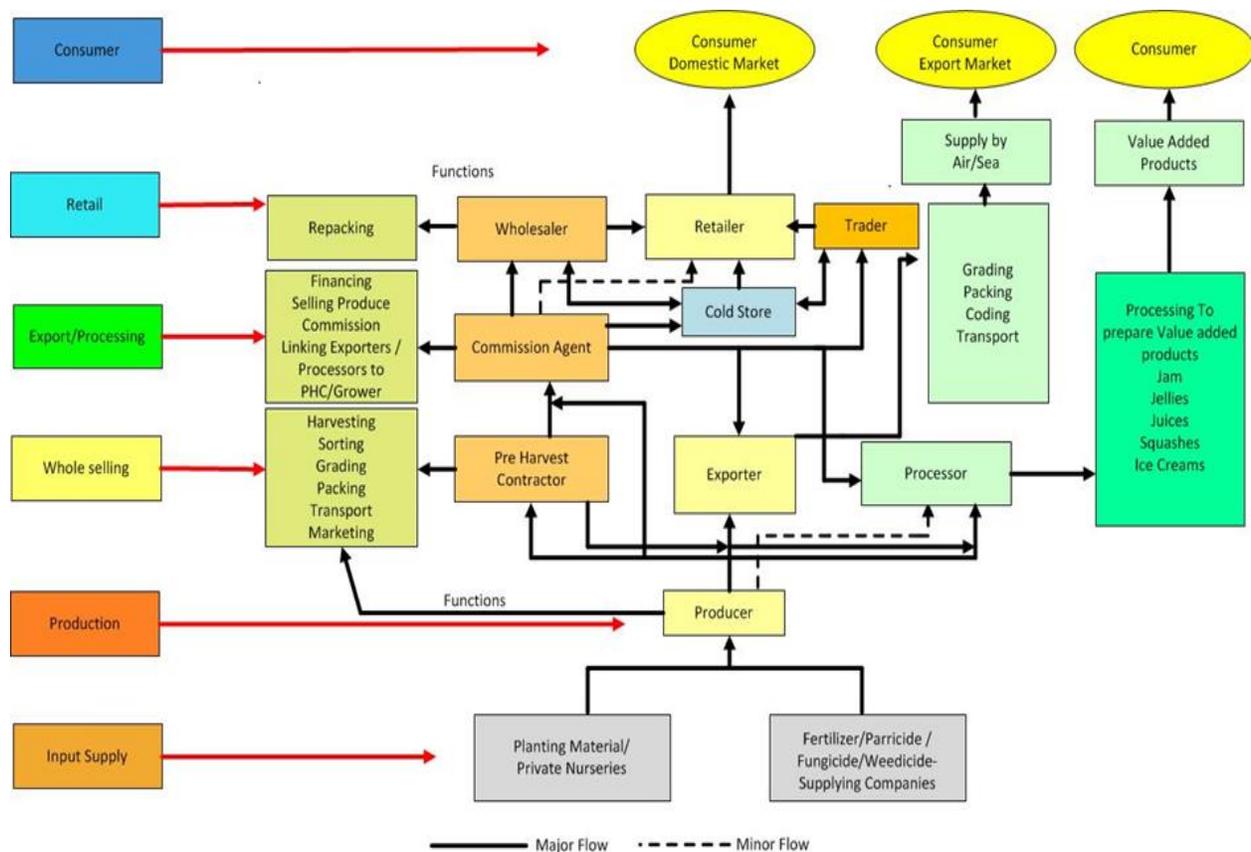
Peach is an important fruit in Pakistan and is available for human consumption from May till end of September. Key characteristics of the peach market are:

- Peaches traded and retailed with a short shelf life.
- A very small proportion of peach is processed into value-added products such as peach pulp, jams, drinks and ice cream.
- No public institution is working towards the development of cold chain parameters of peach export.
- There is limited research and development on peach production and handling is not properly disseminated to peach growers due to ineffective extension system.
- There are sanitary and phytosanitary issues.
- Swat does not have adequate processing, grading, packing, and cold storage facilities.

4.6 Peach Sub-sector Analysis:

Pakistani peach flows through multiple channels before it reaches the consumer or the processor and exporter. A diagrammatic presentation of multiple channels explaining the flow of produce is given below:

Figure 4: Peach sub-sector flow



4.7 Competitive Issues of Peach Value Chain:

Peach value chain faces different competitive issues listed below:

- Unavailability of reliable input supplies and planting material.
- Research and development on peach production and handling is not properly disseminated to peach growers due to ineffective extension system.
- Pakistani peach is generally delivered in an inferior and inconsistent quality that fetches a low price as global markets are more conscious about quality standards.
- The produce is graded and packed in a traditional manner and no standardization exists which leads to inefficiency of the marketing system.

- Unplanned storage leads to high wastage of the fruit. Pakistan does not have adequate processing, grading, packing, and cold storage facilities.
- Sanitary and phytosanitary issues.
- There is little development on the parameters of peach cold storage.
- Due to unavailability of processing facility in the area, C and D grade produce is mixed with the better quality produce which leads to inconsistency and results in low credibility for the buyers.
- There are little branding efforts and poor market linkages.
- Lack of awareness on export protocols and certification requirements.
- Sustainability of peach export to high-end markets would be at stake unless and until Pakistan effectively shows compliance to quality and safety standards.

4.8 Enabling Environment Constraints:

There are a number of constraints within the peach value chain faces, key constraints are:

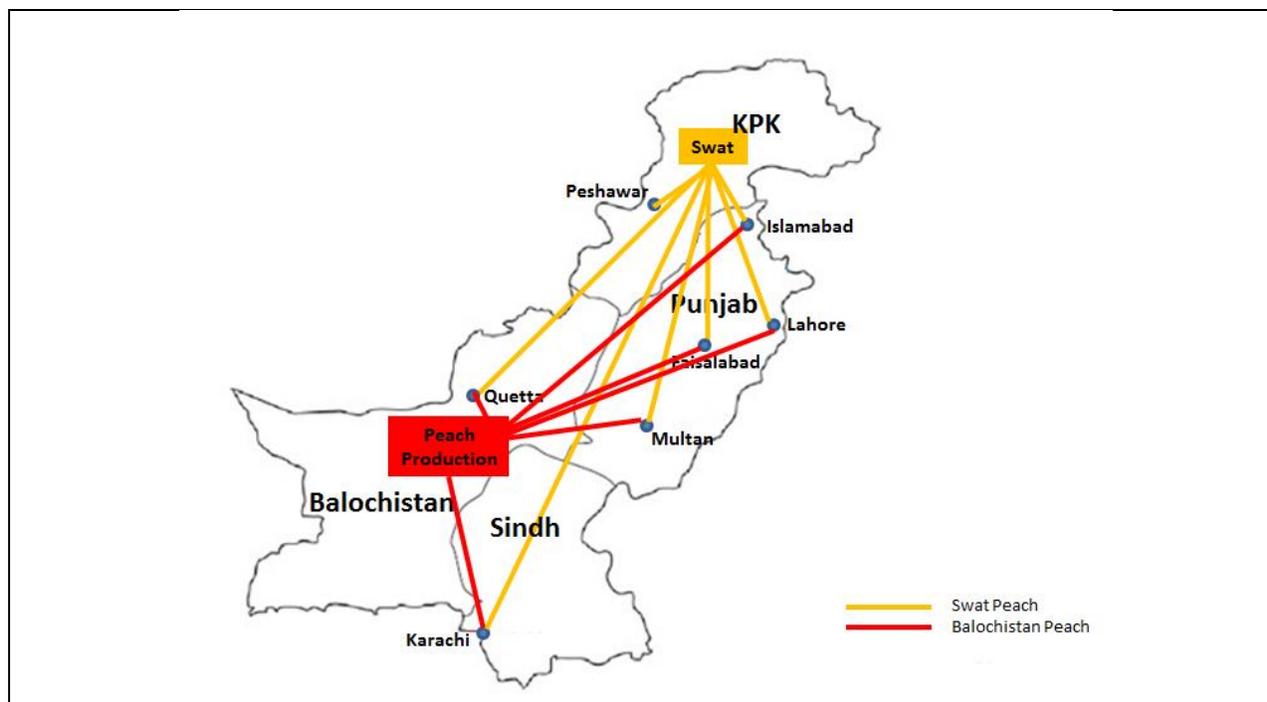
- **No formal trading platform in Swat** – Swat is rich in fruit production but trading facilities are limited to one wholesale fruit and vegetable market in Mingora. This market is in poor condition and is unable to fulfill the trading requirements of local production. A private trading platform in Matta, serves the trading needs to some extent. A proper trading platform with all the necessary facilities is required to be established in the area, linking the producers with potential buyers from all parts of the country.
- **Unavailability of reliable input supplies** – A majority of the farmers complained about adulterated or sub-standard input supplies (fertilizers and pesticides), which badly effects the quality and production. In addition, planting material was also reported to be unreliable and not true to type.
- **Lack of technical advice on GAP** – It was observed that peach growers were implementing traditional cultural/production practices which they have learned from their forefathers. Additionally, there is a lack of research-related input from r any government department or agency
- **Cold storage issues** – There is little or no implementation of regulations with respect to cold storage of commodities. Cold store owners do not accept any responsibility in case of damage to the produce.
- **Lack of alternate marketing channels** – A major part of the produce is dumped in the wholesale markets due to lack of alternate marketing channels, which results in overburdening of markets, lowering efficiency and price crashes.
- **Grading and packing standards** – Non-formulation/implementation of grading and packing standards leads to existence of multiple grades in the market which results in inefficient trade, mixed type of produce in a pack and lack of trust. Furthermore, performance of the market can't be gauged and prices of produce can't be compared due to non-standardization of the produce.
- **Market linkages** – Peach growers need to be linked to premium quality buyers and processors in the domestic market. In addition, export linkages in the shape of participation in international trade fares and introduction of Pakistani peaches in potential buying countries through commercial attachés is also required to be given due importance.

Necessary policy measures are required to be taken by the Government to remove the enabling environment constraints highlighted above.

4.9 Geographical Flow of Peach in Pakistan:

Balochistan and KP (Swat) are the two main peach producing areas in Pakistan. Only KP (Swat) has been considered for this study.

Figure 5: Geographical Flow of Peach



There is a general perception that the price of a product increases as it is supplied to distant local markets and this increase in price is directly proportional to the distance. It may be correct in case of manufactured goods due to uniformity of the product and one supplier controlling the product supply at a particular price. In case of agricultural products, there are some other issues determining the price of a produce in the market, which include:

- The product is not uniform – there are no grading and packing standards.
- Due to the lack of grading and packing standards, the price of produce in different markets cannot be compared precisely.
- Product is perishable – It can't be stored beyond a certain limit.
- Any quantity of produce reaching the market is normally supposed to be sold on the same day.
- There are numerous suppliers – supply of the product to a specific market can't be controlled or determined.
- Price is determined after the product reaches the market – price is determined by the buyers not the sellers.

- Quality of produce – price of the produce depends on quality of produce marketed to a specific market.
- Supply and demand situation –on a specific day plays a major role in determining the price.

Reasons behind the Geographical Flow of Peach:

- **Price:** The supplier considers price as the main factor when deciding which market to target.
- **Major markets:** The produce is mainly dispatched in bulk to the major markets and further marketed to the surrounding smaller markets by traders (*ladania*).
- **Export points:** Although peach is exported in small quantities, this affects the flow of produce from producing areas to export points.
- **Consumer preference:** The demand for peach is high in large cities among the communities with better purchasing power.
- **Quality:** Premium quality produce is marketed to large cities considering purchasing power and consumer preference.
- **Binding with the commission agents:** Most of the producers/PHC obtain_s finance from the commission agents with a commitment to supply their produce to them.
- **Maturity stage of produce:** Mature produce is marketed to nearby markets.
- **Processing and storage facilities:** Availability of processing and cold storage facilities also impacts the flow of produce.

4.10 Critical Factors Influencing Peach Flow:

There are numerous factors which have an impact on the flow of peaches through multiple channels and to different local and export market destinations and these are explained below:

Market Dynamics

Trade of fruits and vegetables takes place in wholesale markets, mostly established under public setup, but it is dominated by the commission agents, traders and wholesalers. Commission agents occupy a central place and are the most influential players in the value chain. Production, harvesting, post-harvest and marketing systems are poorly developed and returns are distributed unevenly, with a maximum share for middlemen which leaves a small amount for the producers.

In domestic markets a majority of the produce is routed through the traditional *mandi* system and alternate supply channels are almost nonexistent which leads to overburdening of the markets and thus lowers efficiency. However, in developed countries only a part of the produce is traded through established markets and is usually routed through alternate supply channels instead. Grades and standards of the produce for domestic marketing, with respect to size and quality, are either nonexistent or not implemented. Thus, price comparisons are difficult and market performance can't be evaluated. The flow of reliable market information is poor which makes it difficult for the producers/PHCs to formulate an appropriate marketing strategy.

