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THE AGRIBUSINESS PROJECT (TAP)

Gilgit Baltistan Apricot- Value Chain Competitiveness Assessment

Sub Agreement TAP-ISA-013-002

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Acronyms and Abbreviations

AKRSP	Agha Khan Rural Support Program
AOR	Agreement Officer's Representative
ASF	Agribusiness Support Fund
BCDF	Baltistan Culture and Development Foundation
DoA	Department of Agriculture
FAO	Food and Agriculture Organization of United Nations
FEG	Farmer Enterprise Group
GAP	Good Agricultural Practices
IMLP	International Market Linkages Program
NGO	Non-Government Organization
M&E	Monitoring & Evaluation
PHDEC	Pakistan Horticulture Development Export Company
SME	Small and Medium Enterprises
SMEDA	Small and Medium Enterprise Development Authority
TDAP	Trade Development Authority of Pakistan
TA	Technical Assistance
UNIDO	United Nations Industrial Development Organization
USAID	United States' Agency for International Development
VCP	Value Chain Platform

Exchange rate used: US\$1 = PKR 105

I. Executive Summary

II. Background

The USAID's Agribusiness Project, now commonly referred to as The Agribusiness Project (TAP) is being implemented through Cooperative Agreement (No. AID-391-A-12-00001) by the Agribusiness Support Fund (ASF). ASF, a Pakistani non-profit company registered under section 42 of the Companies Ordinance of 1984 was formed to provide demand-driven technical and managerial assistance and private sector service delivery mechanisms throughout the agribusiness value chains including supply inputs, production, processing, and market access for domestic and export markets.

The five-year TAP project began on November 10, 2011. The overall goal of the project is to support improved conditions for broad-based economic growth, create employment opportunities and contribute to poverty alleviation through increases in competitiveness of horticulture and livestock value chains in partnership with all stakeholders. Specific objectives of the project are to: (i) strengthen the capacity in horticulture and livestock value chains to increase sales to domestic and foreign markets; (ii) strengthen the capacity of smallholders and farmer enterprises to operate autonomously and effectively; and, (iii) increase agriculture efficiency and productivity through adoption of new farming techniques and technological innovation among targeted beneficiaries.

The ASF had developed some basic information on many of the selected value chains targeted by the project. This information has been published in the following reports:

1. Horticulture (Peaches, Dates, Potatoes, Chilies) Value Chain Assessment Final Report for the Agribusiness Project (31 December 2012)
2. Dairy Value Chain Assessment Final Report for the Agribusiness Project (24 February 2013)
3. Meat Value Chain Assessment of the Livestock Sector of Pakistan (2 November 2013)

The present report is one of a series resulting from the effort to deepen the analysis provided in these reports by assessing the competitiveness of the selected value chains. These competitiveness assessments focused on the following:

- a) Identification of the precise gaps in the potential of Pakistan producers in the selected value chains;
- b) Validation of ongoing and planned interventions;
- c) Identification of attractive/alternative markets for the value chain products;
- d) Identification of additional interventions that could enhance value for all the chain actors;
- e) Facilitation of further prioritization of VCs and of the potential interventions in light of the augmented information and analysis;
- f) Facilitation of subsequent M&E by the information in the assessments

The methodology employed included refining maps of the functions and actors participating in each value chain, identifying variations in each depending on the product and relative efficiency of the different participants, and gathering as much information as possible on prices, costs, and efficiency metrics at each level, as well as volume of product flowing through each of these channels. In parallel, world market information was obtained to assess Pakistan's recent performance in each chain's product(s), assess its relative position vis a vis international competitors considering volumes, prices, and recent export growth, and benchmark the gaps between them.

The information sources used include a review of previous studies, interviews with adequate representation of all functions and participant groups in each value chain, including producers, intermediaries (contractors, commission agents, traders (beuparies), exporters, supermarkets, and input suppliers as well as key informants from among academia, and research and development professionals. The data presented in the reports primarily come from reports and databases published by the Pakistan Bureau of Statistics, Trade Development Authority of Pakistan (TDAP), Directorate of Market Information, Department of Agriculture Punjab, Economic Survey and other domestic and international secondary sources of information, particularly international databases such as International Trade Center (ITC) in Geneva and FAOSTAT. For each specific chain, various knowledge and information sources available on the Internet were utilized as well.

These documents were designed to focus on the competitiveness of the selected value chains. However, they shouldn't be considered final. They were conducted in a relatively short time (about 8 weeks) given the previous work done. Nevertheless, VC strategies should be "living documents" and continuously be updated as potential interventions are further tested and more information is uncovered.

Introduction:¹

The **apricot**, *Prunus armeniaca*, is a species of *Prunus*, classified with the plum in the subgenus *Prunus*. The native range is somewhat uncertain due to its extensive prehistoric cultivation.

The apricot is a small tree, 8–12 m (26–39 ft) tall, with a trunk up to 40 cm (16 in) in diameter and a dense, spreading canopy. The leaves are ovate, 5–9 cm (2.0–3.5 in) long and 4–8 cm (1.6–3.1 in) wide, with a rounded base, a pointed tip and a finely serrated margin. The flowers are 2–4.5 cm (0.8–1.8 in) in diameter, with five white to pinkish petals; they are produced singly or in pairs in early spring before the leaves appear.



Apricot tree in central Cappadocia, Turkey



Apricot flowers in the village of Benhama, Kashmir

The origin of the apricot is disputed. It was known in Armenia during ancient times, and has been cultivated there for a very long time. Its scientific name *Prunus armeniaca* (Armenian plum) derives from that assumption. Despite the great number of varieties of apricots that are grown in Armenia today (about 50), its center of origin would be the Chinese region, where the domestication of apricot would have taken place. Other sources say that the apricot was first cultivated in India in about 3000 BC.

Its introduction to Greece is attributed to Alexander the Great. It is believed that later a Roman General imported apricot trees along with cherry from Armenia to Rome. Although there has been confusion about the origin of apricot, it has been cultivated and is believed to have had a wide native range including Armenia, Caucasus, the Himalaya, China, and Japan. Apricots have been cultivated in

¹ Source: Wikipedia

Persia since antiquity, and dried ones were an important commodity on Persian trade routes. Apricots remain an important fruit in modern-day Iran, where they are known under the common name of *zard-ālū*. Egyptians usually dry apricots, add sweetener, and then use them to make a drink called *amar al-dīn*.

More recently, English settlers brought the apricot to the English colonies in the New World. Most of modern American production of apricots comes from the seedlings carried to the west coast by Spanish missionaries. Almost all U.S. commercial production is in California, with some in Washington and Utah.

Many apricots are also cultivated in Australia, particularly South Australia, where they are commonly grown in the region known as the River land and in a small town called Mypolonga in the Lower Murray region of the state. In states other than South Australia, apricots are still grown, particularly in Tasmania and western Victoria and southwest New South Wales, but they are less common than in South Australia. Apricot cultivation has spread to all parts of the globe containing climates that support it.

Although the apricot is native to a continental climate region with cold winters, it can grow in Mediterranean climates if enough cool winter weather allows a proper dormancy. The dry climate of these areas is good for fruit maturation. A limiting factor in apricot production is spring frosts: They tend to flower very early, which means that spring frost can kill the flowers. Furthermore, the trees are sensitive to temperature changes during the winter season. In China, winters can be very cold, but temperatures tend to be more stable than in Europe and especially North America, where large temperature swings can occur in winter.

Apricot cultivars are most often grafted onto plum or peach rootstocks. The scion from an existing apricot plant provides the fruit characteristics, such as flavor and size, but the rootstock provides the growth characteristics of the plant.

Apricots are susceptible to numerous diseases whose relative importance differs in the major production regions as a consequence of their climatic differences. Diseases include bacterial canker and blast, bacterial spot and crown gall, and an even longer list of fungal diseases, including brown rot, black knot, *Alternaria* spot and fruit rot, and powdery mildew. Other problems in apricot production are nematodes, and viral and phyto-plasma diseases, including graft-transmissible problems.

The fruit is a drupe similar to a small peach, 1.5–2.5 cm (0.6–1.0 in) diameter (larger in some modern cultivars), from yellow to orange, often tinged red on the side most exposed to the sun; its surface can be smooth (botanically described as: glabrous) or velvety with very short hairs (botanically: pubescent). The flesh is usually firm and not very juicy. Its taste can range from sweet to tart. The single seed is enclosed in a hard, stony shell, often called a "stone," with a grainy, smooth texture except for three ridges running down one side.



Apricot and its cross-section



Fresh apricots on display



Dried organic apricot, produced in Turkey:

Table 1: Dried Apricot Nutritional Value

Apricots, dried Nutritional value per 100 g (35.5 oz)

Energy	1.009 kJ (241 kcal)
Carbohydrates	63 g
- Sugars	53 g
- Dietary fibre	7 g
Fat	0.5 g
Protein	3.4 g
Vitamin A equiv.	180 µg (23%)
- beta-carotene	2163 µg (20%)
Thiamine (vit. B ₁)	0.015 mg (1%)
Riboflavin (vit. B ₂)	0.074 mg (6%)
Niacin (vit. B ₃)	2.589 mg (17%)
Pantothenic acid (B ₅)	0.516 mg (10%)
Vitamin B ₆	0.143 mg (11%)
Folate (vit. B ₉)	10 µg (3%)
Vitamin C	1 mg (1%)
Vitamin E	4.33 mg (29%)
Vitamin K	3.1 µg (3%)
Calcium	55 mg (6%)
Iron	2.66 mg (20%)
Magnesium	32 mg (9%)
Manganese	0.235 mg (11%)

Phosphorus	71 mg (10%)
Potassium	1162 mg (25%)
Sodium	10 mg (1%)
Zinc	0.29 mg (3%)

Source: USDA Nutrient Database

Seeds or kernels of the apricot grown in central Asia and around the Mediterranean are so sweet that they may be substituted for almonds. Oil pressed from these cultivar kernels, and known as oil of almond, has been used as cooking oil.

Anti-cancer glycosides (found in most stone fruit seeds, bark, and leaves) are found in high concentration in apricot seeds. Laetrile, a purported alternative treatment for cancer, is extracted from apricot seeds. Apricot seeds were used against tumors as early as AD 502. In England during the 17th century, apricot oil was also used to treat tumors, swelling, and ulcers. In 2005, scientists in the Republic of Korea found that treating human prostate cancer cells with amygdaline induces programmed cell death in vitro. They concluded, "Amygdaline may offer a valuable option for the treatment of prostate cancers".

World Apricot Production

Global apricot production was estimated at 3.9 million metric tons in 2011. Turkey is the world's largest producer, growing 676,000 TONs of fresh apricots in 2011. An estimated 12-15% of the worldwide crop of fresh apricots, and about 65-70 % of the worldwide production of dried apricots comes out of Malatya region in Eastern Anatolia. Iran is the second largest producer and Uzbekistan, according to FAO data, was the 3rd largest apricot producer in the world in 2011.

Table 2: World's Top 10 Apricot Producing Countries in 2011

Production (Metric Tons)					
Rank	Apricot Producing Country	2008	2009	2010	2011
1	Turkey	750,574	695,364	476,132	676,138
2	Iran (Islamic Republic of)	487,333	371,814	371,814	452,988
3	Uzbekistan	265,000	292,000	325,000	356,000
4	Algeria	172,409	202,806	198,467	285,897
5	Italy	205,493	215,121	252,892	263,132
6	Pakistan	237,937	193,936	190,174	189,420
7	Morocco	113,216	133,598	134,933	159,124
8	France	94,516	195,932	144,856	155,124
9	Ukraine	88,900	73,400	77,200	119,900
10	Japan	121,000	115,200	92,400	106,900

Source FAO Stats 2013

A Study on Commercial Potential of GB Apricot by Apex Consulting² suggests that FAO production figures for Pakistan do not include production data for GB, Azad Jammu and Kashmir and the tribal areas. If the estimated production of 114,000 tons was added to Pakistan's total on account of GB

² Commercial Potential of GB Apricot financed by Swiss Agency for Development and Cooperation (SDC) and produced by Apex Consulting

apricot production, the total production would increase to 303,420 TONSs making Pakistan the fourth largest apricot producer in the world after Turkey, Iran and Uzbekistan.