Stakeholders

There are different stakeholders in the peach value chain and every stakeholder has a specific role to play. The performance of value chain determines the flow of produce and is dependent on the behavior of all the stakeholders. These stakeholders include input suppliers, producers, pre-harvest contractors, truck stand/loading point owners, transporters, commission agents, traders, wholesalers, cold store owners and retailers.

Competitive Fruits in the Market

During the start of the peach season, in early May, citrus has finished, mango has not started which creates a gap in the market. This is a good time for peach growers as the early variety fetches a good price. This pushes the producers to get maximum benefit by increasing the supply to the market. It was observed during the visit of producing areas that producers were happy with the return from early varieties.

Climatic Conditions

Climatic conditions also influence peach production, its quality and flow. During the rainy season, intensity of rains increases the probability of disease affecting the fruit. Hailstorms cause physical damage to the fruit and fruit dropage increases subsequently. The cost of preventing the fruit from disease increases. The farmers would want to sell the produce as soon as possible that increases the supply of fruit in the market resulting in a decrease in prices. Farmers are left with no option except to harvest and dispatch the produce to the markets at the existing price as they don't have facilities of storage and processing.

4.11 Gender Constraints:

Traditionally men own and manage the peach farms and there is little or no female contribution post-harvest handling activities such as packing, sorting and grading. Females are normally discouraged to participate in outdoor activities due to cultural norms. Males are preferred for the tedious job of traditional peach harvesting and packing. However, females are actively involved in preparing food for the labor involved in harvesting activities.

Females are always preferred for other agriculture crops like chilies and cotton-picking. Nonetheless, the peach sector has a huge potential to provide employment opportunities to female workers who can be good resources for sorting, grading and packing activities.

5. Economic Gains Across the Value Chain

5.1 Price Structure and Cost Drivers:

When peach produce moves from the production point to the end user, it passes through different intermediaries which charge a price from the next buyer depicting a price structure. The cost drivers consist of all the costs incurred by different actors at each stage of the value chain, including production, transportation, purchase price, labor and other material costs.

In order to evaluate the profitability for each actor, the data was collected from various farm owners (different farm sizes and experiences) located in Swat district and each actor involved in peach value chain was interviewed. Both team members used the same template to collect data about the financial performance of implementation and management of the farms and the corresponding economic outputs of these farms.

Price differences between two market levels are called marketing margins and are commonly used to examine the differences between producer and consumer prices for the same quantity of a commodity. Marketing margins represent the price charged by market intermediaries for the services provided, including buying, packing, transportation, storage, and processing. Under competitive market conditions, marketing margins are the result of the demand for marketing services and are equal to the minimum cost of services provided plus normal profit.

There are many complications in formulating standard prices, which can be summarized as: (a) day-to-day variation in prices due to supply and demand effects, (b) varietal differences, (c) grade differences, (d) price variation over the season, (e) basis for average out the various grades and varieties, (f) price differences in consumption and production areas and (g) variation in freight charges. All the actors in the value chain were visited in the producing areas and in different markets of KP, Punjab and Sindh. Information regarding purchase and sale prices, costs, and services/activities were obtained at each actor level of the value chain. Price and quantity of a pack keeps on changing on a daily basis and market basis. This is influenced by many factors - supply and demand being the most important one. There was more emphasis on obtaining the information regarding price structure and cost drivers to reach a logical conclusion to estimate the costs and margins of the intermediaries in percentage terms which could be applied, irrespective of price of the commodity, at any point in time to evaluate the situation. The price of peach was collected on the basis of a crate/carton, since most of the marketing cost operations are based per crate/carton. Thereafter, per KG price and costs were calculated to estimate the margins, since retail selling is normally done on per KG basis. For the purpose of estimating the sale price of the produce, the recovery ratio of different grades of harvested produce as presented in the tables above was used to get representative information. The information collected was cross-checked as the selling price of one intermediary is the buying

price of another. Also, different intermediaries know the nature of operations, costs and normal range of margins.

Table 2: Structure and Cost Drivers at each actor Level

| | | Swat Peach | | |
|----------------------------|-----------------------|-------------|--------------|-------------|
| | | US\$/Kg | PKR/Kg | % |
| Retailer | Average Selling Price | 0.65 | 63.75 | |
| | Average Buying Price | 0.40 | 39.50 | 62% |
| | Gross Profit | 0.25 | 24.25 | 38% |
| | Other Costs | 0.08 | 8.30 | 13% |
| | Net Profit | 0.17 | 15.95 | 25% |
| Wholesaler | Average Selling Price | 0.40 | 39.50 | |
| | Average Buying Price | 0.35 | 34.50 | 87% |
| | Gross Profit | 0.05 | 5.00 | 13% |
| | Other Costs | 0.03 | 2.50 | 6% |
| | Net Profit | 0.02 | 2.50 | 6% |
| Commission Agent | Commission Earned | 0.04 | 3.76 | |
| | Gross Profit | 0.04 | 3.76 | 100% |
| | Other Costs | 0.02 | 1.88 | 50% |
| | Net Profit | 0.02 | 1.88 | 50% |
| Transporter | Truck Rent | 0.03 | 2.50 | |
| | Gross Profit | 0.03 | 2.50 | 100% |
| | Other Costs | 0.01 | 1.35 | 54% |
| | Net Profit | 0.02 | 1.15 | 46% |
| Peach Grower | Average Selling Price | 0.40 | 39.33 | |
| | Average Cost | | | |
| | Production Cost | 0.13 | 12.42 | 49% |
| | Harvesting Cost | 0.05 | 5.00 | 20% |
| | Packaging | 0.08 | 8.08 | 32% |
| | | 0.26 | 25.50 | 100% |
| | Gross Profit | 0.14 | 13.83 | 35% |
| | Other Costs | | | |
| | Transportation | 0.05 | 4.63 | 52% |
| Commission & other charges | 0.04 | 4.27 | 48% | |
| | 0.09 | 8.89 | 100% | |
| Net Profit | 0.05 | 4.94 | 13% | |

The table above elaborates the profit margins and costs involved in the peach value chain at each actor level. In addition, a breakdown of all costs incurred by each intermediary has also been presented. The total cost of each intermediary was deducted from the gross margin to reach the net profit margin. The production, harvesting and packing costs of peach producer were estimated at USD 0.13, 0.05 and 0.08 per KG respectively (PKR 12.42, 5.00 and 8.08 per

KG respectively) resulting in a total of USD 0.26 per KG (PKR 25.50 per KG). Upon deduction of these costs from the average selling price of USD 0.40 (PKR 39.33), the producer received USD 0.14 (PKR 13.83) per KG as gross profit. When transportation cost, commission and other charges were deducted from the gross profit, the producer received USD 0.05 (PKR 4.94) per KG as net profit. Similarly, the transporter received USD 0.03 (PKR 2.50) and USD 0.02 (PKR 1.15) as gross margin and net profit respectively, the commission agent received USD 0.04 (PKR 3.76) and USD 0.02 (PKR 1.88) as gross and net profit respectively. The wholesaler and retailer received USD 0.05 (PKR 5.00) and USD 0.25 (PKR 24.25) per KG as gross profit and USD 0.02 (PKR 2.50) and USD 0.17 (PKR 15.95) per KG as net profit respectively. In case the producer sells the orchard to the Post-Harvest Contractor (PHC), the returns previously received by the producer, are shared by the two. In this case, the producer gets a gross margin of USD 0.14 (PKR 13.42) per KG and PHC receives USD 0.27 (PKR 26.25) as gross margin.

5.2 Distribution Margins:

The following trend presents how cost drivers impact each actor and contribute to the final price actor after actor.

The trend also explains the typical domestic supply chain scenario and how the distribution margin (DM) increases at each actor level and the ultimate price reached at optimum value passing through different channels of the peach value chain. In this regard, two scenarios have been built i.e. the structure of supply chain in case of self-marketing farm sold to pre-harvest contractor. In case of self-marketing, the absolute cash margin of producer was calculated on the basis of sale price of one KG of produce in the wholesale market whereas in case of selling the orchard to the PHC, the absolute cash margin of the producer was calculated as the sale price of the orchard per KG harvested by the contractor. The distribution margin of contractor is calculated by deducting the purchase price and commission per KG from the sale price in the market. The distribution margin of commission agents is the commission on sales revenue. Similarly, the distribution margins of wholesalers and retailers were calculated on the basis of their purchase and sale prices.

There is a general perception that intermediaries involved in the marketing of agricultural produce take away a major share of the total profit. In order to acquire a more realistic picture, distribution margins for each market intermediary were estimated. The distribution margin or price spread is the difference between the price paid and received by each specific market intermediary.

Figure 6: Distribution Margin of Typical Domestic Peach Value Chain - Self Marketing

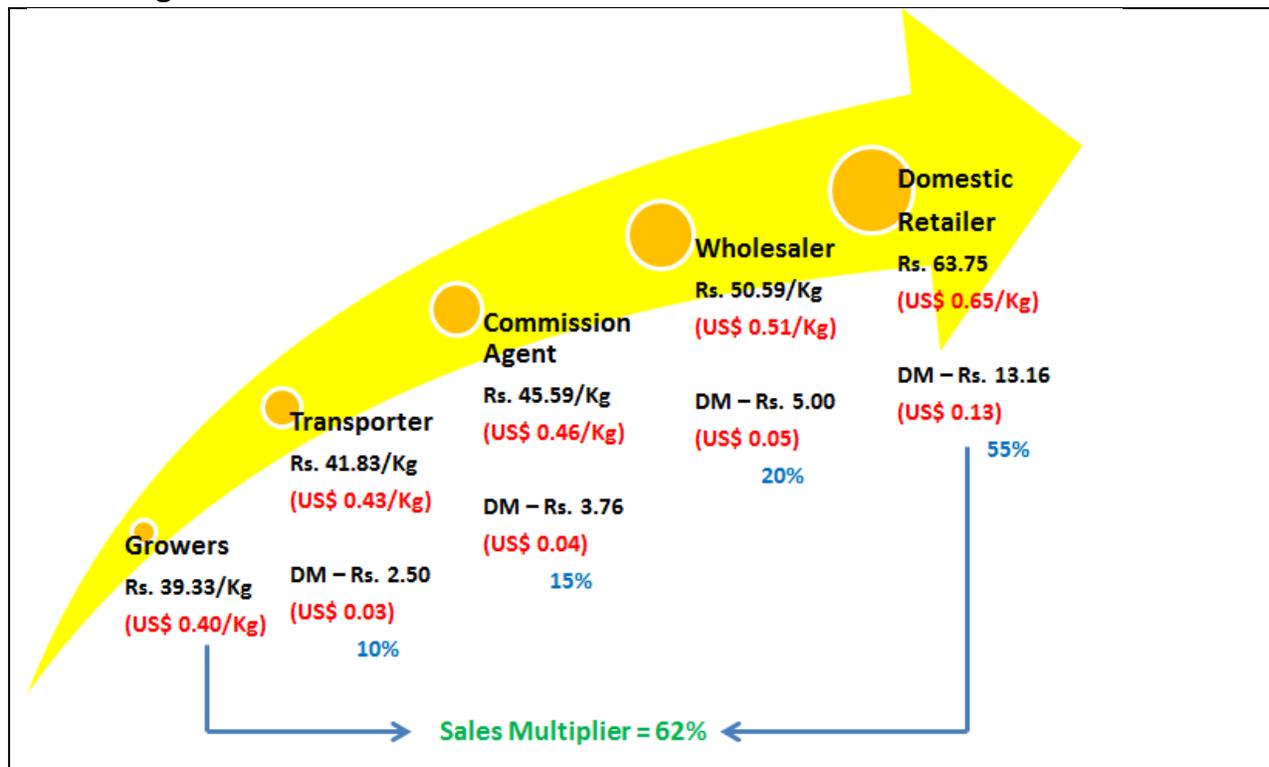
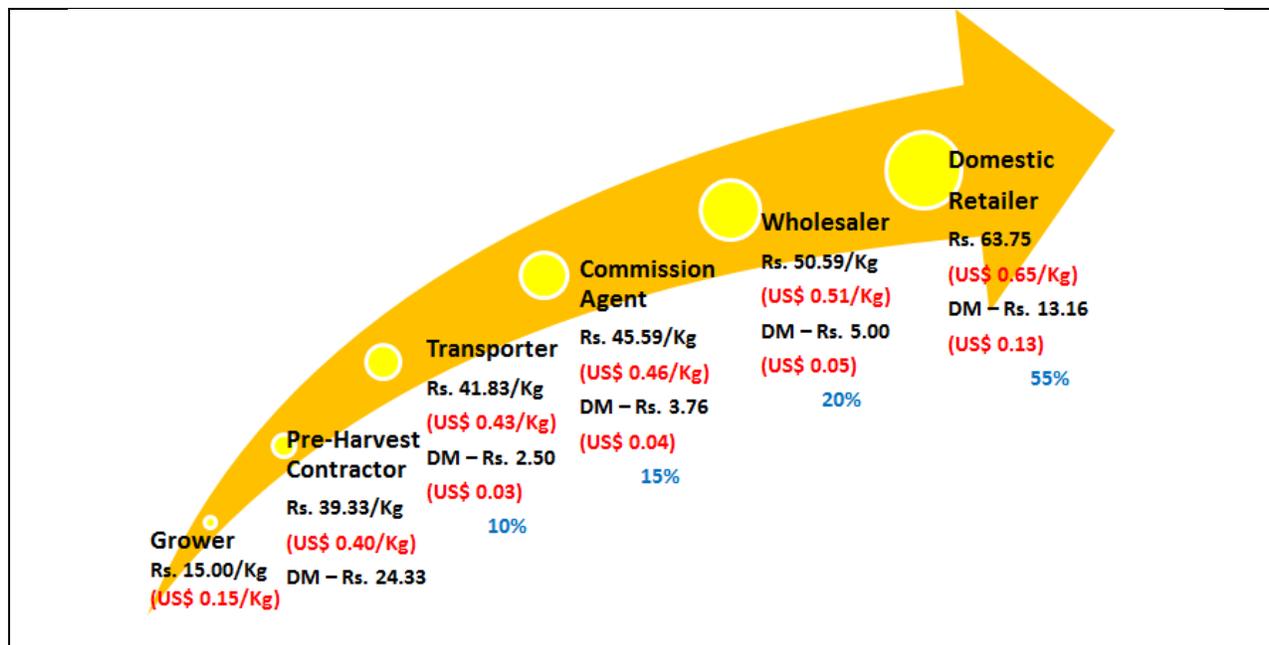


Figure 7: Distribution Margin of Peach Value Chain – Farm sold to Pre-Harvest Contractor



As shown in the above graphic scenarios, the retailer received a maximum share of 54 percent in the distribution margin while the wholesaler, commission agent and transporter received 20 percent, 15 percent and 10 percent share in distribution margins respectively. The retailer's share in the distribution margin is calculated on the basis of the assumption that the total produce purchased by him is sold at a given price. In reality, this is not the case. The retailer is the last owner of the produce and has to bear all sorts of losses as part of produce left unsold fetches a much lower price next day.

5.3 Marketing Strategies:

During field visits and interviews with the different actors involved in peach value chain, it was revealed that there are two types of practices commonly used by the farm owners i.e. farm managed, operated and marketed by owner himself and farm sold to pre-harvest contractor at maturity stage.

Different analysis shows that there is a gap in the sales value if the farm was not managed and marketed by the owner. Through self-marketing there is still potential to sell the produce at a much premium price with the use of latest marketing techniques and modern packaging. On the other hand pre-harvest contractors only use a traditional way of selling the produce through commission agents.

5.4 Employment Generation and Economic Gain across the Value Chain:

As the produce moves from its production point to the consumer, economic activity is generated at each stage of the value chain. There are some direct returns associated with the trade of the produce which results in the shape of margins. In addition, employment is also generated at each step to carry on different activities which results in economic gains for all participating people.

For analytical purposes, a quantity of six tons of produce was made the basis of estimation of employment generation along the value chain, because in domestic marketing peaches are packed in crates of different weight sizes ranging from 3.5 KG to 10 KG. Moreover, six tons load comprising 1000 crates of different sizes was found to be the most common mode of transporting the produce to the destination markets.

All other activities have been estimated accordingly. For instance, 46.67 man days, of harvesting labor are required to harvest, sort, grade, pack and load 1,000 crates of six KG each. Similarly, labor involved in all other activities like preparation of crates, transportation to loading point/truck *adda*, loading on the truck, transportation to wholesale market, unloading, auctioning, carrying to wholesaler's/trader's premises, repacking, wholesaling, onward transportation to collection and retailing point and retailing has also been estimated in man days. The table above shows that when six tons of produce moves along the value chain, from harvesting to the consumption point, employment equal to 114.17 man days is generated. When these man days were converted into jobs, as per assumptions made, it became equal to 0.44 jobs, which means

0.44 FTE Employment is created as six tons of produce moves along the value chain and it generates an economic gain for all the participants equal to USD 696 (PKR. 68,500).

Activity wise analysis and economic gains associated with each activity for domestic market have been presented in the table below:

Table 3: FTE Employment Calculation for Domestic Market - Consignment Size 6 tons

| Description of activities | Man Days | PKR | Estimation of time to complete the work |
|---|---------------|---------------|---|
| Harvesting, sorting/grading, packing, loading 6 tons of produce and taking it to van | 46.67 | 28,000 | 46.67 mandays required to prepare 1,000 crates of 6 Kg. each @ Rs. 600 /MD (including food cost) |
| Preparation of 1,000 crates | 5.00 | 3,000 | 5 persons work for 8 hours to complete the work |
| Transportation to truckstand | 1.50 | 900 | 2 persons work for 6 hours to complete the work |
| Loading on the truck | 2.00 | 1,200 | 4 persons work for 4 hours to load the truck |
| Transportation to wholesale market | 6.00 | 3,600 | 3 persons work for 16 hours to complete the work |
| Unloading at wholesale market | 2.00 | 1,200 | 4 persons work for 4 hours to complete the work |
| Auction by Commission Agent | 1.00 | 600 | 4 persons work for 2 hours to complete the work |
| Purchase by wholesaler (25%)/trader (50%)/retailer (25%), transporting to their premises, repacking and selling | 15.00 | 9,000 | 25% produce is purchased by the wholesaler, 50% by trader and 25% by the retailer. Trader takes the produce to other smaller markets where it is again auctioned and sold to Labor share has been taken according to the % of product purchased |
| Transportation to wholesaler premises | 3.00 | 1,800 | 3 persons work for 8 hours to complete the work |
| Re-packing | 4.00 | 2,400 | 4 persons work for 8 hours to complete the work |
| Selling by Wholesaler | 4.00 | 2,400 | 4 persons work for 8 hours to complete the work |
| Purchase by retailer | 1.00 | 600 | 1 person work for 8 hours to complete the work |
| Transportation to the collection point (Nigrani) by | 4.00 | 2,400 | 4 persons work for 8 hours to complete the work |
| Collection point charges (Nigrani) | 3.00 | 1,800 | 3 persons work for 8 hours to complete the work |
| Transportation to the retail shop | 6.00 | 3,600 | 6 persons work for 8 hours to complete the work |
| Selling by Retailer | 4.00 | 2,400 | 4 persons work for 8 hours to complete the work |
| Cold store scenario | 6.00 | 3,600 | 6 persons work for 8 hours to complete the work |
| Total Man Days | 114.17 | 68,500 | |

In 2013, a total quantity of 34,394 MT was sold by partner peach SMEs in the domestic markets resulting in creation of 2522 FTE indirect employment across the value chain, from the point of harvesting till retailing, which generated an economic gain worth USD 3.98 million (PKR 393 million) to all the participants of the value chain. In addition, the USAID Firms Project has estimated that during 2013, 1,887 direct FTE jobs have been created at peach SME farms at the production level, making the total jobs created equal to 4409. By assuming that the direct FTE jobs (1,887) received the same level of economic gain, as was estimated above for indirect jobs, the economic gain to direct FTE jobs comes out to be USD 2.99 million (PKR 294 million). The cumulative economic gain to total, direct and indirect FTE employment, from production to retail point has been estimated to be USD 6.97 million (PKR 686 million).

5.5 Assumptions for Labor and Sales Multiplier:

For conducting analysis and estimating labor and sales multipliers, certain assumptions were made. These assumptions have been made on the basis of information collected from peach growers and other actors of value chain through interviews, FGD and other primary and secondary sources. An effort has been made that the assumptions should be realistic and should represent the on-ground situation.

The value chain can be divided in two distinct activities – production and marketing. Labor involved in production and returns associated with that can be directly calculated. Here, for the purpose of estimation of FTE employment generation during marketing of produce, the labor activities were recorded from the harvesting point till the produce is retailed to the consumers. On the basis of interviews and discussions with peach producers and other actors of the value chain, certain assumptions were made which have been given below:

1. Farm size considered for calculation purpose = 1 Acre
2. Basis of estimation = Harvesting and marketing of 1,000 crates/cartons of produce
3. No. of plants per acre = 175
4. Production per plant = 57 Kgs
5. Average wt./crate = 6KG
6. One truck load = 1,000 crates/cartons
7. Total weight per truck load = 6 MT
8. Average wage rate = PKR. 600/MD
9. One Man-day (MD) = 8 Hours
10. One FTE = 2,080 Hours per annum
11. No. of persons work for 8 hours to prepare 300 crates of 6 Kg. each = 14 persons
12. Applicability of the model = this model would only work if there is a change (increase in the production) as production is the basis of calculation.
13. Extent of indirect job estimation = Jobs created at the first level of indirect sales have been estimated e.g. only transportation cost is calculated and jobs created in sales of fuel, spare parts etc of the transportation business have not been estimated.

Assumptions for the Sales Multiplier are:

1. Farm size considered for calculation purpose = 1 Acre
 2. No. of plants per acre = 175
 3. Production per plant = 57 KG
 4. Estimated production per acre = 10,000 Kgs
 5. Average crate weight = 6 KG
 6. No. of cartons/crates per acre of 6 KG each = 1,667 cartons/crates
 7. Truck load per 6 Kg crate/carton = 1,000
 8. No. of produce grades = 4 (A,B,C,D)
- Percentage of produce grades =
- | | |
|---|-------|
| A | – 40% |
| B | – 20% |
| C | – 20% |
| D | – 20% |
9. Average farm gate price = PKR. 39.33/KG
 10. Average selling price at retail level = PKR. 63.75/KG

Applicability of Multiplier = % margins would remain the same, if:

- (a). Produce sale is marketed through the established value chain,
- (b). There would not be major structural changes in the value chain system.

The above-mentioned assumptions were taken into account to calculate the labor and sales multipliers for the peach sector. A conservative approach has been used for the calculations and no inflation adjustment has been accounted for and this suffices the minimum growth expected because of the above-mentioned variables. These multipliers can be used further for any increase in the labor, production and sales. These multiplier factors will not be changed until and unless there will be a major change in the value chain cycle.

5.6 Labor and Sales Multipliers:

Labor Multiplier Calculation:

| | |
|---|--|
| Total Man days estimated (as shown in above section) | 114.17 |
| No. of FTE hours per annum | 2,080.00 |
| One man day hours | 8.00 |
| Labor Multiplier formula= | $\frac{\text{total man days estimated} \times \text{one man day hours}}{\text{total FTE hours per annum}}$ |
| | $\frac{114.17 \times 8.00}{2,080.00}$ |
| Labor Multiplier = | 0.44 |

It means 0.44 FTE Employment is created as 6 tons of produce moves along the value chain and it generates an economic gain for all the participants equal to USD 696.42 (PKR 68,500).

Table 4: Sales Multiplier Calculation

| Value Chain Actor | Gross Selling Price (PKR) | Distribution Margin (DM) | DM % | Overall Multiplier |
|-------------------------|---------------------------|--------------------------|------|--------------------|
| Grower | 39.33 | 39.33 | | |
| Transporter | 41.83 | 2.50 | 10% | |
| Commission Agent | 45.59 | 3.76 | 15% | |
| Wholesaler | 50.59 | 5.00 | 20% | |
| Retailer | 63.75 | 13.16 | 54% | |
| | | 63.75 | 100% | 62.08% |

Initial selling Price – PKR. = 39.33 (USD 0.40)

End selling Price – PKR. = 63.75 (USD 0.65)

Margin to be distributed - PKR. = 24.42

$$\text{Sales Multiplier formula} = \frac{\text{End selling Price} - \text{Initial selling}}{\text{Initial selling}} \times 100$$

$$\text{Sales Multiplier} = \frac{\frac{\text{Price}}{\text{Initial selling Price}}}{39.33} \times 100$$

$$\text{Sales Multiplier} = \frac{63.75 - 39.33}{39.33} \times 100$$

$$\text{Sales Multiplier} = 62.08\%$$

On the basis of assumptions and formulae given above, each activity was studied to calculate the Labor and Sales Multipliers to see the economic gains along the value chain, as the produce moves from production point to the consumer. Analysis of financial and employment data was conducted to determine the impact of project interventions on increase in sales and employment. Since the multiplier is calculated on percentage basis, it can be applied to the past, present and future data to calculate labor and sales.

5.7 Peach Sales and FTE Trend Analysis:

Labor and sales multipliers have been estimated under some assumptions earlier described in this report. These multipliers can be applied in light of these assumptions.