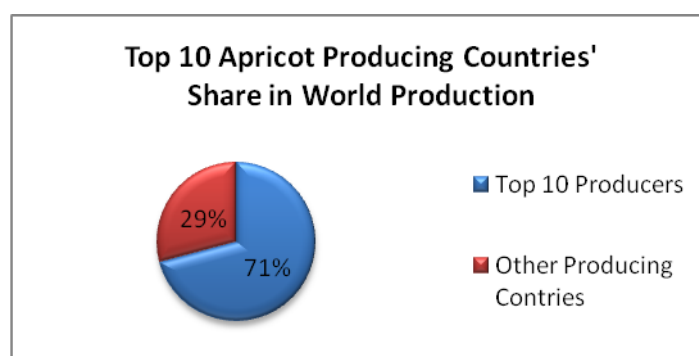
Table 3: Pakistan Apricot Production in 2011

Tons	
Pakistan Production as per FAO Stats	189,420
Production in GB and Kashmir Areas	114,286
Total	303,706

Source FAO Stats 2013 and GB DoA Estimates

The top 10 apricot countries share in total world production, indicating that apricot production is relatively concentrated. Upon further study, the list of the top 10 countries reveals that most of the production is coming from the countries in the Mediterranean region and former states of the Soviet Union. Incidentally, these states are geographically located on the northern side of the Himalayas and Production areas in Pakistan, Iran and Afghanistan fall on the Southern side of the high mountain ranges in the area; this is indicative of favorable growing conditions for apricot in these areas.

Chart 1: Share of Top 10 Producing Countries



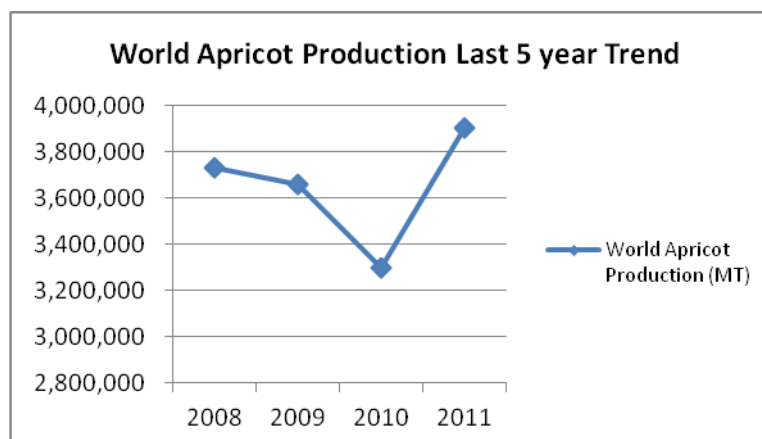
Source FAO Stats 2013

Table 4: Area under Apricot Production

(Hectares)				
Countries/Year	2008	2009	2010	2011
World	486.140	475.280	486.526	488.344
Turkey	58.000	59.000	59.801	59.696
Iran (Islamic Republic)	61.000	47.000	50.000	50.177
Algeria	32.849	34.119	37.190	38.174
Uzbekistan	33.000	34.000	35.500	36.500
Pakistan	31.018	30.206	29.648	29.634
China	20.483	22.349	22.425	22.689
Italy	17.370	18.033	19.543	19.595
Spain	18.834	19.226	18.333	18.729
China, mainland	14.000	15.000	16.000	17.000
Japan	17.400	17.100	16.900	16.600
France	14.049	14.398	13.975	13.900
Syrian Arab Republic	13.600	13.563	13.700	13.746
Morocco	11.187	11.196	12.244	12.505
Afghanistan	8.000	8.170	8.320	8.320

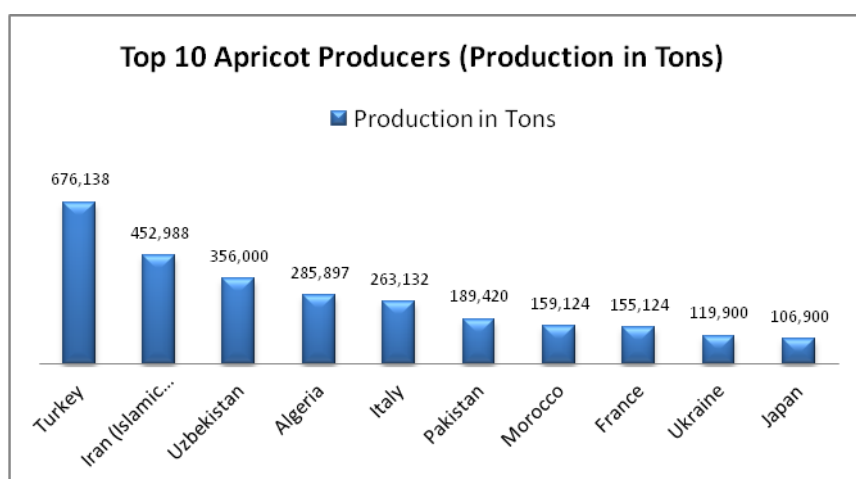
Source: FAO Stats

Chart 2: World Apricot Production Trend



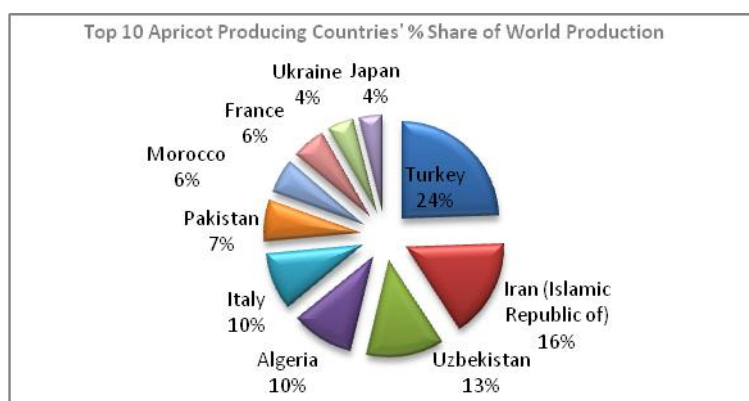
Source: FAO Stats

Chart 3: Leading Apricot Producers of World in 2011



Source: FAO Stats

Chart 4: Leading Apricot Producers of World in 2011 (Relative Share in World Production)



Source: FAO Stats

Table 5: Comparison of Yields: Leading Apricot Producing Countries of the World

Rank	Country	Yield per hectare Tons
1	Austria	40.248
2	Slovenia	18.568
3	Egypt	15.470
4	Turkmenistan	15.338
5	Switzerland	14.027
6	Italy	13.429
7	Romania	13.249
8	Ukraine	12.893
9	Morocco	12.725
10	United States of America	12.297
11	Turkey	11.326
12	France	11.160
13	Chile	10.676
14	Israel	10.204
15	Uzbekistan	9.753
16	South Africa	9.114
17	Iran (Islamic Republic of)	9.028
18	New Zealand	7.080
19	Afghanistan	6.736
20	Pakistan	6.392
World Average		7.988

Source: FAO Stats 2013,

In terms of productivity (yield per hectare) Pakistan is at approx 80% of world average, whereas compared to top ranked country Austria, Pakistan' per hectare yield is at 16%. This signifies that despite comparative advantages like climatic conditions, soil and irrigation water availability, Pakistan needs to work on production systems to enhance its competitive advantage as compared to other producers of the world. For instance Pakistan apricot producers need to improve their per unit area yields by 177% to be at parity with its Turkish counterparts/competitors. Therefore, this consultant is of this understanding that besides other factors, the apricot production part of the chain needs to enhance its yield per unit area to be competitive in the international markets.

Table 6: Countries where Apricot Production Has Increased between 2008-2011

Country	Production in Tons				% Increase between 2008 and 2011
	2008	2009	2010	2011	
Uzbekistan	265,000	292,000	325,000	356,000	34.34%
Algeria	172,409	202,806	198,467	285,897	65.82%
Italy	205,493	215,121	252,892	263,132	28.05%
Morocco	113,216	133,598	134,933	159,124	40.55%
France	94,516	195,932	144,856	155,124	64.12%
Ukraine	88,900	73,400	77,200	119,900	34.87%
China	77,812	89,890	94,995	88,010	13.11%

Source FAO Stats 2013

Table 6 above shows that among the top exporting countries, France and Morocco have been able to increase their production over the last few years. Countries like Algeria, Uzbekistan, Ukraine, Italy and China are also increasing their production further to build future growth. Their rate of production growth is many folds higher than the world average increase over the same period of time, which is an indication of their competitive strength.

Table 7: Countries where Apricot Production Has Decreased between 2008-2011

Rank in World	Country/Year	Production (Metric Tons)				% Increase between 2008 and 2011
		2008	2009	2010	2011	
1	Turkey	750,574	695,364	476,132	676,138	-24.76%
2	Iran (Islamic Republic of)	487,333	371,814	371,814	452,988	-20.39%
6	Pakistan	237,937	193,936	190,174	189,420	-20.37%
10	Japan	121,000	115,200	92,400	106,900	-18.33%
11	Egypt	106,165	112,977	92,704	96,643	-11.65%
13	Spain	109,108	95,221	78,715	86,880	-9.92%
15	Syrian Arab Republic	100,900	98,913	61,981	75,919	-8.97%
16	United States of America	74,035	62,324	60,219	60,464	-7.05%
18	South Africa	61,222	46,594	44,346	57,421	-6.21%

Source FAO Stats 2013

Turkey, Iran and Pakistan have recorded significant (25%, 20% and 20%) decreases in production over the last five years. This is an indication of erosion of competitiveness in the production segment of the value chains in these countries. The trend is also confirmed from the reduction in production area in these countries. In the case of Pakistan (Gilgit Baltistan), the consultant probed this particular issue with the growers in the Gilgit, Hunza and Ghizer areas. It came out in the discussions that some of the growers had replaced their apricot trees with Cherry and Almond trees due to higher returns and a regular market for the produce. In answer to the question, if the interviewees had known any case where growers had planted new apricot trees in the last few years, the answer was “no.” This consultant gathers that the FAO data is representative of the realities on the ground and both area of apricot orchards and overall production are in decline .

The Pakistan Apricot Sector

Pakistan produces approximately over 303 thousand tons of fresh apricots, making it the world’s fourth largest producer. Gilgit Baltistan (GB) and Baluchistan are the two main apricot growing regions in Pakistan, with GB alone producing 114,286 tons in 2011.

Planting density is estimated to be only 230 trees/ha in GB which is much less than usual 750 trees/ha when apricots are grown in orchards, unlike in GB where apricot trees are usually planted around field edges.

Earlier studies have reported average yield per plant to be 38 kg/tree, which seem to be grossly under reported. During the validation exercise, the consultant checked with growers from several areas of Ghizer, Gilgit and Hunza districts. The figures were much higher in each instance. According to Mir Ali a grower in the Gahkush area of district Ghizer, his average output per tree from 14 trees comes out be around 200 kgs this year. According to him, a big tree gives up to 400 kgs of fresh fruit in his area. He estimates total wastage on trees in the range of 5-7% only. There seemed no disagreement to this estimate from other growers in the room.

Pakistan produced approx 6.392 Tons per hectare in 2011 (FAO Stats). The country averages approximately 80% of world average in terms of yield per unit hectare. On analysis of the yield figures of top ten producers, one notices that Pakistan's productivity level was 34% of that of Slovenia's and 56% of that of Turkey's.