Peach Sales Data Variance Analysis:

Sale value is an outcome of quantity sold and price at which the produce is sold. In 2012, the sales value of SME farms (old beneficiaries) increased by 72 percent, against the baseline, in spite of one percent drop in production. In 2013, the increase in sales was 19 percent against a six percent increase in production in 2012.

Similarly, in case of new beneficiaries the increase in sales over the baseline was 85% in 2013, against 59 percent increase in production. Cumulatively the increase in sales for both old and new beneficiaries, in 2013 from the previous year, was 47 percent against 27 percent increases in production. This increase in sales at a higher value as compared to increase in production can be attributed to the good agricultural practices adopted by the SME farms due to project interventions and consequent improvement in the quality of produce. The variance analysis for the year 2012 and 2013 has been shown in table 5 and 6 respectively.

Table 5: Peach Sales Data Analysis - 2012

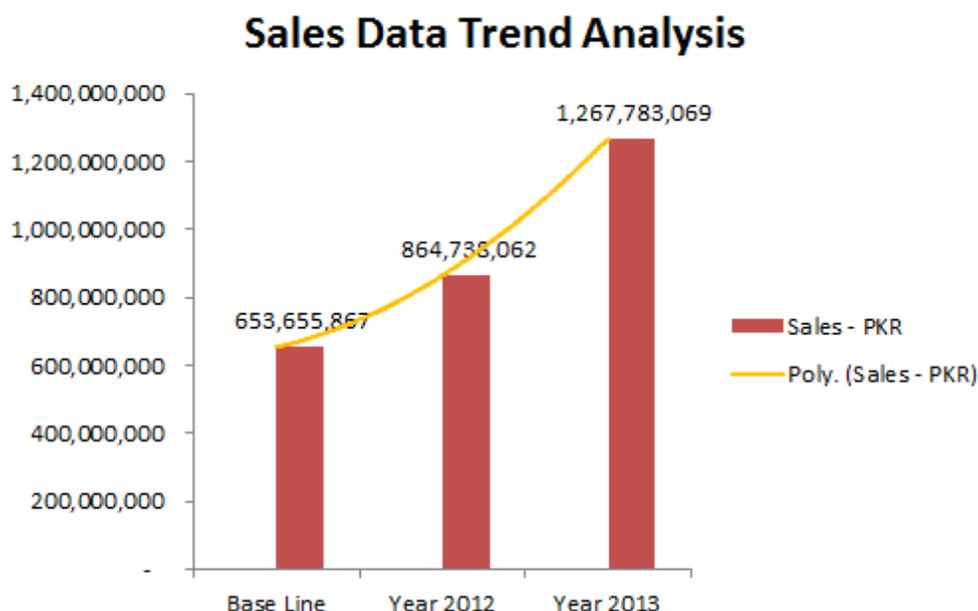
| | Base Line | | Year 2012 | | | | | |
|-------------------|---------------|--------------|---------------|--------------|---------------|-----|--------------|-----|
| | | | Actual Data | | Variance | | | |
| | Sales Kgs. | Sales PKR | Sales Kgs. | Sales PKR | Sales Kgs. | % | Sales PKR | % |
| Old Beneficiaries | 16,434,204 | 295,119,035 | 16,190,956 | 506,201,230 | (243,248) | -1% | 211,082,195 | 72% |
| New Beneficiaries | 10,823,134 | 358,536,832 | 10,823,134 | 358,536,832 | | | | |
| Aggregate | 27,257,338 | 653,655,867 | 27,014,090 | 864,738,062 | | | | |

Table 6: Peach Sales Data Analysis - 2013

| | Year 2013 | | | | | |
|-------------------|-------------------|----------------------|------------------|------------|--------------------|------------|
| | Actual Data | | Variance | | | |
| | Sales Kgs. | Sales PKR | Sales Kgs. | % | Sales PKR | % |
| Old Beneficiaries | 17,141,587 | 603,589,502 | 950,631 | 6% | 97,388,272 | 19% |
| New Beneficiaries | 17,251,972 | 664,193,567 | 6,428,838 | 59% | 305,656,735 | 85% |
| Aggregate | 34,393,559 | 1,267,783,069 | 7,379,469 | 27% | 403,045,007 | 47% |

Sales trend analysis can be seen in the graph below:

Figure 8: Sales Data Trend Analysis



FTE Employment Analysis:

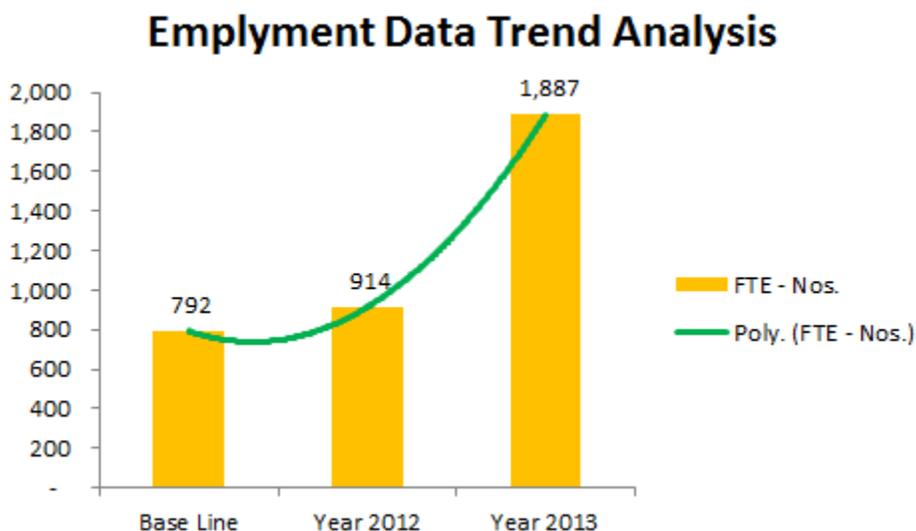
In 2012, the FTE direct employment of SME farms (old beneficiaries) increased by 28 percent against the baseline and in 2013, the increase in FTE employment was 70 percent over 2012. Similarly, in case of new beneficiaries the increase in FTE employment in 2013 was 162 percent over the baseline. Cumulatively, the increase in FTE employment for both old and new beneficiaries in 2013 was 107 percent.

Table 7: Employment Data Variance Analysis – 2012-2013

| Base Line | Year 2012 | | | | Year 2013 | | |
|-------------------|-------------|------------|----------|-----|--------------|------------|-------------|
| | Actual Data | | Variance | | Actual Data | | Variance |
| | FTE Nos. | FTE Nos. | FTE Nos. | % | FTE Nos. | FTE Nos. | % |
| Old Beneficiaries | 434 | 555 | 121 | 28% | 946 | 391 | 70% |
| New Beneficiaries | 358 | 358 | | | 940 | 582 | 162% |
| Aggregate | 792 | 914 | | | 1,887 | 973 | 107% |

Employment Trend analysis can be seen in the below graph:

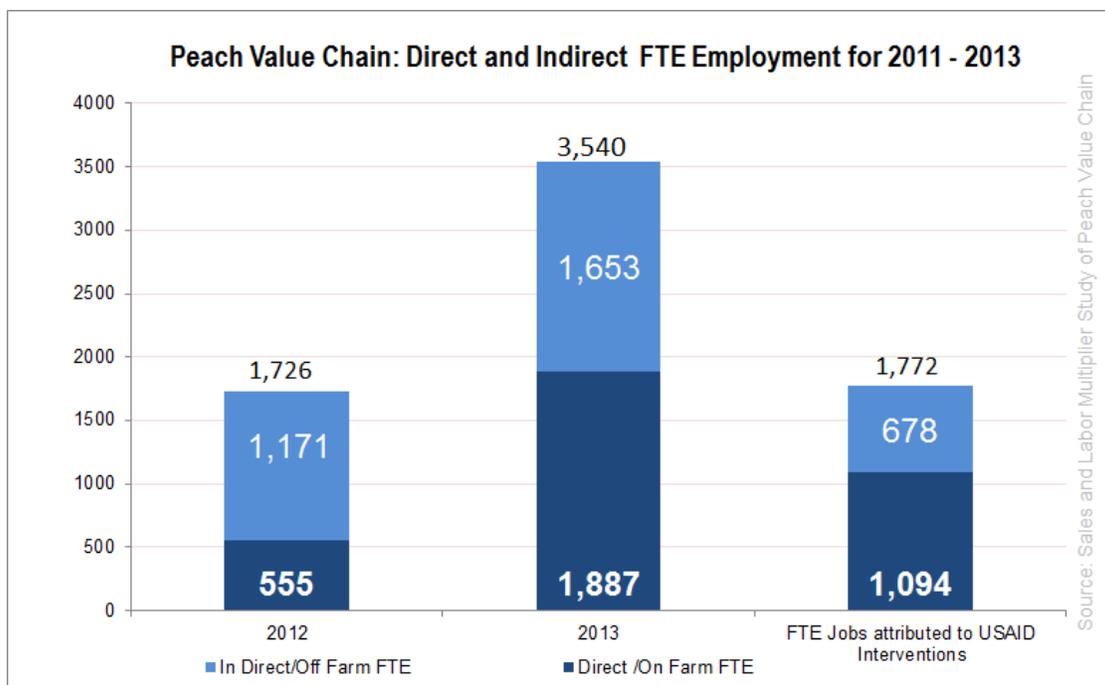
Figure 9: Employment Data Trend Analysis



5.8 Direct and Indirect FTE Employment in 2011-2013:

Employment opportunities can be divided in two categories: direct or ‘on-farm’ and indirect or ‘off-farm’ opportunities. Direct or on-farm opportunities involve operations being performed on the farm from the production stage till the produce is sold to the first buyer. Indirect or off-farm opportunities are those which are a result of operations starting from the point of purchase till the produce is sold to the consumer or export point. A graphical presentation of the situation is shown in the chart below:

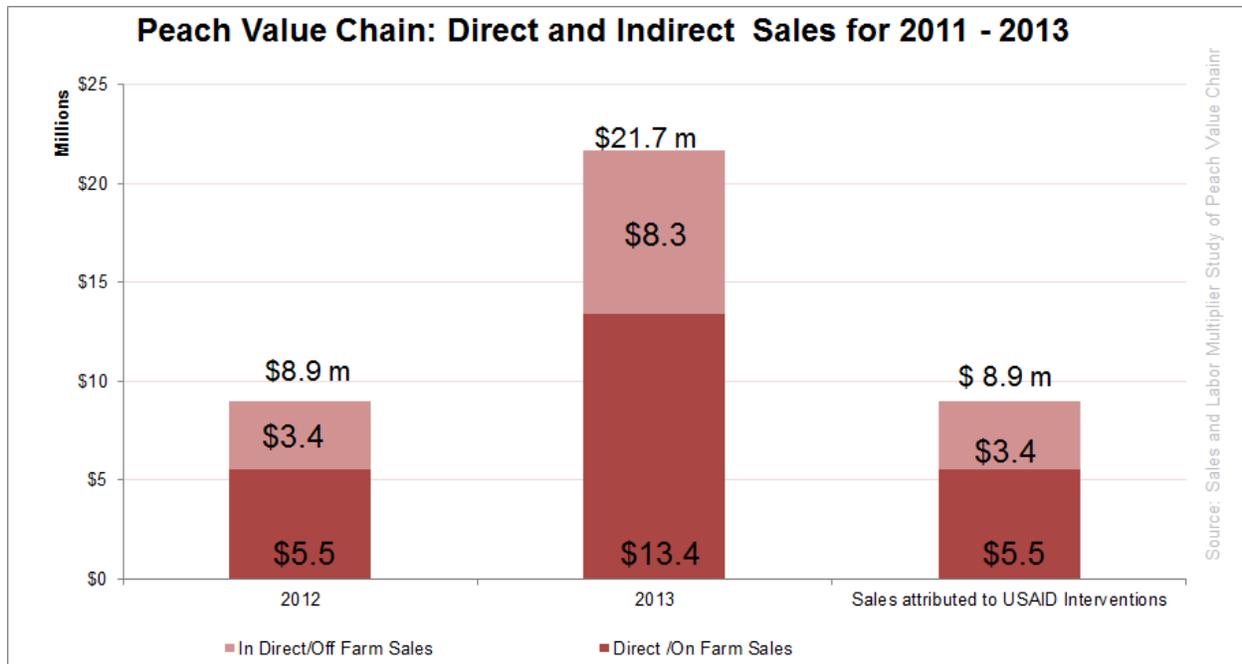
Figure 10: Direct and Indirect FTE Employment for 2011-2013



In 2012, there were 1,726 total FTE employment opportunities at SME farms, 555 direct or on-farm and 1,171 indirect or off-farm. These opportunities increased to a total of 3,540 in 2013, 1,887 on-farm and 1,653 off-farms as a result of the USAID Firms Project’s interventions. The net increase in on-farm and off-farm employment opportunities has been estimated to be 1,094 and 678 respectively making a total net increase of 1,772 FTE jobs which can be attributed to the USAID Firms Project’s interventions.

5.9 Direct and Indirect Sales in 2011-2013:

The section below highlights the performance of SME farms (before and after the USAID Firms Project’s interventions) between 2011 and 2013. Sales are divided in two categories – direct or on-farm sales and indirect or off-farm sales. Direct or on-farm sales include total sale value of produce received by the producer at farm gate or at first selling point. As the produce moves along the value chain there is an increment in its sale value till it reaches the consumer in domestic market or is sold to an importer in the destination market. The sale value of produce over and above the sale value of producer is called indirect or off-farm sale. Indirect sales can be calculated by multiplying the direct sales with sales multiplier. Performance of SME farms in this regard has been shown in the chart below.



In 2012, the total sales value of the produce was USD 8.9 million out of which direct sales were of USD 5.5 million and indirect sales were USD 3.4 million. In 2013, the total sale value of produce was USD 21.7 million with direct sales of USD 13.4 million and indirect sales of USD 8.3 million. This results in a total net increase of USD 8.9 million in sales with USD 5.5 million direct and USD 3.4 million indirect sales in 2013 over and above the sales in 2012, a result of USAID Firm Project's interventions in peach SME farms.

6. Conclusion and Recommendations

6.1 Conclusion:

Peach is an important fruit of Pakistan and is given its due priority. During the last two decades, an increase of 431 percent in cultivation area and 196 percent in peach production has been recorded.¹¹ KP and Balochistan are the two peach producing provinces of Pakistan with KP enjoying a major share. KP produces 70 percent¹² of Pakistan's peaches and Swat is a leading peach producing area. Due to the large number of peach varieties with different maturity timings, the availability window of fruit is reasonably long, ranging from early May to mid-September. Fruit placed in cold stores further extends the availability period for about fifteen days.

Despite the fruit becoming popular among the producers of Swat, indicated by the increase in area and production, the sector faces several constraints which include traditional agricultural practices, lack of technical know-how, unreliable input supplies and planting material, scarcity of proper equipment, lack of formal training on good agricultural practices, orchard management and post-harvest handling of produce, resulting in a high-waste ratio.

The role of the government appears to be very passive in providing information to the growers regarding latest production techniques and in the provision of reliable input supplies.

The total produce is marketed to wholesale markets in the country by making grades and packs of everybody's own choice or as per direction of the commission agent. Cash is obtained from commission agents to meet immediate cash needs and undertake production practices. This common practice limits the choice of the producer to market the produce independently.

Due to non-availability of processing facility in the area for C and D grade fruit, producers are not left with any option except mixing the inferior quality produce with good quality which leads to an increase in marketing costs and sales of produce at a low price. Due to the high perishable nature of fruit; it needs to be transported in reefer containers, at least to the distant markets to maintain its freshness. In reality, this facility is not available or is not being used appropriately. Furthermore, the fruit is stored in cold stores to enhance its shelf life or to avoid distress selling and glut in the market. Due to unavailability of appropriate cold storage facilities, it has been observed that placing of produce in the cold store is highly risky.

Exposure of growers and farmers to trainings and workshops for learning purposes is very limited. Trainings and workshops are conducted on a limited scale too.

¹¹ Source: Agricultural Statistics of Pakistan 2010-11.

¹² Source: Agricultural Statistics of Pakistan 2010-11.

The export of produce is still a neglected area as little quantity of fruit is exported in an informal manner. It needs to be given due attention by linking the producers with export markets to enhance sales revenue.

6.2 Recommendations:

The importance of peach in human nutrition is well-known. Peach plays an important role in balancing the diet by providing energy-rich nutrients. The region of Swat has rich topographic and climatic endowments and variations in soil on which a large range of fruits, such as peaches are grown. Swat peach industry needs to move from a production-driven industry to a market-focused one, and the production of peaches meeting specific market requirements should be facilitated.

Productivity:

- ✓ Growers should be given training on a regular basis in order to enhance their capacity to manage farms professionally and as per the requirements of GAP to prepare an appropriate marketing strategy independently for successful marketing of all the grades of their produce. In order to have effective results, Technical Field Officers (TFOs) may be appointed for visiting the peach farms on a regular basis with the objective of providing information/guidance regarding latest farm management techniques in order to have better yield and quality.
- ✓ Small processing facilities may be developed close to peach growing areas. These facilities can process C and D grade produce into canned products and preserve the produce in sugar syrup for a longer span of time. This window will immediately reduce significant number of post-harvest losses and increase the profitability of C and D grade produce.
- ✓ Availability of graders in the pack houses is necessary to meet the buyer's grading requirement of size, weight, number of pieces in a specific weight, uniformity of a lot, manually this is not possible in an efficient manner and up to the required degree of accuracy. In the light of above, packing areas may be equipped with graders.
- ✓ International trips may be arranged for peach growers so that they can learn new techniques and technologies and stay abreast with latest agriculture trends for peach sectors. Activities such as this can also create opportunities to explore export options in modern markets.



Singapore based company *Sun-Moon* specialized in packed fresh fruits in syrups

Effective Marketing:

- ✓ Market strategy may be developed to provide necessary information and guidelines to the growers so that they can market their produce in a more profitable manner and as per

requirements of the customer. Corporate marketing is an area which has huge potential to accommodate the peach sector. Some sustainable linkages should be developed with the corporate sector such as modern retail and large-scale food processing companies. In addition, a structured model can be devised in collaboration with some courier company.

- ✓ International markets may be captured with a highly focused and professional approach. There must be a considerable pool of international buyers. These diverse portfolios will not only help exporters learn different market behaviors but also allow the export process to continuously grow as well.
- ✓ Since this rapidly changing world is focusing on the presentation of products, modern packaging has become a vital part of agriculture product business. Farmers must be educated about the importance of modern packaging along with physical samples of packaging material. It is recommended to facilitate farmers with modern and latest packaging material on cost-sharing basis at least for one season.
- ✓ The project should arrange some export shipments on a trial basis by directly bearing the costs. This initiative will serve the vital purpose of growers' education and training about export procedures and standards. It can create an immediate impact by convincing farmers that they can do similar business operations and increase their profitability. This will also enhance farmers' confidence and will make them realize the potential benefits associated with export of peaches.



Modern Packaging Trends

Economic Benefit Analysis:

- ✓ Financial benefit analysis of export shipments should be shared with all the partner farms and other related beneficiaries.
- ✓ Partner farms and other related stakeholders may be provided assistance in preparation of financially viable business plans. Seminars on business planning should be arranged for the beneficiaries.

Awareness Campaigns:

- ✓ An Awareness campaign may be designed to educate peach growers, targeting main peach growing areas. Growers can provide important and useful information regarding pre-harvest activities, crop care, post-harvest techniques and reliable handling throughout the crop cycle. Local radio and regional television channels are the most effective mediums for such communication.
- ✓ A data base of peach farmers may be developed and they may be directly educated with the help of regular SMS based communication. This approach is effective, instant as well as low in cost.

7. Annexure

Annex -1 Scope of Work of the Study

USAID Firms Project
Sales and Labor Multiplier Study for Peach & Dates Sector
Peach and Dates Sectors Development Programs
Work Plan Level 11360 Action 7091, SOW 2187,

Study at a glance:

The USAID Firms Project is seeking a team of consultants to develop a model to estimate the economic impact of USAID Firms Project's interventions throughout the entire value chain of both the peach and dates sector in Pakistan. The study will collect and analyze data from different stakeholders in the peach and dates value chain and calculate a multiplier for the change in sales and jobs with necessary assumptions and qualifiers that provide USAID a level of confidence for attribution to its investments. This analysis will also help the USAID Firms Project understand the change in sales by volume and the change in the number of jobs created throughout the peach and dates value chains in Pakistan. This assessment is expected to commence in July 2013 and will be completed by October 31, 2013.

Studies Titles:

Sales and Labor Multiplier for Peach and Date Value Chain

Background:

2.1 Peaches: Swat produces 67 percent of Pakistan's peaches, with an average annual production of 44,000 metric tons of a large number of varieties. Peaches are traditionally sold in local mandis (markets) and through middlemen in Peshawar and Islamabad. The strong, established local marketing channels in Swat result in the sale of almost all the produce, minus wastage. Grades C and D peaches can also be supplied to peach pulping facilities. Prior to the 2007-2008 insurgency, peaches were exported from Swat at good prices, however, currently, little is exported, and orchards are not directly linked to export markets.

This sector faces several constraints including a lack of formal training, scarcity of proper equipment, limited access to markets, and an absence of a formal link between peach growers and pulping units. Other factors that reduce small and medium enterprises' (SME) potential revenues include a high waste ratio of 25 percent, a lack of utilization of C and D grade fruits and the absence of export certification or established export channels.

2.2 Dates: Pakistan grows approximately 600,000 metric tons of dates annually. Dates are Pakistan's third largest horticulture crop and Pakistan is the fifth largest producer of dates in the world. There are approximately 8,000 SME farmers, 8 date processing facilities, and 110 traders in Khairpur and Sukkur districts where the project works. Women make up to 70 percent of the processing workforce. Pakistan exported USD64 million in 2011 worth of dates, which is 5.45 percent of the total international date trade of USD 1.17 billion.

In 2011, Pakistan was the third largest date producer in international market and its share (6.85% approx.) grows every year. In terms of quantity, it produced 113,358 metric tons of fresh dates in 2011. However, the date sector is still struggling for increased share in terms of value compared to its main competitors, Tunisia, the U.S., and Egypt. Currently, due to unimproved facilities and practices, Pakistan is exporting low quality dates and dry dates that prevent it from fulfilling the demand of high end markets. Supply-side constraints primarily exist at date farms and within processing facilities. The lack of processing machinery and tools, on-farm storage, cold storage, and access to finance are the major

impediments faced by date palm SME farmers and processors, which results in poor quality, high waste, and date contamination.

USAID Firms Project and Peach and Dates Sector Development Initiatives:

3.1 USAID Firms Project: The focus of the USAID Firms Project is to assist the government of Pakistan to improve its service delivery and develop dynamic, internationally competitive private-sector firms to accelerate sales, investment, and job growth. The value chain development component of the project aims to work directly with businesses in select value chains and create a robust private sector.

3.2 Peach Sector Development Initiative: In 2012, the Firms Project started working with 440 peach growers in 11 geographical clusters in Swat to help them upgrade their skills, increase revenues, and create jobs. The Firms Project's M&E team collected data from peach growers to capture the outcome of project activities in the sector. The data collected by the project's M&E team demonstrated an annual increase of USD \$2 million in producer SMEs' revenue as a result of the project's activities. Building on those results the Firms Project started working with 440 additional peach growers to upgrade their skills, reduce wastage, and increase production and revenue in 2013. The project will also offer exporting and linkage assistance to a small number of producer SMEs who grow exportable varieties of peaches to help them penetrate export markets.

As part of the 2012 project activity in the sector, the project completed a feasibility study that demonstrated a high demand for pasteurized peach pulp production in Swat by middle-tier companies that produce consumer pulp products. As a result of the study's positive findings, the project included a plan to assist one pulping unit in Swat during 2013-14. This activity integrates the value chain vertically by linking peach growers to pulping facilities which will allow them to utilize C and D grade fruit and meet peach pulp demand.

3.3 Dates Sector Development Initiative: The date assistance program is designed to increase the quality and quantity of fresh dates compared to the existing product mix that is dominated by the dry dates. This shift in focus will drive an incremental shift in profitability by reduction in cost, improved productivity, and enhanced quality of fresh dates. The project has equipped a group of 45 SME farmers and three SME processors with the tools and processing machinery that is required for quality date processing. The three processors are being equipped with the latest processing and cold storage facilities to enable them to maintain high quality processing and storage standards and increase exports.

The value chain studies are outlined in the sections below. It is guided by the goals, strategic objective and intermediate results per the USAID Economic Growth & Agriculture Office Results Framework listed below.

Goal: Improved economic status of target populations

Program Purpose: Dynamic internationally and domestically competitive firms with accelerated sales, investment, and employment

Intermediate Result 1: Improved economic performance of target enterprises

Per the project's PMP, the following indicators are used to measure the project's peach and date activities. Although the project uses all of the following indicators to measure its peach and date interventions, this study will specifically target the first three indicators.