Apricot and its Significance for the Gilgit Baltistan Region

Apricot trees and apricots are found everywhere in Gilgit Baltistan region. According to a Department of Agriculture survey, on average, every household in GB has 30 trees out of which at least 15 are apricot trees. Apricot trees and apricots have been a part of the local culture and ecology for centuries. Apricots are an important part of the local food chain and therefore apricot trees are considered one of the most important socio-economic household assets in GB. Apricots are grown in all GB districts and contribute in a number of ways to the GB economy. Its fruit is eaten fresh as well as dried, and consumed domestically and sold commercially. A major part of the annual crop is dried and is then used both domestically as well as sold commercially for down country consumption. Along with potatoes, dried apricots are the region's major cash commodities.

Like apricots, apricot kernel and its oil are also used regularly in every household. The oil, which is extracted from the kernels, has many uses including edible oil, massage oil and as medicine especially for stomach ailments and for chronic joint pain. Similarly, the leftover kernel cake is fed to cattle and is also used by women for washing hair.

Lastly, apricot wood is used as firewood in the winter as it is considered to be the best quality firewood.

Apricot Production in Gilgit Baltistan:

Apricot is the most significant fruit grown in Gilgit Baltistan (GB) in terms of tonnage and value. It has the largest area under cultivation, and highest average number of trees per households. Among the fruits grown in GB, apricots have a unique significance in terms of food security of Gilgit Baltistan population and overall economic contribution to the growers' economy.

Over 50% of total fruit trees owned by households in GB (Department of Agriculture) are apricot

Table 8: Apricot Trees per Household in the Gilgit Baltistan Region

Region	Average # of Trees per House Hold
Gilgit Baltistan	15.10
Skardu	28.43
Ghanche	36.25
Gilgit	1.57
Ghizer	1.77
Astore	1.10

Source: Department of Agriculture Gilgit Baltistan

Over the years, the apricot has emerged as an agricultural product with the potential to accelerate the growth of rural economies. It offers good opportunities for future income and employment through the establishment of processing industries. Gilgit Baltistan can possibly become one of the major

apricot producing areas in Pakistan due to its comparative advantage emanating from highly conducive climatic conditions, water resource availability and an efficient farming community.

Table 9 below shows that except for Diamer, apricots have the highest contribution to fruit produced in all the districts of the Gilgit Baltistan region. Skardu and Ghanche have an overwhelming 70% and 78% apricot contribution. Apricots have the maximum contribution in production followed by apples and walnuts. According to the AKRSP³ study report, the number of apple and cherries plants is increasing due to higher commercial gains compared to apricots and other fruits; however, apricots due to their easy management, very high adoption and multiplication rate and multiple roles in livelihood system, will remain one of the most grown fruits in the region. Commercialization of marketable varieties of apricots among fruits like apples, cherries and almonds is a good sign, but this limited to specific areas with certain climatic and marketing advantages.

³ *Basic Study on the Horticulture Sector in Gilgit-Baltistan*, study conducted by Aga Khan Rural Support Programme (AKRSP)

Table 9: Apricot Contribution to Economic Value Compared to Other Fruit Crops in GB

District	Prominent Fruits	% Contribution
Gilgit	1. Apricot 2. Walnut 3. Pomegranate 4. Apple	20 18 12 10
Hunza/Nagar	1. Apricot 2. Apple 3. Walnut 4. Cherry	43 17 15 10
Ghizer	1. Apricot 2. Almond 3. Walnut 4. Apple	48 15 10 10
Astore	1. Apricot 2. Walnut 3. Apple 4. Cherry	33 32 17 6
Diamer	1. Walnut 2. Apple 3. Pomegranate 4. Grapes	45 11 9 8
Skardu	1. Apricot 2. Apple 3. Walnut 4. Cherry	70 14 4 3
Ghanche	1. Apricot 2. Apple 3. Walnut 4. Almond	78 9 7 3

Source: Department of Agriculture Gilgit Baltistan

Chart 5: Harvest Calendar for Apricot in GB

Zone	Jan	Feb.	Mar.	Apr.	May	Jun.	July	Aug.	Sep.	Oct.	Nov.	Dec.
D												
MD												
S												

Source: AKRSP/DoA Study 20010

Key: D=Double cropping Zone, MD = Marginal Double Cropping Zone, S= Single Cropping Zone

The AKRSP/DoA Study reported that apricot had the highest production volumes (108,588 Ton) and consumption volumes (21,862 tons fresh and 7,072 Tons dry) in 2007. Apricot also had the highest volumes that were marketed in 2008 (14,428 fresh and 9,372 dry).

It is worth noting that the survey also revealed that over 50% of apricots were lost during the various stages: harvesting, handling, drying, transportation, etc.

Table 10: Utilization of Apricot in GB

	Fresh	Dried	Total
Production			114,286
Consumption	2,494	3,519	
Wastage			43,083
Marketed	2,939	5,692	

Source: GB Agriculture Statistics 2009, Department of Agriculture Gilgit Baltistan

A general trend with respect to consumption by the growers is depicted in Table 11 below.

Table 11: Utilization of major Apricot Processed products in GB

Apricot		
Product	Household Consumption %	Marketed%
1. Sun dried Apricot	10	90
2. Sun dried Apricot	40	60
3. Apricot Kernel Oil	25	75
4. Apricot kernel Cake	100	0

Source: AKRSP/DoA Survey, 2010

This trend was generally confirmed during the validation process in Gahkush, District Ghizer and Gilgit.

During the validation process, the consultant investigated these aspects with the various growers, processors, agriculture experts and key informants, and found that there are significant variations across the various apricot producing areas/clusters depending upon the following major factors:

- Varietal Mix: What portion of apricots grown in the area belong to the so called commercial varieties? (expected value of harvested product in the market)
- How far is the market from the production cluster? (market accessibility)
- Relative importance of apricot harvest as compared to wheat for the farmer?
- Availability of contract labor for harvesting;

For instance, the focus group discussion with Mountain Fruit Association (MUNAF) member growers at Gahkush (District Ghizer) revealed that

- Commercial varieties (Habi and other 05) comprise approx 55% of the plantations in the area, due to anticipated buying of apricots by Mountain Fruit Company. Most of the apricots were harvested despite constraints and almost 100 % of the fruit of commercial varieties was harvested. The majority of wasted apricots come from the Desi or Jungli varieties, though Habi and "Hulmand" varieties are invariably completely harvested.
- The next major contributing factor to overall wastage was incidence of rain during the sun drying process, where during the 7-8 days when the fruit was let on the rocks to dry, rain destroys a major portion of the product due to contamination and mould growth

According to the AKRSP/DoA survey, the prospects of processing fruits has increased due to availability of good communication and interaction with the national and international markets. At present, very small portion of apricot is being processed under hygienic conditions by commercial outfits. The bulk is processed (mostly dried) at homes, and much of what is processed is consumed at home and is not marketed or marketable.

Figure 1: Traditional Sun Drying of Apricot in GB



Source: Study on Commercial Potential of GB Apricot

The majority of apricot growers dry their fruit in the open under sun. The product loses quality due to improper and unhygienic processing methods. It is concluded in the report that the reason for lack of value addition in fruits and high volume of post harvest losses is the lack of capacity of farmers to produce a marketable product. It is also true that NGOs and Government departments present huge numbers of people who have been trained in fruit and vegetable processing, including apricot processing (AKRSP/DoA study 2010). The end result however does not show significant impact on the ground as about 99% apricot is still dried in the conventional ways.

As reported in the AKRSP/DoA survey report, there were only eight (8) private sectors processing units that were engaged in small scale horticultural processing. Keeping in view the huge volumes produced in the region, this figure is negligible.

A unique example is Mountain Fruit Company. MF is the pioneer private sector dried fruit company in GB that has linkages in the global dried fruit value-chain, and has succeeded exporting to United Kingdom market under Fair Trade and Organic labels. The company is making efforts to expand its processing capacity as well as market volume. According to the CEO, they are constrained at the moment due to non availability of financial resources to modernize and expand their processing facilities for dried apricots. He also think that converting fresh apricots during the harvesting season into apricot pulp and storing it in aseptic packaging is the only viable solution to increase utilization of the fruit at industrial level and thereby decrease wastage. MF is considering setting up a pulp line at their newly constructed purpose built facilities at Nasirabad (Hunza-Nagar). The company is looking for appropriate avenues/options to leverage finances for the expansion. Their proposal for a challenge grant has been under consideration with the Agribusiness Project as well.

Table 12: Wholesale Supply of Apricots

(Value in Percent)								
Fruits	GB	Gilgit	Hunza/ Nagar	Ghizer	Astore	Diamer	Skardu	Ghanche
Apricot-A	15%	15%	12%	16%	3%	17%	19%	30%
Apricot-B	9%	4%	8%	17%	13%	11%	7%	12%
Apricot-Normal	3%	2%	0%	6%	1%	0%	5%	6%
Kernel Bitter	2%	2%	2%	2%	0%	0%	3%	5%
Kernel Sweet	4%	2%	4%	6%	0%	17%	5%	7%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Source: AKRSP/DoA Survey, 2010

Potential of Apricots Produced in Gilgit Baltistan Region:

a) Domestic Markets:

Apricots are primarily consumed fresh in Pakistan; therefore, all the market mechanisms and supply chains are geared towards supplying fresh fruits to consumers. Fresh apricots commanded a price of Rs 10-25 per kg at the farm gate in the Gilgit Baltistan region this year. Corresponding retail prices were reported between PKR 25 and 35 per kg in Gilgit. Farm gate prices are reported to be much worse in the farther away areas of Skardu and Ghanche districts, where farm gate prices were as low as Rs 5 per kg.

In the Islamabad fruit market, the wholesale price ranged from PKR 60 to 80/ kg for commercial varieties from GB, Baluchistan or Afghan apricots. Prices rose to PKR 220-240 for a brief period in the month of Ramadan this year but this opportunity was not available to GB apricots as the harvesting season had already passed.

Judging from the huge price spread available between the farm gate prices and the retail prices in the urban centers, there is huge potential for fresh apricots from GB in the domestic fruit markets of Pakistan. To increase supplies from GB to down country markets, a supply chain must be developed between GB and Islamabad. Similarly, for large scale down country and international export of GB apricots to become a reality, an improved road network is a necessity to ensure a steady supply of large quantities of fruit to central locations like Gilgit and Skardu.

b) Export Markets:

According to fresh fruit exporters, profit margins in export of fresh apricots are significantly higher than those in traditionally exported fruits like mangoes and citrus. Currently, all fresh apricots being exported are first imported from Afghanistan, repackaged and then exported to the Middle East. Exporters in Karachi had indicated that their ability to export apricots is limited mainly by the quantities available from Afghanistan (Apex Consulting Study 2010).

A few traders in Gilgit assert that apricots from Gilgit Baltistan can be exported to by air through Skardu airport. They state that there is at least one daily PIA flight between Skardu and Islamabad (subject to weather conditions). This flight can be used to fly batches of pre-packed fresh apricots to

Islamabad that can then be flown to a number of Middle Eastern and European destinations through a number of direct flights.

Huge figures were reported in an earlier study done on commercial potential of apricots from the Gilgit Baltistan region. Potential sales were assumed on the basis of the total estimated production of the entire region. During the validation process, this consultant however understood that several practical limitations on grounds mentioned above would make it impossible to realize volumes as projected in the earlier studies. A more pragmatic estimate by the consultant is given below in Table 12 for an estimated projection.

It is assumed that if the top 10% in quality of total apricot production of commercial varieties (assumed to be xx% of total apricot production in the region) could be exported at the average unit price prevailing in 2012, over US Dollar (USD) 2.8 million worth of export value could be realized from fresh apricot exports.

In the case of dried apricots, it is assumed that if 50% of selected quality dried apricot was exported at the prevailing world average unit price, over 9.2 million US dollars worth exports potential could be realized.