Increase in sales revenue of project- assisted SMEs

Increase in employment for project-assisted SMEs

Increase in value of exports of targeted commodities for project-assisted SMEs

Value of private sector investment mobilized through formally engaged SMEs (on average \$ for \$ cost share by partner SMEs)

Number of project assisted training events conducted
Number of participants trained through project assisted workforce development training events
Number of SMEs trained through project assisted workforce development training events
Number of micro, small and medium enterprises (MSMEs), including farmers, receiving business development services from USG assisted sources
Number of hectares under improved technologies or management practices as a result of USG assistance
Number of SMEs using project funded implements
Number of marketing events conducted with project assistance to address export opportunities in targeted sectors

Project Achievements (as of May 31, 2013):

The Pakistan Firms Project started in May 2009 and will conclude in December 2014. The project's M&E team measures the economic benefits that have been created as well as benefits that are expected to be realized throughout the peach value chain.

4.1 Peach

The Swat District produces 44 percent of Pakistan's peaches and 76 percent of KP peach production. The sector employs a large number of full and part-time SMEs who grow a range of peach varieties. Peaches are traditionally sold in local markets and through middlemen in Peshawar and Islamabad. The established local market channels are strong and SMEs generally sell their annual production. However, there is very little export of peaches from Swat and the orchards are not linked to export markets.

Sector constraints include: lack of formal training, scarcity of proper equipment, limited access to markets, and an absence of a formal link between peach growers and pulping units. Other factors that reduce producers' potential revenues are high waste, a lack of utilization of lower grade fruit categories, and the absence of export certification and established export channels. To address these constraints, the project completed the activities below:

Workforce Development, Trainings, and Events:

In 2012, the USAID Firms Project conducted 22 trainings on pre and post-harvest best management practices for 449 peach growing SMEs in 11 clusters to build their capacity and increase revenue and jobs. This resulted in USD 2.1 million in additional sales and 121 new full time equivalent (FTE) employments.

In 2013, the project will train 440 additional peach farming SMEs on proper harvesting techniques, sorting, storing, and transportation to help them decrease their post-harvest losses. Proper post-harvest handling increases production and ensures that better quality peaches reach the local markets. Trainings will also be conducted on important pre-harvest activities such as pruning, irrigation, and fertilizer application.

In-kind Assistance

In 2012, the project provided pruning and harvesting kits and more than 16,000 corrugated cartons to 449 peach SME farms so that they could apply their knowledge of pre and post harvesting best practices. In 2013 and 2014, the project will continue to provide pruning toolkits to additional 440 SME farmers in order to support the best practices trainings. These kits will help SMEs practice proper tree and canopy management and ensure minimal damage to trees. The harvesting kit plays an integral role in implementing proper harvesting techniques. It includes a harvesting ladder, small pruning shears, harvesting bags, plastic collection bins, and a waterproof tarpaulin.

Export Potential Analysis, Training and Market Linkages

Swat peaches enjoy a very strong domestic market. Almost all varieties of Swat peaches are sold in the local, regional, and national markets. In 2011-2012, the Firms Project M&E team collected data which demonstrated that 449 SMEs recorded total sales of USD 5.53 million, which is an increase of USD 2.1 million from 2011.

After SME farmers realized the increase in sales, some of them requested additional support for exporting. In 2013, the project will complete an export potential analysis for beneficiary SMEs that sell late-season peach varieties. These varieties have a longer shelf life making them well suited for export. If the analysis identifies export potential, the project will carry out two activities in 2014 to support peach exports. First, a delegation of representatives from major exporters and SMEs will attend an international trade show to increase their market awareness and create market linkages. Second, the project will conduct a "Producing for Exports" training to help upgrade the quality of fruit so it meets export standards.

Peach Pulping Unit

The peach sector suffers from 40 percent post-harvest loss annually. One of the main constraints is a lack of pulping units that can purchase and process grade C and D peaches. The reduction in post-harvest losses can be achieved by utilizing fragile and shorter shelf life peach fruit for value addition purposes.

According to a pre-feasibility study conducted at one of the pulping units in Mingora, Swat, 11 buyers reported an annual demand of 1760 tons of peach pulp compared to the current production of 36 tons. As a result of that study, the project identified that this pulping unit in Swat that could be upgraded on a cost share basis to meet peach pulp market demand.

In 2013 and 2014, the project will provide in-kind support to one peach pulping unit by providing pulping equipment and machinery and conducting trainings for the production staff of the pulping units. The pulping unit will upgrade its infrastructure to house the new equipment and meet environmental standards.

4.2 Dates Value Chain Development

The date's business model addresses the constraints of date farmers and processors with the interventions below:

Workforce Development, Trainings, and Events

In 2013, the assistance for three date processing units will comprise of training programs on food safety standards so that facilities comply with international standards, and training programs on export marketing management to help brand products for international markets. Select SMEs will also receive training on packaging design for direct sales in local markets.

Dates On-Farm and Processing Infrastructure support:

In 2012, 45 SMEs received farming equipment and tools to address the waste, quality, and productivity constraints inherent in date production. These SMEs also received solar drying tunnels that will improve the date quality, decrease drying time, and improve food safety.

In 2014, each of the date processing units will receive cold storage facilities along with backup generators that will increase the date's shelf life. They will also receive x-ray machines for the detection of foreign materials during processing.

Market Linkages

In year 2013 and 2014, the date processing units will participate in international trade fairs so that they can create market linkages. In 2014, the project will assist date processors in the design and development of branding and packaging material, as well as develop a business directory of program partners for market exposure.

Objective of the Studies:

The overall objective of these two studies is to conduct a value chain analyses to measure the potential impact of the USAID Firms Project on the peach and dates value chains. For this purpose the value chain analysis will measure the forward linkages (source of inputs and destination of output) and determine the value-added.

The study will collect and analyze data from different stakeholders in the peach and dates value chain and calculate a multiplier for the change in sales and jobs with necessary assumptions and qualifiers that provide USAID a level of confidence for attribution to its investments. This analysis will also help the USAID Firms Project understand the change in sales by volume and the change in the number of jobs created throughout the peach and dates value chains in Pakistan. It will also provide practical recommendations for future improvement of the Firms Project's peach and dates sector development programs.

The assessment will consider six key sub-objectives. For each sub-objective, the project has defined the minimum activities that consultants are expected to complete.

- Sub-Objective 1: Define and document the Value Chains for the Peach and Dates sectors in Pakistan.
- Sub-Objective 2: Systematically document the USAID Firms Project's intervention in these value chains.
- Sub-Objective 3: Acquire information on the distribution of economic gains across the peach and dates value chains by various players.
- Sub-Objective 4: Determine the labor multiplier and sales multiplier equations with assumptions for both the peach and dates sectors. These multipliers must be transferable for use by all stakeholders in the sector.
- Sub-Objective 5: Determine specific enabling environment constraints that impact peach and date value chains specifically with regard to sales and employment.
- Sub-Objective 6: Provide practical and realistic recommendations on how modification in the program interventions can create greater impact in generating sales and creating employment. .

Scope of the Study

7.1: Peaches: The consultant(s) will focus on the peach production within the province of KP. The consultant(s) will work from offices in Swat, Islamabad, and Lahore for the majority of the study but will require frequent travel to other cities in order to interact with a wide range of project beneficiaries, transporters, processors, and marketing agents to analyze the complete value chain.

7.2: Dates: The consultant(s) will focus on the date production areas within Sindh province. The consultant(s) will work from Karachi, Islamabad, and Lahore Offices for the majority of the study period with frequent travel to other cities including Sukkur and Khairpur, in order to interact with project beneficiaries, transporters, processors, and marketing agents to analyze the complete value chain.

Details of Specific Tasks:

General Activities:

In collaboration with the USAID Firms Project M&E and technical assistance team, develop and finalize the detailed methodologies to use for both the peach and dates studies, including the conceptual frameworks, assumptions and coefficients/ratios, protocols, quantification of impacts, attribution, instruments, and detailed analyses plans.

Seek approval from USAID Firms Project M&E Advisor on study design, methodologies, time frame and any instruments to be used during the study.

Where possible and required; coordinate with relevant peach and dates assistance programs, national and local governmental officials, community elders and other stakeholders for the smooth implementation of the study.

Develop analyses plans for both studies and seek USAID Firms approval.

Provide two draft reports to the USAID Firms Project in English for peach and dates for review and comment. The report should be in the prescribed format as detailed in Annex 2

Conduct any supplemental analyses based on feedback from the USAID Firms Project, including results in the final report.

Work closely with the designated USAID Firms Project focal points throughout the contract period.

Adhere to all relevant policies and procedures of the USAID Firms Project as detailed in Section 15.

Specific Activities by Sub-Objective:

Sub-Objective 1: Document the Value Chains for the Peach and Date Sectors in Pakistan

Key Questions:

How are the peach and date value chains structured?

Who are the different actors involved in the peach and date value chains and what are their functions?

How do the different peach and dates varieties reach different destinations such as mandis, retailers, and export locations from farm gates?

What are some of the critical factors that influence the flow of peaches and dates from farm gate to other destinations?

Proposed Methodology:

Conduct meetings with relevant members of the project teams and management and other relevant stakeholders of the peach and dates value chains.

Conduct desk review of Firms Project M&E related documents and other secondary sources.

Define the peach and dates sector value chains.

Based on the information gathered from discussions with project teams, management and other stakeholders along with secondary research conducted (study findings); describe the different actors and their functions in the peach and dates value chains. This may include: input suppliers; nursery developers, producer, transporters, traders, wholesalers, retailers, processors, exporters and other stakeholders such as government, academia and Civil Society Organizations (CSO)

Map out the flows of different varieties of peaches and dates (between all actors and on a geographical basis).

Using the study findings, identify the different critical factors and explain how they influence the peach and dates value chains. These could be government policies; role of different stakeholders, market dynamics, climatic conduction, etc.

Detail the market structure for peach and dates by using the study findings to show a logistical function, an informational function, and a distributional function. The logistical function includes not only the transformation of goods over time (storage), but also embraces place (transportation), and form (processing) activities.

Sub-Objective 2: Systematically document the USAID Firms Project's interventions in different aspects of the Peach and Dates Value Chains**Key Questions:**

What were the different components of the Firms Project peach and date value chain development programs?

What were the achievements of each of the components of both the peach and dates programs?

What were the major challenges that both programs faced since their inception and how were they addressed?

Proposed Methodology:

Conduct meetings with peach and date teams, senior management, M&E staff and other members of the project to collect the historical perspective on the inception, development and implementation of the peach and dates programs.

Conduct meetings with Firms Project's partner SMEs

Conduct desk review of Firms Project M&E related documents.

Analyze the increase in sales and jobs of partner SMEs for both peach and dates sectors, relative to their baselines.

Document the inception, evolution, and implementation of different components of both the peach and dates programs. More specifically, summarize the best practices adopted during the implementation of the programs.

Document the achievements of each component for both the programs.

Document the major challenges that both programs have faced since their inception and how they were addressed

Sub-Objective 3: Acquire information on the distribution of economic gains across the peach and date value chains by various players.**Key Questions:**

What were the profit margins, price structure, and cost drivers for the peach and date stakeholders? (these include input suppliers, nursery developers, producers, transporters, traders, wholesalers, retailers, processors, exporters, and other stakeholders such as government, academia and Civil Society Organizations (CSOs))

What is the increment in sales at farmer level to intermediaries and to local market and from intermediaries to exporters, for both the peach and dates sectors?

How much labor is required at each step and function of the value chain?

Proposed Methodology:

Gather price and sales related information of all stakeholders in the peach and dates value chains.

Information will be collected from: input suppliers, nursery developers, producers, transporters, traders, wholesalers, retailers, processors, exporters, and other relevant stakeholders such as government, academia and Civil Society Organizations (CSOs)

Gather information on the factors that affect the costs of peach and dates production including production, wastage, and sales. .

Carry out analysis on the difference between farm gate and retail price for both peach and dates sectors;

Determine the market share – costs and margins – for market participants(wholesalers, traders and middlemen) in both the peach and dates sectors;

Determine the marketing channels of peaches and dates per variety and geographic location;

Conduct separate profit analyses, with specific focus on market margins for different peach and dates sales channels for all stakeholders such as: input suppliers; nursery developers, producer, traders, wholesalers, retailers, and processors;

Determine the price structures, cost drivers and labor requirements of local retailers, supermarket chains and other retailers for both the peach and dates sectors;

Identify the increment in the price of a metric ton from sales at farmer level to intermediaries and to local market and also from intermediaries to exporters for both the peach and dates sectors.

Sub-Objective 4: Determine the labor multiplier and sales multiplier equations with assumptions for both the peach and dates sectors. These multipliers must be transferable for use by all stakeholders in the sector.

Key questions:

What was the change in sales and employment in the peach and date sectors for Firms beneficiaries from 2012 – 2013?

What are the values of the sales and labor multipliers

for the peach and date value chains? Include all necessary assumptions and qualifiers for further use by USAID for both sectors.

Proposed Methodology:

Carry out in-depth analyses of the change, in sales of peach and dates value chain stakeholders in 2013, and extrapolate the impact in 2012.