Table 13: Estimated Potential of Export Earnings from Fresh and Dried Apricot

Exports Potential of Fresh Fruit		
Export Price of Fresh Apricot (World Average)	USD per ton	1,363
Total Available Quantity for Exports (10% of Fresh Produce of Highest Grade Commercial Varieties)	tons	2,068
Potential Export Proceeds at Prices available in 2012	USD	2,818,957
Potential Export Proceeds at Prices available in 2012	PKR	295,990,443
Potential Price Realization on account of Product (50% of C&F Price)	PKR per Ton	103,410
Export Potential of Dried Fruit		
Export Price of dried Apricot (World Average)	USD per ton	2,380
Total Available Quantity for Exports (50% of Dried Product of highest quality)	tons	3,878
Potential Export Proceeds at Prices available in 2012	USD	9,229,640
Potential Export Proceeds at Prices available in 2012	PKR	461,482,000
Potential Price Realization on account of Product (50% of C&F Price)	PKR per Ton	119,000

III. Market Trends:

Pakistan Domestic Markets

Fresh Apricot:

According to local market estimates, around 3000-3200 tons of fresh apricots were transported down country from Gilgit Baltistan region in 2013. This is a miniscule portion of the total production in the area (less than 3%). Traditionally, due to a number of physical and supply chain constraints, fresh apricots from GB have not been able to reach markets in down country regularly. However, there have been some attempts by middlemen in secondary markets like Rawapindi and Peshawar to buy standing crops in Gilgit and Astore areas and to export them to markets down country. A healthy

change had set in before the law and order situation deteriorated in 2010. A sharp decrease in prices of fresh apricots in 2013 is a strong indication that this lack of market has become once again an acute constraint for fresh apricots.

On the other hand, most of the fresh apricots available in the down country markets of Pakistan come from Baluchistan, Afghanistan and Swat; Khyber Pakhtunkhwa. According to a market estimate by Pakistan Horticulture Development Export Company (PHDEC), out of an estimated 240,000 metric tons of production from Baluchistan and KPK, over 94% came from Baluchistan in 2011.

Pakistan was a net importer of fresh apricot in 2012. Pakistan imports of 2,574 tons came from Afghanistan, most of which added to domestic supplies.

Dried Apricot:

Dried apricots, along with other dried fruits are mostly consumed in the winter months. In the Gilgit Baltistan region, however, they are an integral part of the local diet, and are consumed regularly in a number of ways. Total annual dried apricot consumption in Pakistan is estimated at more than 12,236 tons. Of this amount, more than 3,514 tons is consumed locally within GB, while the remainder is consumed by the rest of the country. GB supplies approximately 5,149 tons of dried apricots to the down country markets, and the rest is imported from Afghanistan.

Table 14: Estimated Consumption of Dried Apricot in Pakistan, 2012 (Tons)

	8,663
Consumed Domestically in GB	3,514
Supplied to down country markets	5,149
Estimated total Consumption of dried apricot in down country	8,722
Supply from GB	5,149
Supply from Afghanistan	3,573
Total Annual Dried Apricot Consumption in Pakistan	12,236

Source: Author's Estimations based on market information and DoA Statistics

Processed Apricot Products:

There is very little local or international trade in apricot products by Pakistani firms at the moment. Apricot Jam is the only readily available in the domestic markets. A small quantity of apricot oil is marketed by a not for profit foundation operating out of Skardu. AKRSP markets a small quantity of apricot based cosmetic products through its Serena Hotel outlets. The size of existing sales as well as size of potential markets is not known as such.

Export Markets:

World fresh apricot trade stood at slightly above USD 440 million in the year 2012. A total of 323 thousand tons were exported at an average price of USD 1,363 per ton. Dried apricot trade stood at US dollar 391 million in 2012, with a total of 164,400 tons exported at an average price of USD 2380 per ton. The largest volumes of apricot exports were traded fresh (53.6%) followed by 27.3% of dried apricot traded internationally. Apricot processed product exports were 19.1% of total volumes traded.

Fresh apricot international trade steadily increased 21% annually between 2008 and 2012, whereas dried and processed apricot international trade remained static in those five years.

ITC Statistics indicate that there is a sizeable (USD 157 million) international market for apricot products. International trade of processed apricots comprised 16% of world trade in terms of value ,and 19% of trade volume in 2012. It is worth noting that Pakistan was not present in the processed apricot products category. It is also worth noting the comparison in Table 15 below, while fresh apricot exports were a bigger portion of world trade, Pakistan's fresh trade lagged behind dried apricot exports both in value and volume.

The table below shows the product mix of world apricot markets, and Pakistan's share of mthe arket in the respective categories.

Table 15: World Apricot Trade Product Mix Comparison in 2012

World Apricot Trade: Product Mix				
	000 USD	Tons	Value %	Qty %
Fresh	440,163	323,022	44.5%	53.6%
Dried	391,323	164,400	39.6%	27.3%
Processed	157,561	114,912	15.9%	19.1%
Total	989,047	602,334	100%	100.0%
Pakistan Apricot Trade: Product Mix				
	000 USD	Tons	Value %	Qty %
Fresh	438	396	30.6%	48.5%
Dried	993	420	69.4%	51.5%
Processed	-	-	-	-
Total	1,431	816	100%	100%

Source: Authors Calculations based on ITC Trade Map Statistics

Chart 6: World Apricot Trade Mix (\$ Value)



Source: ITC Trade Map Statistics

Chart 7: World Apricot Trade Mix (Volume)



Source: ITC Trade Map Statistics

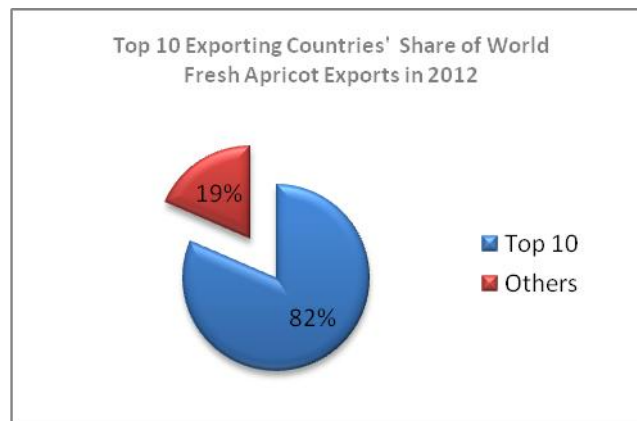
World Trade: Fresh Apricots

The majority of apricots are consumed in producing countries, and approximately only 8% of world production was traded in 2012 (ITC and FAO Stats).

As mentioned earlier, total world trade of fresh apricots stood at slightly above USD 440 million in the year 2012 (apricots, fresh defined under Harmonized code 080910). The volume of trade stood at 323 thousand tons in 2012. In the world markets, the largest volumes of apricot exports are traded fresh. Fresh apricot exports have steadily increased by 21% from 2008 to 2012. Although France is only the world's eighth largest producer in 2011 with 155,124 tons of apricot production, it exported approximately 38% of its harvest, which is 24.5% of total world trade, making it the global leader in fresh apricot exports.

Chart 8 below shows that the world fresh apricot trade is dominated by top 10 exports with 82% of world market share. The sixty one (61) other exporting countries contributed only 19% to world exports.

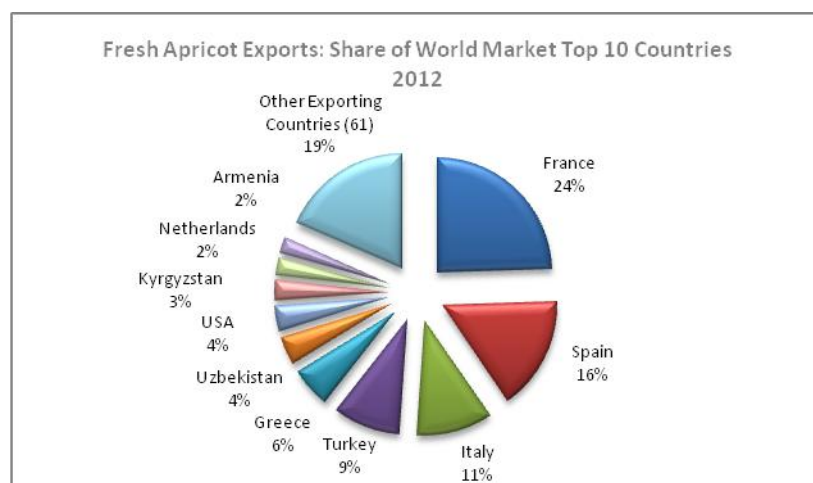
Chart 8: Top 10 Exporting Countries' Share of World Fresh Apricot Exports in 2012



Source: Author's Calculations based on ITC, Trade Map, 2013

As depicted in Chart 9 below, France is the world's largest exporter of fresh apricots followed by Spain and Italy.

Chart 9: Fresh Apricot Exports: Share of World Market Top 10 Countries 2012



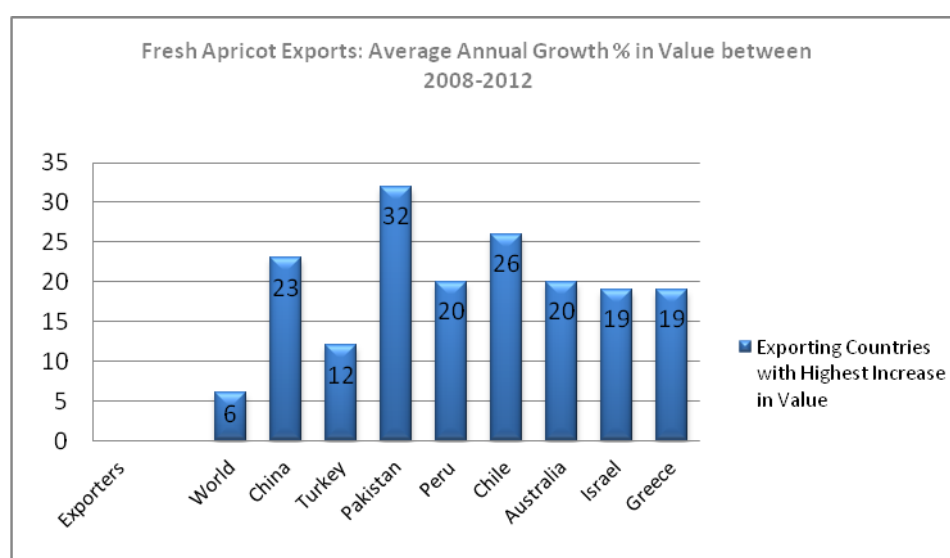
Source: ITC, Trade Map, 2013

World Fresh Apricot Market Trends:

Growth:

World Fresh apricot trade grew 6% annually in the last 5 years in dollar value terms. As shown in Chart 10 below, China, Chile, Australia, Peru, Israel, Greece and Pakistan recorded double digit growth in export value. Pakistan recorded the highest growth of 32% per annum in the world, followed by Chile (26%) and China (23%).

Chart 10: Fresh Apricot Exports: Fastest Growing Export Countries in 2012



Source: ITC, Trade Map, 2013

Unit Prices:

As Table 16 below shows, leading fresh apricot exporting countries like United States, France, Italy and Spain achieved higher than world average unit prices in 2012. It is worth noting that Afghanistan averaged unit export price of 157% of world average in 2012. Pakistan unit price was 81% of world average price for fresh apricots.

Table 16: Fresh Apricot Exports: Highest Achievers of Unit Prices in 2012

Exporters	Unit value (USD/unit)	Unit value as % of World Ave.
World	1,363	100%
France	1,842	135%
Spain	1,659	122%
Italy	1,497	110%
United States of America	2,047	150%
South Africa	1,464	107%
Afghanistan	2,137	157%
Hungary	1,579	116%
Chile	1,661	122%
Pakistan	1,106	81%

Source: ITC, Trade Map, 2013

Fresh Apricot Imports Trends:

Germany topped the list of importing countries for fresh apricot, followed by Russian Federation, Italy, Austria and France. As shown in Table 17 below, German imports accounted for more than 31 percent of fresh apricots in 2012, followed by Russian Federation's over 15% share in world imports.

Table 17: Fresh Apricot Imports: Top 10 Import Markets in 2012

Rank in World Imports	Importers	Value imported in 2012 (USD thousand)	Quantity imported in 2012	Share in world imports (%)
	World	469,461	321,771	100
1	Germany	100,515	53,784	21.4
2	Russian Federation	73,791	67,198	15.7
3	Italy	27,576	20,997	5.9
4	Austria	27,434	13,601	5.8
5	France	26,721	15,701	5.7
6	Netherlands	23,943	9,435	5.1
7	Kazakhstan	20,467	25,711	4.4
8	Switzerland	19,166	7,865	4.1
9	Belgium	17,568	7,999	3.7
10	United Kingdom	15,690	6,674	3.3

Source: ITC, Trade Map, 2013

Growth:

In terms of import growth, Kazakhstan recorded the highest growth with an over 300 percent annual increase in the last five years. It has already become a significant importer of fresh apricots in the world (Ranked 7 in 2012). Among the top 10 import markets Russian Federation, Belgium and Netherlands were the other fastest growing import markets in 2012.

Among the other import markets, Iraq, Ukraine and UAE show potential for high growth.

Table 18: Fresh Apricot Imports: High Growth Markets in 2012

Rank in World Imports	Importers	Value imported in 2012 (USD thousand)	Annual growth in value 2008-2012 (%)	Annual growth in quantity 2008-2012 (%)	Share in world imports (%)
7	Kazakhstan	20,467	303	276	4.4
17	Iraq	4,808	189	195	1
16	Pakistan	5,527	59	71	1.2
12	Ukraine	12,563	43	23	2.7
15	Lithuania	6,401	27	27	1.4
20	United Arab Emirates	2,989	24	5	0.6
21	Spain	2,743	19	50	0.6
6	Netherlands	23,943	15	10	5.1
18	Australia	4,166	13	11	0.9
2	Russian Federation	73,791	8	4	15.7
9	Belgium	17,568	8	15	3.7
13	Poland	10,500	8	18	2.2
11	Canada	12,943	7	-1	2.8
1	Germany	100,515	0	7	21.4

Source: ITC, Trade Map, 2013

World average unit price for fresh apricot was USD 1.459 per ton in 2012. Table 17 below lists countries that imported at an average unit price much higher than average world unit price. These are considered the most lucrative markets and may be further studied for future development.

Table 19: Fresh Apricot Imports: Most Lucrative Import Markets of the World

Rank in World Imports	Importers	Unit value (USD/unit)
	World	1459
18	Australia	3826
19	United States of America	3620
11	Canada	2749
6	Netherlands	2538
8	Switzerland	2437
10	United Kingdom	2351
9	Belgium	2196
4	Austria	2017
15	Lithuania	1982
1	Germany	1869
20	United Arab Emirates	1708
5	France	1702

Source: ITC, Trade Map, 2013

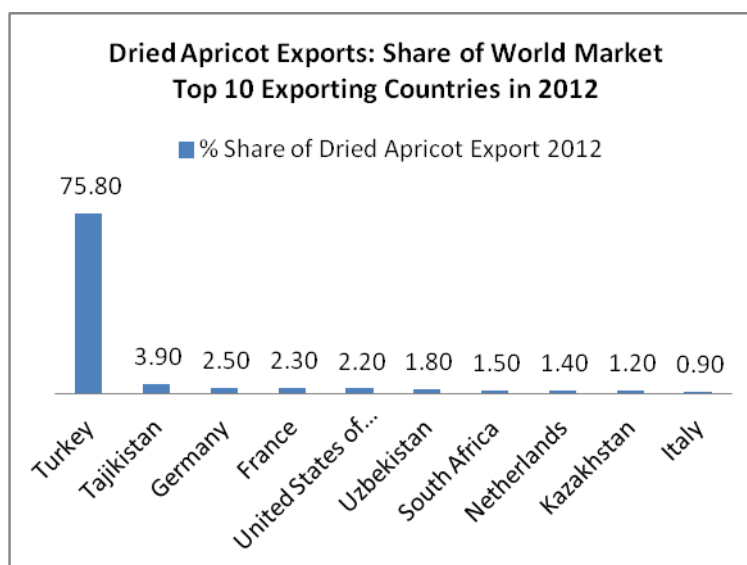
World Trade: Dried Apricot:

World dried apricot exports stood at USD 391 million in 2012 with a total 164,400 tons exported at an average price of USD 2380 per ton.

World trade in dried export has experienced no net decline in the last four years and a decline of 17% has been reported as compared to year 2011. This shows that the dried apricot market is shrinking.

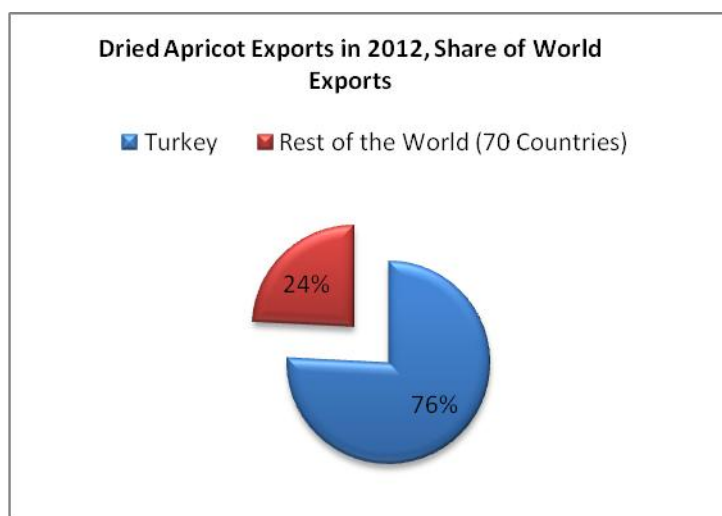
As depicted in charts 11 and 12, Turkey dominated the world dried apricot exports market, exporting more than 75% of total world exports in 2012, followed by Tajikistan, Germany, France and United States with 3.90, 2.50, 2.30 and 2.20 percent of the world market share respectively among the top five leading exporters.

Chart 11: Dried Apricot Exports: Share of World Market Top 10 Exporting Countries in 2012



Source: ITC, Trade Map, 2013

Chart 12: Dried Apricot Exports: Turkey's Share of World Market in 2012



Source: ITC, Trade Map, 2013

Analyzing world dried apricot exports further, we notice that world top 10 exporting countries also achieved much higher unit prices as compared to the average world unit price. France, Germany and USA and South Africa achieved over 200 percent of world average price.

Table 20: Dried Apricot Exports: Top Unit Price Achievers in 2012

Exporting Country Rank in World Exports	Exporters	Unit Price as Percent of World Average Unit Price
	World	100%
4	France	277%
3	Germany	244%
7	South Africa	222%
5	United States of America	213%
8	Netherlands	164%
11	Afghanistan	137%
1	Turkey	123%
19	Pakistan	99%

Source: ITC, Trade Map, 2013

World Dried Apricot Imports:

Russia was the world's largest importer; however, the most recent statistics show that imports more than halved in 2011. Also, Kazakhstan rose from being a minor importer to a world leader in the same year (ITC). Further detailed information on trade flows is presented below.

Table 21: Dried Apricot Imports: Top 10 Importing Countries in 2012

Rank among Importing Countries	Importers	Value imported in 2012 (USD thousand)	Quantity imported in 2012	Unit value (USD/unit)	Share in world imports (%)
	World	398,975	148,954	2679	100
1	United States of America	49,120	14,195	3460	12.3
2	Russian Federation	37,280	15,054	2476	9.3
3	United Kingdom	33,847	8,937	3787	8.5
4	France	30,140	7,773	3878	7.6
5	Germany	27,656	7,490	3692	6.9
6	Kazakhstan	19,019	33,450	569	4.8
7	Australia	15,748	5,245	3002	3.9
8	Ukraine	13,887	5,612	2475	3.5
9	Brazil	13,555	3,680	3683	3.4
10	Canada	10,763	2,730	3942	2.7

Source: ITC, Trade Map, 2013

As shown in Table 20 below, Kazakhstan, Pakistan, Qatar and Senegal recorded import growth in triple digits between years 2008 and 2012. Except Kazakhstan, all other markets are relatively small. Pakistan is also among the fastest growing import markets for dried apricot. Its imports are exclusively coming from Afghanistan.

Table 22: Dried Apricot Imports: Fastest Growing Market between 2008-12

Rank among Importing Countries	Importers	Annual growth in value 2008-2012 (%)
6	Kazakhstan	263
81	Pakistan	163
71	Qatar	138
105	Senegal	113

Source: ITC, Trade Map, 2013

As shown in Table 21 below, among the top 10 import markets Kazakhstan, Ukraine and Canada may be of particular interest due to double-digit growth, and good price level and market size.

Table 23: Dried Apricot Imports: Growth Trend among the Top 10 Import Markets

Rank among Importing Countries	Importers	Annual growth in value 2008-2012 (%)	Annual growth in quantity 2008-2012 (%)
6	Kazakhstan	263	358
8	Ukraine	30	-3
9	Brazil	18	15
10	Canada	7	2
1	United States of America	2	-2
7	Australia	1	-24
3	United Kingdom	-1	-6
5	Germany	-1	-4
4	France	-2	-4
2	Russian Federation	-13	-28

Source: ITC, Trade Map, 2013

World Trade: Processed Apricot Products:

ITC Statistics indicate that there is a sizeable international market for apricot products. In 2012, France was the largest international exporter and France was the largest international importer of prepared and preserved apricot products. Interestingly, Turkey and Iran, which are among the largest producers of apricots, are not major players in this market.

Table 24: Top Exporters 2012-Apricot Prepared or Preserved Products

Product Category: Apricots prepared or preserved whether or not sugared or sweetened defined under HS Code 200850

Rank of Importing Country	Importers	Value imported in 2012 (USD thousand)	Quantity imported in 2012	Unit value (USD/unit)	Annual growth in value between 2008-2012 (%)	Annual growth in quantity between 2008-2012 (%)	Share in world imports (%)
	World	179,201	138,132	1297	-4	-2	100
1	France	45,255	34,033	1330	-5	-2	25.3
2	Germany	36,902	28,850	1279	-5	-3	20.6
3	Netherlands	11,047	9,999	1105	-1	6	6.2
4	Austria	9,820	10,745	914	-6	3	5.5
5	Belgium	9,498	6,481	1466	-3	-2	5.3
6	Australia	8,630	4,322	1997	5	20	4.8
7	United Kingdom	8,349	5,011	1666	-2	-3	4.7
8	Russian Federation	7,032	8,732	805	-7	-10	3.9
9	Italy	6,632	5,803	1143	-5	-1	3.7
10	Czech Republic	3,470	2,693	1289	-3	-1	1.9

Source: ITC, Trade Map, 2013

Table 25: Top Importers 2012-Apricot Prepared or Preserved Products

Product Category: Apricots prepared or preserved whether or not sugared or sweetened
defined under HS Code 200850

Rank of Importing Country	Importers	Value imported in 2012 (USD thousand)	Quantity imported in 2012	Unit value (USD/unit)	Annual growth in value 2008-2012 (%)	Annual growth in quantity 2008-2012 (%)	Share in world imports (%)
	World	179,201	138,132	1297	-4	-2	100
1	France	45,255	34,033	1330	-5	-2	25.3
2	Germany	36,902	28,850	1279	-5	-3	20.6
3	Netherlands	11,047	9,999	1105	-1	6	6.2
4	Austria	9,820	10,745	914	-6	3	5.5
5	Belgium	9,498	6,481	1466	-3	-2	5.3
6	Australia	8,630	4,322	1997	5	20	4.8
7	United Kingdom	8,349	5,011	1666	-2	-3	4.7
8	Russian Federation	7,032	8,732	805	-7	-10	3.9
9	Italy	6,632	5,803	1143	-5	-1	3.7
10	Czech Republic	3,470	2,693	1289	-3	-1	1.9
11	Japan	3,087	1,468	2103	2	-4	1.7
12	New Zealand	2,670	1,587	1682	0	-6	1.5
13	Switzerland	2,115	1,213	1744	-12	-10	1.2
14	United States of America	1,657	1,243	1333	8	12	0.9
15	Croatia	1,620	1,323	1224	-8	-3	0.9
16	Hungary	1,615	1,320	1223	-2	10	0.9
17	Canada	1,568	1,201	1306	-2	-4	0.9
18	Poland	1,176	822	1431	-11	-10	0.7
19	Norway	1,083	455	2380	-1	-4	0.6
20	Mexico	968	621	1559	-13	-9	0.5

Source: ITC, Trade Map, 2013

Pakistan Fresh Apricot Exports:

In Dollar value terms, Pakistan exported fresh apricots of over USD 438,000 in 2012. The country stood at 39th position among the exporting countries for fresh apricots in 2012. In terms of quantity, Pakistan exported a meager 396 tons of fresh apricots at an average per unit price of USD 1,106. Pakistan exports reached only 10 importing countries.