Carry out in-depth analyses of the change in the number of jobs of peach and date value chain stakeholders in 2013, and extrapolate the impact in 2012.

Determine the sales and labor multiplier equations with assumptions (with separate equations for both the peach and dates sectors). These multipliers must be transferable for use by all stakeholders in these sectors.

Sub-Objective 5: Determine specific enabling environment constraints that impact peach and date value chains specifically with regard to sales and employment.

Key Questions: What are some of the most important enabling environment constraints that hamper growth in sales and employment in the peach and dates value chain?

List these constraints in hierarchical order in light of the extent and nature of their impact on sales and employment generation.

Proposed Methodology:

Based on the analysis of primary and secondary data list the enabling environment constrains in different aspects of the peach and dates value chain. These may include but not limited to the constraints input supplies, lack and / or application of knowledge and skills, infrastructure facilities, market dynamics, Govt. policies and other market requirements etc.

Consult key stakeholders to understand the nature of the impact of these constraints on the sales and employment generation.

Sub-Objective 6: Provide practical and realistic recommendations on how modification in the program interventions can create greater impact in generating sales and creating employment.

Key Questions:

Keeping in mind the remaining life of project (LOP), what modifications, in the short term, can be made in the peach and dates program to create greater impact on sales revenue and employment.

What measures, in the long term, can be adopted to accelerate sales and employment growth in the peach and dates value chains.

Discuss the prerequisites of adopting these recommendations, if any, and the anticipated implications of adopting those suggestions for peach and dates value chains.

Proposed Methodology:

Explore / Look for options of modifying the program with an aim of accelerating revenue generation and employment creation throughout the data collection.

Consult stakeholders view on how program can be modified to create more sales and employment opportunities.

Formulate/ propose relevant, specific, clear, and realistic actions to be taken (short and long-term) in both peach and dates sectors in priority order. The recommendation must be aimed at improving the program to create greater impact on sales and employment in the peach and the date value chains.

Deliverables:

Deliverable 1: Value Chain Study/Impact Assessment methodology presentation. The consultant(s) will present the proposed methodologies for peach and date sectors with the aid of two PowerPoint presentations in English to the USAID Firms Project management and relevant staff within 4 calendar days of the first introductory meeting.

Deliverable 2: Work plan and time frame. The consultant(s) will submit two detailed work plans and time frames (one for peach and one for dates) including the itineraries of meetings, data collection approach, analyses, reporting and presentations before the start of the field work.

Deliverable 3: Regular updates on study status. The consultant(s) are required to regularly provide brief written updates on the study process for both peach and dates studies. The frequency of the updates would be decided upon start of employment. The updates should cover the tasks for that period; whether they were completed or not and if not then why.

Deliverable 4: Presentation on the preliminary findings. Present the preliminary findings with the aid of a PowerPoint presentation in English to the USAID Firms Project management and relevant staff within 6 calendar days of the completion of the field work for each sector. The field-work and preliminary findings for the peach sector are to be conducted and presented first, followed by the field-work and presentation on the preliminary findings for the dates' sector.

Deliverable 5: Draft study report. The Consultant(s) will submit the two draft reports for the entire study (separate for peach and dates) of a maximum of 25 pages excluding annexes, in English as per the format provided by the USAID Firms Project within 16 calendar days of the completion of the field work.

Deliverable 6: Final study report. The Consultant(s) will submit two final Value Chain Study Reports(one each for peach and dates sector), of maximum 25-30 pages excluding annexure, in English language within 1 week after receiving the feedback from the USAID Firms Project on the draft report.

Deliverable 7: Final study presentation. Present the findings for both the peach and dates reports with the aid of two PowerPoint presentations in English to the USAID Firms Project management and relevant staff with the two final study reports.

Deliverable 8: Hard copies of questionnaires. Properly filed/archived hard copies of filled-in questionnaires, transcripts of any discussions and interviews, photos etc. used for both studies.

Ethical Guidelines:

It is expected that the team will adhere to ethical guidelines as outlined in the American Evaluation Association's Guiding Principles for Evaluators. A summary of these guidelines is provided below, and a more detailed description can be found at www.eval.org/Publications/GuidingPrinciplesPrintable.asp.

Informed Consent: All participants are expected to provide informed consent following standard and pre-agreed upon consent protocols.

Systematic Inquiry: Evaluation team/ Evaluator conduct systematic, data-based inquiries.

Competence: Evaluation team/ Evaluator provide competent performance to stakeholders.

Integrity/Honesty: Evaluation team display honesty and integrity in their behavior, and attempt to ensure the honesty and integrity of the entire evaluation process.

Respect for People: Evaluation team/ Evaluator respect the security, dignity and self-worth of respondents, program participants, clients, and other stakeholders. It is expected that the evaluation team/ evaluator will obtain the informed consent of participants to ensure that they can decide in a conscious, deliberate way whether they want to participate.

Responsibilities for General and Public Welfare: Evaluation team/ Evaluator articulate and take into account the diversity of general and public interests and values that may be related to the evaluation.

Key Personal/Management & Team Composition:

The study will be outsourced to a team of consultants who will work closely with the Firms Project M&E team (including Firms Project M&E Advisor and relevant staff). The USAID Firms Project will select individual consultants through a competitive selection process.

The Firms Project M&E Advisor will be responsible for approving the study methodology, instruments and the final deliverables. He will work closely with the VCD component lead, the focal person for the peach and dates programs and other relevant members of the VCD team.

Team Requirements:

External consultants with the following portfolio will be sought to undertake the study:

Team Composition:

The study team will include:

One Team Leader (Masters in Agriculture Economics, PhD Preferred)

One Team Member (Masters in Economics/MBA, Business Development/Financial Accounting or related field)

Team Leader: One team leader will be required for at least 73 days. A team leader experienced in impact assessment methodology and relevant fieldwork will be needed to facilitate the study. Specifically, the team leader will be required to:

Design the study;

Supervise execution and implementation;

Supervise study protocols;

Conduct spot checks

Undertake data analysis; and

Draft the final report, presentations etc.

Team Leader must meet the following qualification and experience requirement.

Minimum Education/Experience: Masters in Agriculture Economics with 10 years of experience or PhD in Agricultural Economics with 5 years of experience preferred.

Demonstrated experience of conducting impact assessment related to agriculture. Experience in peach and date sectors will be considered as a plus.

Must possess excellent communication and interpersonal skills

MUST be able to write and speak English.

Team Member: One will be required for at least 73 days. S/he will be responsible for accurate data collection, photography and supporting documents.

Team Member must meet the following qualification and experience requirement.

Minimum Education: Master's in Economics/MBA, Business Development/Financial Accounting or related field

Minimum Experience: At least three years of relevant experience

Good understanding of impact assessment.

Must possess good communications and interpersonal skills

MUST be able to write and speak English

Reporting Line:

The consultant (s) will report to the M&E Advisor / Team Lead or his designated staff. He will work closely with the peach and dates sector teams, Office Director- Islamabad, Office Director – Karachi office and the relevant M&E staff.

Working Conditions and Duty Station:

The consultant(s) will be required to visit the primary project sites for the peach and date sector. These include Swat region in KP and Sukkur and Kahirpur districts in Sindh. Visits to the regional and national markets in Swat, Peshawar, Islamabad, Lahore, Karachi, Sukkur and other relevant areas will also be required.

Period of Performance and Schedule of Deliverables¹³:

The consultancy is expected to commence in July 2013 and be completed by October 31, 2013. The Team Lead and Team Member both will have an LOE of at least 73 days each.

| Description of tasks | No. of days per Consultant | Total LOE (Days) for two Consultants |
|---|----------------------------|--------------------------------------|
| Introductory Meetings | 1 | 2 |
| Document review and develop study instruments | 1.5 | 3 |
| Presentation on methodology | 1 | 2 |
| Meeting with Firms Project staff (Swat, Islamabad, Lahore, Karachi), and submission of work plan and time frame for peach and dates | 4 | 8 |
| Field work (meeting with beneficiaries, transporters, retailers, and other market players including travel). | 16 | 32 |
| Analyses of the study findings (Including meeting with Firms and associated travel). | 5 | 10 |
| Preparation and Presentation of the preliminary findings in PPT | 1 | 2 |
| Prepare first draft of report | 5 | 10 |
| Prepare final report | 3 | 6 |
| Preparation and Presentation of the Final findings in PPT | 1 | 2 |
| Total LoE Days for One Study | 38.5 Days | 77 Days |
| Total LoE Days for Two Studies | 77 Days | 154 Days |

Estimated due dates of the deliverables are given below:

| Deliverable | Due Date |
|--|--------------|
| 1. Value chain/impact assessment methodology presentations for peach | Day 4 of LOE |

¹³Assessment schedules and deadlines are flexible to some extent and will be finalized in coordination with the successful consultant.

| Deliverable | Due Date |
|---|------------------------|
| and dates | |
| 2. Work plan and time frame for peach and dates | Day 6 of LOE |
| 3. Regular updates on studies status | As decided after award |
| 4a. Presentation on the preliminary findings for peaches | Day 28 of LOE |
| 4b. Presentation on the preliminary findings for dates | Day 54 of LOE |
| 5a. Draft study report for peaches | Day 70 of LOE |
| 5b. Draft study report for dates | Day 77 of LOE |
| 6a. Final study report for peaches | Day 77 of LOE |
| 6b. Final study report for dates | Day 77 of LOE |
| 7a. Final study presentation for peaches | Day 77 of LOE |
| 7b. Final study presentation for dates | Day 77 of LOE |
| 8. Hard copies of questionnaires/photos etc. for both peach and dates studies | Day 77 of LOE |

Client & Audience:

USAID Firms Project, USAID Economic Growth & Agriculture Office are the primary audience of this study.

Budget:

The estimated budget is taken out from the external version.

Annex -2 Methodology Framework:

| Sr. # | Objectives | Key Questions - Complex Variables | Simple Variables | Activities/Avenues of Exploration | Values | Methodology | Source/s | Assessment Instruments/Tools | Activity Area |
|-------|--|--|--|---|---|--|---|--|---|
| 1 | Document the Value Chains for the Peach Sector in Pakistan. | How is the Peach Value Chain Structured ? | Different steps/stages in peach value chain | Defining peach value chain. Identification of different steps/stages and activities in peach Value Chain | List of value chain steps/stages and activities | Review of concept paper, proposal, base line survey report, project/strategy documents and other secondary sources, meetings with project peach team and M & E staff | Project Archive | Meetings/Discussion | Lahore and Islamabad |
| | | Who are the different actors involved in the peach value chain and what are their functions? | Different actors involved in Peach value chain Functions of actors | Identification of Actors involved in value chain Identification of functions of Actors involved in value chain | List of Actors List of Functions by Actors | Meetings/discussion with project team, review of project/strategy documents Confirmation from Actors | Project team and implementing partners/stakeholders | Focus Group Discussion/Key Questions | Swat |
| | | How do the different peach varieties reach to different destinations such as mandis, retailers and other export locations from farm gates? | Mapping of supply chain flow | Supply chain flow of different peach varieties on geographical basis and from farm gate to mandi, retailers, processors and export location Type of transport used between farm to different destinations. | List of mode of transportation by each destination List of mode of transport by variety of peach | Interviews and focus group discussions Desk review | Project team and implementing partners Progress Reports M&E Reports, stakeholders | Focus Group Discussion/Key Questions | Swat, Peshawar, Islamabad, Faisalabad, Lahore, Multan and Karachi |
| | | What are some of the critical factors that influence the flow of peach from farm gate to other destinations? | Key areas in supply chain of peach | Identification of critical factors in supply chain of peach and from farm gate to different destinations. | List of critical factors effecting the flow of peach and from farm gate to diff. destinations. | Review of Govt. policies, Interviews and focus group discussions Desk review | Project team and implementing partners Progress Reports M&E Reports, | Focus Group Discussion/Key Questions | Swat, Peshawar, Islamabad, Faisalabad, Lahore, Multan and Karachi |
| 2 | Systematically document the USAID Firms project's interventions in different aspects of the peach Value Chain. | What were the different components of the Firms Project Fresh peach Value Chain development program? | Components of Firms Project fresh peach value chain development program Component wise interventions in different aspects of peach value chain | Enlistment of components of peach value chain development program. Enlistment of interventions in peach value chain. | List of components List of interventions | Meetings and discussion with peach team, M&E team and senior management Desk review | Project team Progress Reports M&E Reports | Meetings/Discussion | Lahore and Islamabad |
| | | What were the achievements of each of the components of peach program? | Component wise achievements | Description of achievements made by each component. | List of objectives in the light of objectives | Meetings and discussion with peach team, M&E team and partner SMEs Desk review | Project team and implementing partners Progress Reports M&E Reports | Meetings, discussions | Lahore, Islamabad and Swat |
| | | What were the major challenges that program faced since its inception and how they were addressed? | Major challenges by year Remedial measures undertaken | Identification of different challenges faced by the program from inception to its implementation and strategies adopted to resolve these challenges | List of threats over time List of remedial measures over time | Meetings and discussion with peach team, M&E team and partner SMEs Desk review | Project team and implementing partners Strategy Documents Project team and implementing partners Progress Reports M&E Reports | Meetings & focus group discussions | Lahore and Islamabad Partner Farms |
| 3 | Acquire information on the distribution of economic gains across the peach value chain by various players. | What were the profit margins, price structure & cost drivers for the peach stakeholders? | Profit & loss analysis across value chain for various players | Net profit calculated for each player Price Structure Cost Drivers | % age share of each player in the total margin in value chain starting from farm gate Price structure Cost drivers | Interviews and focus group discussions Desk review of financial data | Project team and implementing partners Stakeholders in the value chain Progress Reports M&E Reports | Case study/key questions, focus group discussion | Lahore, Islamabad, Multan, Faisalabad & Karachi Partner Farms |
| | | What is the increment in sales at farmer level to intermediaries and to local market and from intermediaries to exporters for peach sector? | Increment in sales and sales comparison with base line | Mapping or marketing channels as per variety and geographic location Increase in sales at farm level Increase in sales at intermediary level Increase in sales at local market level Increase in sales to exporters | Volume of sales in Kgs/tons | Interviews and focus group discussions Desk review of sales data | Project team, implementing partners & stakeholders Progress Reports M&E Reports | Case study/key questions, focus group discussion | Lahore and Islamabad Partner Farms |
| | | How much labor is required at each step and function of the value chain? | Labor involved at each step | Mapping of labor involved for performing different activities at each step at each value chain actor level | Estimation of labor involved at each step | Interviews and focus group discussions Desk review of employment tracker | Project team, implementing partners & stakeholders Progress Reports M&E Reports | Case study/key questions, focus group discussion | Lahore and Islamabad Partner Farms |
| 4 | Determine the labor multiplier and sales multiplier equations with assumptions for peach sector. These multipliers must be transferable for use by all the stakeholders in the sector. | What was the change in sales and employment in the peach sector for Firms beneficiaries from 2012-2013 ? | Impact on volume of sales due to interventions Impact on Employment | Impact on volume of sales Impact on jobs due to interventions | Reasons of increase in Sales in Kgs/tons No. of labour days increased | Interviews and focus group discussions Desk review | Project team, implementing partners and stakeholders Progress Reports M&E Reports | Case study/key questions, focus group discussion | Peshawar, Lahore, Islamabad, Multan, Faisalabad & Karachi Partner Farms |
| | | What are the values of the sales and labor multipliers for the peach and value chains? Include all necessary assumptions and qualifiers for further use by USAID for both sectors. | Impact on volume of sales Impact on No. of jobs | Impact on volume of sales Impact on jobs due to interventions | Reasons of increase in Sales in Kgs/tons No. of labour days increased | Interviews and focus group discussions Desk review | Project team, implementing partners and stakeholders Progress Reports M&E Reports | Case study/key questions, focus group discussion | Peshawar, Lahore, Islamabad, Multan, Faisalabad & Karachi Partner Farms |
| 5 | Determine specific enabling environment constraints that impact peach value chain especially with regard to sales and employment. | What are some of the most important enabling environment constraints that hamper growth in sales and employment in the peach value chain? | List of enabling environment constraints in peach value chain | Identification of constraints | List and description of constraints in peach value chain | Interviews and focus group discussions | Project team and implementing partners Stakeholders Progress Reports M&E Reports | Case study/key questions, focus group discussion | Peshawar, Lahore, Islamabad, Multan, Faisalabad & Karachi Partner Farms |
| | | List these constraints in the hierarchical order in light of the extent and nature of their impact on sales and employment generation. | List of enabling environment constraints in peach value chain | Extent and nature of Impact on sales and employment | Reasons of constraints on sales and employment | Interviews and focus group discussions | Project team and implementing partners Stakeholders Progress Reports M&E Reports | Case study/key questions, focus group discussion | Peshawar, Lahore, Islamabad, Multan, Faisalabad & Karachi Partner Farms |
| 6 | Provide practical and realistic recommendations on how modification in the program interventions can create greater impact in generating sales and creating employment. | What modifications, in the short term can be made in peach program to create greater impact on sales revenue and employment. | Lessons learned from past interventions Recommendations on interventions to be undertaken in near future | Identify interventions that resulted in increased returns on the product and created employment opportunities | List of interventions to be reviewed or amended (if required) List of new interventions Improved processes | Interviews with experts on peach value chain | Experts in peach value chain, Stakeholders Project team and implementing partners | | |
| | | What measures in the long term can be adopted to accelerate sales and employment growth in the peach and s value chains. | Lessons learned from past interventions Recommendations on interventions to be undertaken in future | Identify interventions that carry long term objectives with the sustainable prospect for permanent growth | List of interventions to be reviewed or amended (if required) List of new interventions | Interviews with experts on peach and value chain | Experts in peach value chain Project team and implementing partners | | |
| | | Discuss the prerequisites of adopting these recommendations, if any, and the anticipated implications of adopting those suggestions for peach value chain. | Things to be planned before adopting or implementing any new suggested change/improvement or intervention | Review the capacity and potential of available infrastructure and resources. Identify the key enablers to activate new interventions as agents of change. | Strategy to convert proposed interventions into permanent practices. Effective result measurement of new interventions to ensure their sustainability and overall efficiency. | Interviews with experts on peach value chain | Experts in peach value chain Project team and implementing partners | | |

Annex -3 List of FGD Participants:

| Sr. No. | Names | Category | Contact No. |
|----------------|--------------|-----------------|--------------------|
| 1. | [REDACTED] | Peach Grower | [REDACTED] |
| 2. | [REDACTED] | Peach Grower | [REDACTED] |
| 3. | [REDACTED] | Peach Grower | [REDACTED] |
| 4. | [REDACTED] | Peach Grower | [REDACTED] |
| 5. | [REDACTED] | Peach Grower | [REDACTED] |
| 6. | [REDACTED] | Peach Grower | [REDACTED] |
| 7. | [REDACTED] | Peach Grower | [REDACTED] |
| 8. | [REDACTED] | Peach Grower | [REDACTED] |
| 9. | [REDACTED] | Peach Grower | [REDACTED] |
| 10. | [REDACTED] | Peach Grower | [REDACTED] |
| 11. | [REDACTED] | Peach Grower | [REDACTED] |
| 12. | [REDACTED] | Peach Grower | [REDACTED] |
| 13. | [REDACTED] | Peach Grower | [REDACTED] |
| 14. | [REDACTED] | Peach Grower | [REDACTED] |
| 15. | [REDACTED] | Peach Grower | [REDACTED] |
| 16. | [REDACTED] | Peach Grower | [REDACTED] |
| 17. | [REDACTED] | Peach Grower | [REDACTED] |
| 18. | [REDACTED] | Peach Grower | [REDACTED] |
| 19. | [REDACTED] | Peach Grower | [REDACTED] |
| 20. | [REDACTED] | Peach Grower | [REDACTED] |
| 21. | [REDACTED] | Peach Grower | [REDACTED] |
| 22. | [REDACTED] | Peach Grower | [REDACTED] |
| 23. | [REDACTED] | Peach Grower | [REDACTED] |
| 24. | [REDACTED] | Peach Grower | [REDACTED] |
| 25. | [REDACTED] | Peach Grower | [REDACTED] |
| 26. | [REDACTED] | Peach Grower | [REDACTED] |
| 27. | [REDACTED] | Peach Grower | [REDACTED] |
| 28. | [REDACTED] | Peach Grower | [REDACTED] |
| 29. | [REDACTED] | Peach Grower | [REDACTED] |
| 30. | [REDACTED] | Peach Grower | [REDACTED] |
| 31. | [REDACTED] | Peach Grower | [REDACTED] |
| 32. | [REDACTED] | Peach Grower | [REDACTED] |
| 33. | [REDACTED] | Processor | [REDACTED] |
| 34. | [REDACTED] | Processor | [REDACTED] |
| 35. | [REDACTED] | Processor | [REDACTED] |
| 36. | [REDACTED] | Peach Grower | [REDACTED] |
| 37. | [REDACTED] | Peach Grower | [REDACTED] |
| 38. | [REDACTED] | Peach Grower | [REDACTED] |
| 39. | [REDACTED] | Peach Grower | [REDACTED] |
| 40. | [REDACTED] | Peach Grower | [REDACTED] |

Annex -4 List of Fruit and Vegetable Markets Visited:

1. Fruit and Vegetable market – Swat
2. Fruit and Vegetable market – Matta
3. Fruit and Vegetable market – Peshawar
4. Fruit and Vegetable market – Islamabad
5. Fruit and Vegetable market – Multan
6. Fruit and Vegetable market – Lahore
7. Fruit and Vegetable market – Faisalabad
8. Fruit and Vegetable market – Karachi

Annex -5 List of Actors:

| Sr. No. | Name | City | Category | Contact No. |
|----------------|-------------|-------------|------------------------|--------------------|
| 1. | [REDACTED] | Matta | Peach Grower | [REDACTED] |
| 2. | [REDACTED] | Swat | Peach Grower | [REDACTED] |
| 3. | [REDACTED] | Swat | Peach Grower | [REDACTED] |
| 4. | [REDACTED] | Talegram | Peach Grower | [REDACTED] |
| 5. | [REDACTED] | Muradabad | Peach Grower | [REDACTED] |
| 6. | [REDACTED] | Mangora | Peach Grower | [REDACTED] |
| 7. | [REDACTED] | Swat | Pre-Harvest Contractor | [REDACTED] |
| 8. | [REDACTED] | Swat | Pre-Harvest Contractor | [REDACTED] |
| 9. | [REDACTED] | Faisalabad | Commission Agent | [REDACTED] |
| 10. | [REDACTED] | Multan | Commission Agent | [REDACTED] |
| 11. | [REDACTED] | Matta | Commission Agent | [REDACTED] |
| 12. | [REDACTED] | - | Commission Agent | [REDACTED] |
| 13. | [REDACTED] | Peshawar | Commission Agent | [REDACTED] |
| 14. | [REDACTED] | - | Commission Agent | [REDACTED] |
| 15. | [REDACTED] | Multan | Commission Agent | [REDACTED] |
| 16. | [REDACTED] | Lahore | Commission Agent | [REDACTED] |
| 17. | [REDACTED] | Lahore | Commission Agent | [REDACTED] |
| 18. | [REDACTED] | - | Wholesaler | [REDACTED] |
| 19. | [REDACTED] | Multan | Wholesaler | [REDACTED] |
| 20. | [REDACTED] | - | Wholesaler | [REDACTED] |
| 21. | [REDACTED] | Lahore | Wholesaler | [REDACTED] |
| 22. | [REDACTED] | Multan | Wholesaler | [REDACTED] |
| 23. | [REDACTED] | - | Wholesaler | [REDACTED] |
| 24. | [REDACTED] | Peshawar | Wholesaler | [REDACTED] |
| 25. | [REDACTED] | Faisalabad | Wholesaler | [REDACTED] |
| 26. | [REDACTED] | Faisalabad | Wholesaler | [REDACTED] |
| 27. | [REDACTED] | Faisalabad | Wholesaler | [REDACTED] |
| 28. | [REDACTED] | Peshawar | Retailer | [REDACTED] |
| 29. | [REDACTED] | Faisalabad | Retailer | [REDACTED] |
| 30. | [REDACTED] | Peshawar | Retailer | [REDACTED] |
| 31. | [REDACTED] | Peshawar | Retailer | [REDACTED] |
| 32. | [REDACTED] | Lahore | Retailer | [REDACTED] |
| 33. | [REDACTED] | Lahore | Retailer | [REDACTED] |
| 34. | [REDACTED] | Lahore | Retailer | [REDACTED] |
| 35. | [REDACTED] | Swat | Processor | [REDACTED] |
| 36. | [REDACTED] | Swat | Processor | [REDACTED] |
| 37. | [REDACTED] | Multan | Retailer | [REDACTED] |
| 38. | [REDACTED] | Faisalabad | Processor | [REDACTED] |

| | | | | |
|-----|------------|---------|----------|------------|
| 39. | [REDACTED] | - | Exporter | [REDACTED] |
| 40. | [REDACTED] | Karachi | Retailer | [REDACTED] |

8. References

- 2.
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4. USAID Firms project Fact Sheets 2012
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11. USAID Firms project SOW for peach value chain study
12. FAS/USDA
13. French ministry of Agriculture and the statistical division (FAOSTAT) of the Food and Agriculture Organization of the United Nations (UN, FAO)
14. Freshfruitportal.com

USAID Firms Project
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