Germany imported 174 thousand dollars worth of fresh apricots at an average price of USD 994 per metric ton and topped the list of importing countries with 175 metric tons of apricot shipments, accounting for 21.4% of total exports from Pakistan for the product. Pakistan exports have witnessed a healthy annual increase of 70% over the last five years (2008-2012). There was a 48% average annual increase in quantities exported to Germany between 2008 and 2012.

Pakistan exported USD 62,000 worth of fresh apricots to the USA in 2012. Pakistan's exports to USA recorded an average annual increase of 13% in terms of dollar value and 1% negative annual growth in quantities exported during 2008-2012. Pakistan exported 44 metric tons of fresh apricots at an average unit price of USD 1409 per metric tons. The US imports however recorded a decline of 11% during the period.

Pakistan exports to Bahrain and United Arab Emirates have witnessed healthy growth in terms of dollar value with an average annual growth of 52% and 25% during the same period.

However Pakistan's exports to United Kingdom and Saudi Arabia experienced a negative annual growth of 28% and 22% on an average between 2008 and 2012 respectively in terms of quantities exported. In dollar terms, Pakistan exports to Saudi Arabia recorded a negative growth of 23% in the corresponding period. It is worth noting that Saudi Arabian imports increased by an average 11% annually in the period. This signifies that Pakistan exports to Saudi Arabia are losing share of market to other competing countries.

Table 26: Pakistan Fresh Apricot Exports Share of Market

Pak Quantity	396
World Quantity	323,022.00
Pakistan Share of World Market (Quantity wise)	0.12%
Pakistan Exports Value USD '000 2012	438.00
World Exports Value USD '000 2012	440,163.00
Pakistan Share of Market (Value wise)	0.10%

Pakistan is only the 39th world exporter. Revealed Comparative Advantage is 0.7, noting that Pakistan's exports are very small and has not developed enough to be considered a "world player" in this product.

'2012	
Pak Apricot RCA	0.73
World Market Share (%)	0.10

Pakistan Fresh Apricot Imports:

Imports of fresh apricots to Pakistan originate almost exclusively from Afghanistan. In 2012, imports totaled 5,527 tons (ITC). It is believed that Afghan apricots are imported through Peshawar and often re-exported overland to India.

Table 27: Pakistan Import of Fresh Apricot in 2012

Exporters	Imported value 2012 (USD thousand)	Trade balance 2012 (USD thousand)	Share in Pakistan's imports (%)	Imported quantity 2012	Unit value (USD/unit)	Growth in import value 2008-2012 (% p.a.)	Share of partner countries in world exports (%)	Total export growth in value of partner countries 2008-2012 (% p.a.)
World	5,527	5,089	100	2,574	2,147	59	100	4
Afghanistan	5,527	5,527	100	2,574	2,147	59	1.3	53

(Source: ITC statistics).

Pakistan Dried Apricot Exports:

Pakistan exported 420 Tons of dried export in 2012 at a unit price of USD 2,364 per ton and total value of USD 993,000. Its share in world dried apricot exports was a mere 0.3% in 2012. Pakistan's rank was 19 among the 70 odd countries that exported in 2012.

Germany and UK were the main markets where Pakistan exported dried apricot. A small trial shipment of a couple of hundred KGs was sent to Japan recently. Results of the shipment were not yet available when this report was being compiled. Pakistan's export of dried apricot is higher in value than its export of fresh apricot, however compared to other exporters of dried apricot in the world and its production base, it is insignificant.

Pakistan exported at a slightly below world average unit price, but Afghanistan was able to achieve a unit price 37% higher than world average. Turkey, the world leader with more than 75% world trade was still able to command a 23% higher unit price than the world average. Since per unit price is a good indication of perceived quality of product, this consultant is of the understanding that Pakistan needs to make considerable efforts to improve in all of the quality related aspects in order to enhance its competitive position. Quality as well as scale is needed to be a world player in dried apricot exports.

It is worth noting that Pakistan experienced 18% decline in dried apricot exports as compared to the previous year and its exports have been static in the preceding four years with a 0% growth.

Table 28: Pakistan Exports of Dried Apricot in 2012

Importers	Exported value 2012 (USD thousand)	Share in Pakistan's exports (%)	Exported quantity 2012	Unit value (USD/unit)	Exported growth in value between 2008-2012 (% p.a.)	Ranking of partner countries in world imports	Total import growth in value of partner countries 2008-2012 (% p.a.)
World	993	100	420	2,364	4		2
United Kingdom	265	26.7	87	3,046	-5	3	-1
Bangladesh	134	13.5	75	1,787	23	74	8
United Arab Emirates	128	12.9	68	1,882	33	29	20
United States of	92	9.3	33	2,788	19	1	2
Singapore	52	5.2	18	2,889	7	41	16
Saudi Arabia	47	4.7	20	2,350	19	35	17
Morocco	44	4.4	16	2,750		63	-31
China	32	3.2	12	2,667		44	86
Germany	32	3.2	16	2,000	-26	5	-1
Canada	28	2.8	11	2,545	-1	10	7
Chinese Taipei	24	2.4	10	2,400		73	-8
Hong Kong, China	18	1.8	10	1,800		38	19
Bahrain	15	1.5	7	2,143	29	76	39
Kuwait	15	1.5	6	2,500	27	50	14
India	15	1.5	10	1,500	3	25	-14
Netherlands	14	1.4	5	2,800	-24	11	5
Iran (Islamic Republic	12	1.2	5	2,400	-46	77	-30
Australia	8	0.8	4	2,000	-2	7	1
Qatar	5	0.5	3	1,667	75	71	138
South Africa	5	0.5	2	2,500		42	7
Iraq	3	0.3	1	3,000		24	44
Republic of Korea	3	0.3	1	3,000		56	-10

Source: ITC, Trade Map, 2013

From Table 26 table above it is evident that Pakistan's export to top 10 trading partners is 85.7%.

Table 29: Pakistan Imports of Dried Apricot in 2012

Exporters	Imported value 2012 (USD thousand)	Share in Pakistan's imports (%)	Imported quantity 2012	Unit value (USD/unit)	Imported growth in value between 2008-2012 (% p.a.)	Share of partner countries in world exports (%)	Total export growth in value of partner countries between 2008-2012 (% p.a.)
World	5,527	100	2,574	2,147	59	100	4
Afghanistan	5,527	100	2,574	2,147	59	1.3	53

Source: ITC, Trade Map, 2013

From Table 26 above, Pakistan's import of dried apricot is evident. It is worth noting that Pakistan is importing apricot at a much higher price than it is exporting. It may be indicative of the fact the Afghani product is superior to Pakistani dried apricot.

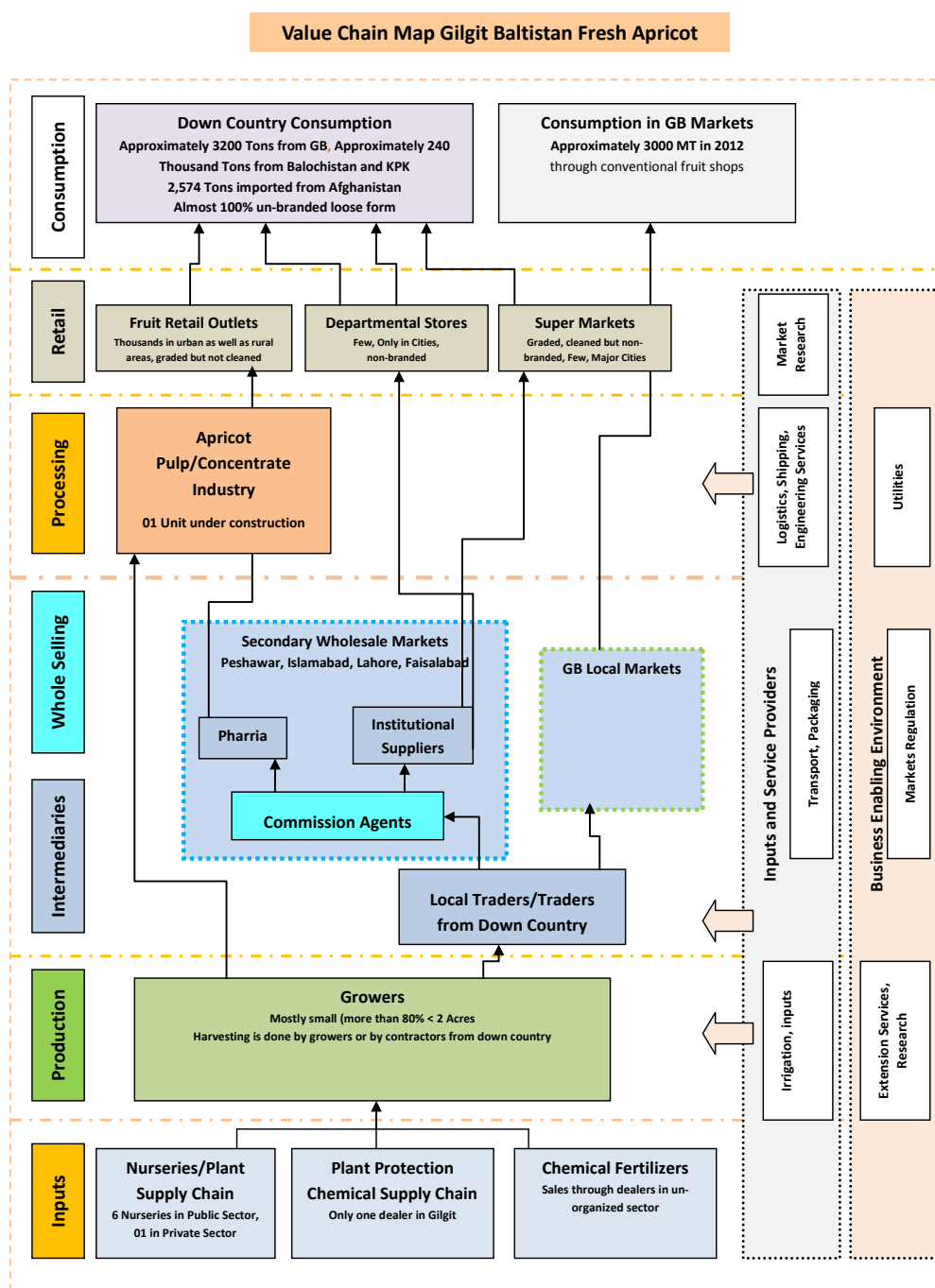
IV. Structure of the Apricot Value Chains:

Gilgit-Baltistan and Baluchistan are the main apricot growing regions in Pakistan. This assessment is focused on apricots produced in Gilgit Baltistan

Apricot Value Chain: Fresh Apricot

Fresh apricot value chains comprise of the following participants and actors: input suppliers (fertilizer, pesticide etc), growers, contractors/traders, commission agents and exporters. The below value chain map of depicts the flow of goods across the chain:

Figure 2: Value Chain Map Gilgit Baltistan Fresh Apricot



Structure of Input Providers:

The major demand for crop inputs in Gilgit-Baltistan is for seed and chemical fertilizers. The demand for pesticides has increased substantially over the last few years, which may be attributed to outbreaks of two major pests. The demand however keeps fluctuating. Urea, Nitrophos and DAP are the main fertilizers that the farmers of the area commonly demand. Single Super Phosphate (SSP) is also sold in small quantities as a substitute of DAP. Urea is the highest quantity of fertilizer sold, followed by Nitrophos and Nitrate. According to the fertilizer dealers interviewed, the most demanded fertilizers are Urea and Nitrophos. There are no formal pesticide stores. Some of the small and large grocery stores sell pesticides. There is only one formal pesticide store in Gilgit. From the timing of fertilizer purchase, it is gathered that most of the fertilizer is used for cereal and potato cultivation. Using chemical fertilizer for fruit cultivation is comparatively less common. (DoA/AKRSP survey 2010).

Structure of Apricot Production:

Over 12,921 hectares of apricot trees were present in the Gilgit Baltistan region in 2011. Gilgit Baltistan Agriculture Department statistics reveal that more than 114,286 tons of apricot were produced in the Gilgit Baltistan region in 2011. As evident from Table 23 below, the maximum area under apricot production is in district Skardu (4873 ha) followed by district Ghanche (2470 ha). Apricot growers are usually small growers with an average 15/16 trees per household. There are only few relatively large orchards in Baltistan region. Usually women take care of trees and harvesting from the trees. Production is highly fragmented due to small holding, indiscriminate varietal mix (more than 50 varieties reported) and inaccessibility due to remoteness and terrain. Highest area under production is in Skardu and Ghanche where per household land holding is relatively bigger, however the production is even more scattered than Gilgit and Hunza Nagar.

Table 30 below shows spread of production across districts in the region.

Table 30: Apricot Production in GB (2009)

District	Area Planted(ha)	Production(Tons)
Gilgit	1,201	9,169
Hunza/Nagar	1,790	21,156
Ghizer	1,475	14,491
Astore	560	2,932
Diamer	537	1,194
Skardu	4,871	40,649
Ghanche	2,487	22,723
Total	12,921	114,286

Source: Department of Agriculture Gilgit Baltistan

Structure of Marketing Channels:

- Assembler or Village Trader
- Secondary or terminal markets in other towns of Pakistan
- Exporters
- Local retailers

Local Produce Aggregators:

Aggregators are usually missing in the chain.

Wholesale market:

Wholesale markets do not exist in Gilgit Baltistan region as they do other parts of the country.

Harvest Contractors or Traders:

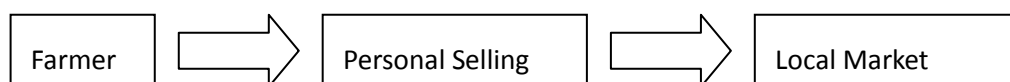
Traders from Down Country have started contracting unharvested apricots and act as preharvest Contractors in the region as is the practice in other parts of the country. The number of preharvest contracts has dropped due to the law and order situation since unrest in 2010, but the trend has since reversed.

Secondary or Terminal markets:

Islamabad, Peshawar and Lahore are secondary wholesale markets for GB apricots. The bulk of sale is routed through Islamabad and Peshawar markets.

Apricots produced in GB reaches domestic consumers through the following channels:

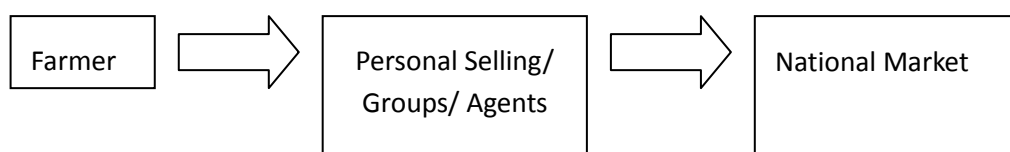
Existing Marketing system-Fresh Apricot



Although many growers/local traders are part of this channel, this is one of the weak links in the chain.

Existing Marketing system-Fresh Apricots –Down Country Markets

Only a small amount of trade takes place through this channel since there are several constraints impeding volume through this channel.



Analysis of the value chain reveals that the average purchase price of apricots ranges from Rs 15-25/Kg. The cost of transport from orchard to the Gilgit is also Rs 3-5/Kg. So, the cost of product reaches 18-32 per KG. The fruit is then sent to Islamabad or Peshawar for local sale or to transported to other domestic markets. Transport cost is Rs 5-7 per kg.

The value chain losses indicate that 5-7% of the fruit is lost during transport to a central point in Gilgit. Similarly, 7-10% fruit is lost during transport to Islamabad/Peshawar. It is reported that 10-15% of the

apricots are lost by the time they reach secondary market. There is 8 – 10% loss of fruit during the processing.

Structure of Apricot Processing:

a) Dried Apricot

Apricots are dried by the growers near their trees or houses in the open sun in small lots. Usually, the women of the house take care of the drying. Drying is usually done in the traditional manner. Like apricot production, processing (mostly drying) is extremely fragmented. The product is nonstandard and usually gets contaminated due to drying in the open. Thousands of small growers dry apricot on a scale which could be termed “cottage” at best.

Figure 3 on the next page depicts the flow of goods and relationships of various actors in the value chain. The channels for dried apricot operate somewhat differently as compared to channels for the fresh product as depicted in the map since dried product is not perishable. Product reaches wholesale merchants in Gilgit through personal selling or small traders who buy small lots from growers and aggregate into bigger lots of similar looking product for higher commercial value. Wholesale merchants sell to traders/wholesalers in the secondary wholesale markets through their respective networks.

b) Pulp

Apricot processing on a commercial scale is practically non-existent at the moment in the region despite a sizeable market potential for pulp and value added products like apricot juices, nectar and other beverages. Almost all the fruit processing companies were of the opinion that there was a potential market for apricot pulp. One estimate puts the total potential demand to be in the range of 3000 – 5000 tons per year (Commercial Potential of GB Apricots. 2010)

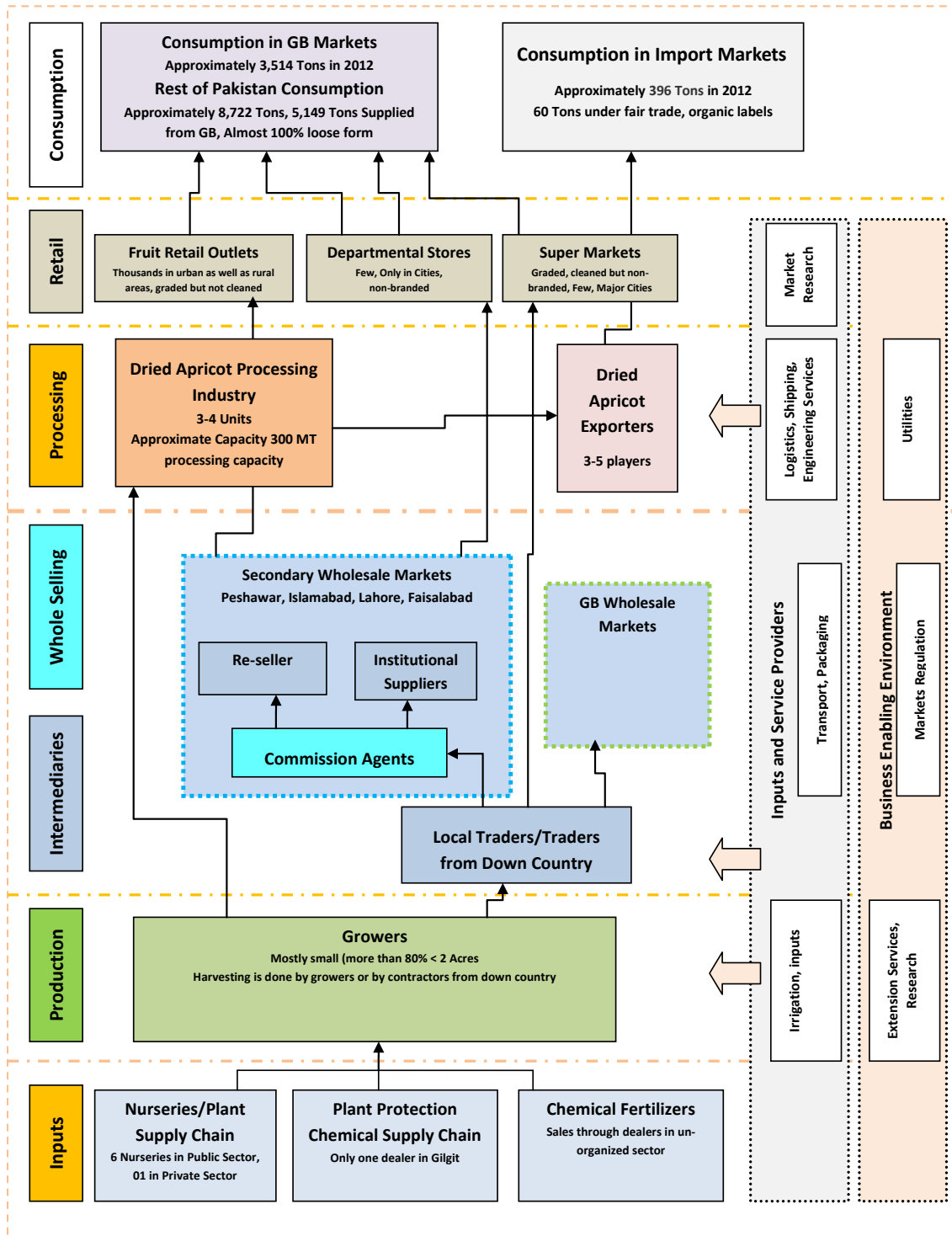
Despite the potential, fruit processing companies from down country or local entrepreneurs are not making required investments to establish commercial scale pulping facilities in the region.

Availability of year-round fruit in bulk quantities and absence of a nearby wholesale market to procure fruit in large quantities are cited as major limiting factors by down country investors/entrepreneurs in making such an investment financially feasible for them.

A local processing/exporting business by the name of Mountain Fruits has started setting up a pulping facility at Nasirabad, Hunza. The consultant has visited the under-construction site, which appears to be a purpose built premises for a modern pulping industry. The Managing Director of Mountain Fruits, shared that his company is convinced that producing and exporting apricot pulp as per international standards and in bulk aseptic packing could be a significant step towards exploiting commercial potential of locally available apricot varieties which otherwise are not considered price varieties for fresh consumption. He is convinced that raw material is available for several pulping units in each region, and there is sizeable market for industrial processing of apricot pulp in other countries.

Figure 3: Gilgit Baltistan Dried Apricot Value Chain Map

Value Chain Map Gilgit Baltistan Dried Apricot



c) Apricot Kernels:

Traditionally, GB apricot growers of wild varieties salvage apricot kernels and discard the pulp in several areas. Especially areas that are remote or inaccessible, apricot kernels are saved. These apricot kernels are consumed locally as well as sold to down country markets as an inexpensive substitute for almond kernels. Traditionally de-hulling has been done manually mostly by women and small quantities are sold to local traders. The traders aggregate and then sell to wholesalers or their agents. Like the fresh apricot value chain, this channel takes the maximum share of the margins available between the producers and the consumers, leaving producers at the receiving end.

Recently, Mountain Fruit Company has setup a nut processing facility at Damas, district Ghizer where apricot kernels are being de-hulled and packed by machine for a buyer in the UK. The CEO of the company sees good potential for further growth in the UK and other European markets for organically produced apricot kernels.

Figure 4: Mountain Fruit's Dry Fruit Processing Facilities at Damas



Figure 5: Mountain Fruit Dry Fruit Processing Facilities at Damas



According to data compiled by BCDF, approximately 1,600 tons of apricot kernel is available annually in GB (this can be increased substantially if wasted crop is also harvested). Most of this quantity is currently consumed or converted into oil at the household level. Approximately 100 tons is sold in the local market at an average rate of between PKR 250-300 per kg. It is primarily used by the baking industry down country as a cheaper almond substitute. There is also some evidence of export of apricot kernels through sale of “Hunza Apricot Kernels” on international health food websites. The volume of apricot kernel exported this way is not known.

d) Apricot Kernel Oil:

Traditionally, oil has been extracted from apricot kernels for several domestic needs, including use as cooking oil during the long winter months.

“Apricot kernel oil is the major source of fat for the local populace. It is a cholesterol free product. It is extracted using small domestically manufactured presses and households sell their surplus at a price of PKR 400 - 500 per liter in the local market. This oil also has established uses in cosmetics industries. Apricot kernel oil can also be used for blending purposes as well as marketed as a substitute for olive oil to high-end health conscious consumers. The apricot kernels and kernel oil are now commercially traded.”

Study on “Commercial Potential of GB Apricot”, 2010,

The oil extraction however is done on a very small scale “cottage” level by mostly growers themselves for either self consumption or sales locally. Commercial scale oil exaction is practically non-existent despite market potential and availability of raw material.

A small scale oil extraction facility supported by the Swiss Agency for Development and Cooperation (SDC) is one exception in this regards. A nonprofit foundation by the name of Baltistan Culture and Development Foundation (BCDF) was supported by the agency to work for apricot value chain development. BCDF has been promoting production and marketing of apricot oil in Skardu region.

BCDF asserted that since apricot kernel oil contains zero cholesterol, it could be marketed as replacement for imported olive oil (Over 2000 Tons of olive oil is imported into Pakistan annually). BCDF is also convinced of apricot kernel oil potential in view of its use in cosmetics, use as an alternative to almond oil and use for its antioxidant and other medicinal properties.

On the basis of total apricot production in GB, there is a possibility for the annual production of over 1000 Tons of apricot kernel oil. According to BCDF sources, sale of apricot oil was increasing in down country urban centers like Islamabad due to “word of mouth” promotion. The Foundation purchases kernels from villagers and operates a small oil extraction unit in Skardu. The retail market price for apricot kernel oil is reported to vary between Rs. 700-900 per kg depending on the quality.

V. Constraints Affecting Value Chain Competitiveness:

Inputs:

The major demand for crop inputs in Gilgit-Baltistan is for seed and chemical fertilizers. The demand for pesticides has increased substantially over the last few years, which may be attributed to outbreaks of two major pests. The demand however keeps fluctuating (DoA/AKRSP Survey, 2010).

According to Department of Agriculture survey, Urea, farmers in the region commonly demand Nitrophos and DAP fertilizers. Single Super Phosphate (SSP) is also sold in small quantities as a substitute of DAP. Urea is the highest quantity of fertilizer sold, followed by Nitrophos and Nitrate. There are not many formal pesticide stores and some of the small and big grocery stores sell pesticides instead. There is only one formal pesticide store in Gilgit. Most of the fertilizer is used for cereal and potato cultivation. Use of chemical fertilizer use for fruits is relatively insignificant.

Availability of standard inputs like fertilizers and plant protection is weak but is not considered to be a binding constraint by the apricot producers.

Labor Shortages during Apricot Harvesting Season:

Shortage of labor for apricot harvesting is regarded as a major constraint in enhancing the harvest and increasing production. The apricot harvesting season in GB coincides with the wheat harvesting season. Since Wheat is considered more valuable for the farmers and households in GB, wheat harvesting, therefore, gets priority over everything else, and all available resources are dedicated to harvesting wheat. Incidentally, outside paid labor is also not available to harvest fruit. As a result, a significant portion of apricot production is not harvested and perishes on the trees. Many reports claim this wastage to be as high as 50% of the apricot crop in GB.

This consultant tried to validate the various claims with respect to apricot wastage on the trees due to shortage of harvesting labor, and tried to assess the present situation regarding availability of labor and the extent of wastage due to non-availability of labor.

In response to several probing questions during the in-depth interviews with growers in various production regions, it was confirmed that though labor shortages were generally experienced, the extent of the shortages and consequent wastages varied greatly from area to area. For instance, apricot growers in Gahkush cluster in district Ghizer, reported that they harvested almost 100% of the fruit from the trees. They agreed however that fruit from the wild varieties was left to perish on the trees because of the shortage of labor, but fruit from trees of Habi and other commercial varieties was harvested to the maximum extent. One progressive farmer reported that in his estimate, the wastage in his area was not more than 5-8%. Similarly, a group of female growers in Hunza (Aliabad) reported that they harvested almost 100% of fruit. They reported that it was the usual scenario in the region as other growers as they had realized the value of fruit, especially if they could dry it as per the trainings provided by AKRSP and other NGOs.

Informed people in the Department of Agriculture confirm that incidence of wastage is very high in the Skardu and Ghanche areas. It is asserted that at times almost all the fruit is left to perish on the trees in case of trees of wild or Jungli varieties. The reason for this is extremely low commercial value of the produce at the time of harvest. The growers make a rational choice by letting the fruit perish, and diverting their efforts to wheat harvesting. Once the wheat harvesting is complete, they recover apricot kernels from the perished fruit and process them for either apricot kernels or apricot kernel oil. In such cases, although the fruit wastage is as high as 70-80% at times, partial recovery of value is

done by processing the kernel. It is very hard to assess the extent of the loss of value in such cases, as the growers do not take into account their own labor or opportunity cost attached to it. While from a theoretical point of view, one can put further efforts to estimate an overall wastage figure, the consultant is of the view that assessing the situation in each cluster, and using the insight for bringing the change may be a more practical approach.

Scale of Production:

Scale of production due to small land holding leads to growing trees on farmland boundaries, and is a limiting factor. Due to relatively small land holding per family in Gilgit, Hunza and Ghizer, land utilization is divided between wheat, fodder for human and cattle sustenance and food security. Apricot production is only the second priority. The small size of the apricot farm impedes proper attention to tree management and production due to limited commercial importance and limited economic returns as compared to primary crops. Many limitations to apricot production emanate from small size of production. Small production size is a disabling factor that essentially contributes to weaknesses in other aspects of apricot production in the region.

Varietal Mix of Apricot Trees:

There are more than 50 known apricot varieties in the region due to indiscriminate propagation of indigenous varieties. Due to proliferation of varieties, product of uniform attributes is not available. Non standard product has become a binding constraint over time for any commercial activity since the mixed product cost of sorting and aggregating into commercial lots has been costly. This inhibits cost effective transportation to markets and inhibits exports in commercial quantities. Unreliable supply of certified bud wood for commercial cultivars is also a limiting factor.

Weak Knowledge Base:

Yield and quality of fruit is low compared to international standards. Weak tree management (inefficient irrigation practices, inadequate pest and disease management, losses during harvesting and post-harvest handling of apricot) is generally reflective of knowledge gaps on the part of growers. This is also reflective of weak coordination between research institutions, educational institutions and extension service department.

Market Accessibility:

Market accessibility is a major constraint for the apricot value chain. Due to fragmented farm size, distances between farms and difficult terrain, it is costly and sometimes prohibitive to take product to market. In most of cases, farming is looked after by women, which increases the challenge. The fact that most of the produce does not reach market is indicative of the extent of the constraint.

Poor Infrastructure:

Supply chain performance is constrained due to inadequate cold storage facilities and poor transport facilities.

Weak Institutional Support⁴:

In Skardu, PCSIR and the Department of Agriculture act as training institutes for farmers. PCSIR has invested significantly in building training and lab facilities in Skardu, but the facility is underutilized

⁴ Department of Agriculture/AKRSP Study

due to lack of qualified staff and the funds to run the facility on a regular basis. In addition, the AKRSP and a private company representing the private sector imparts apricot and apple drying training to the farmers (primarily the women).

In the newly established district of Hunza–Nagar, only one fruit processing training program is being run by an Australian couple with Nonehal Development Organization (NDO). The Gilgit based MFC is also covering most of the area of Hunza-Nagar by providing dehydration trainings under different projects/programs. Public sector training facilities are not currently available but with the declaration of Hunza-Nager as a district, and due to the abundance of fruit especially apricot, the prospects for establishing a good public sector of public-private training and processing facility is very high.

The Department of Agriculture is the only public sector organization providing training in food/fruit processing in Ghizar district. But, there is however no permanent mandate for such trainings. The trainings are therefore conducted from time to time under different projects.

In Astore district, Department of Agriculture and the AKRSP collaborate to arrange short training sessions for the communities, but these are not regular due to low demand. The reason for low demand might be the lack of interest from the market players in the produce from Astore due to poor quality and quantity of fruit compared to other districts.

Ghanche district, despite of great potential for fruit processing, is lagging behind due to its geographical marginality. DoA and the AKRSP are therefore collaborating in conducting training in fruit processing under different projects but no major success was achieved in developing a commercial processing environment.

Institutional support is also needed in the areas of feasibility analysis, business planning, and access to finance, marketing and business operations management so that the existing business models may be analyzed, processes re-engineered and capacities of enterprises increased/enhanced with the help of business development services.

VI. Conclusions, Recommendations and Proposed Interventions

Conclusions:

The agro-ecological conditions in most of the Gilgit Baltistan region are conducive for apricot production. Growers are mostly women and are generally literate, receptive to improvement and hardworking. Growers are also socially mobilized, well aware and many times trained in apricot production, handling, etc. thanks to significant work by AKRSP and other NGOs. These conditions are indicative of a strong comparative advantage for apricot production in the region.

Lack of commercial scale production, weak supply chain management and challenges emanating from weak market channels are affecting competitive position of GB apricot value chains.

The consultant recognizes that growers are rational decision makers who usually make the best choices on the basis of economic consideration available to them; weighing value on one hand and constraints they face on the other. Letting fruit perish in case of wild varieties is a well considered tradeoff for them. Similarly, sun drying apricots without much consideration for quality is mainly due to the lack of access to a market for fresh apricot sales. In the absence of any viable option to sell a highly perishable product, which is available in abundance in the area at the same time, drying is the best option for them to try recovering some value later.

Recommendations:

Based on the above conclusions, it is recommended that TAP/USAID works with apricot value chain participants and in collaboration with other value chain support actors to help create better alternatives for higher value creation.

The following areas are recommended for apricot value addition through private sector development:

1. Support development of new enterprises, and strengthen existing growers/extractors of apricot kernel oil for the bitter wild varieties (60-70% of the production base is in Skardu and Ghanche areas).
2. Support development of new commercial enterprises or strengthen existing growers/processors to extract and de-hull apricot kernels from the other wild varieties (25-30% production base in most of the apricot growing areas).
3. Support Commercial Enterprises for processing and marketing dried apricots made from the various sour tasting varieties (20-25% of the produce in some areas are inaccessible for transport of fresh apricots of otherwise commercial varieties)
4. Support new investment by the private sector for the development of commercial scale pulp facilities in the region.
5. Support Growers/traders/existing processors to setup small scale processing facilities for value added apricot products in major production clusters where production of commercial varieties of fresh apricot to pulp and concentrate forms and preserving/packing them for industrial use like apricot juice and other derivatives.

Proposed Interventions:

Keeping in view of TAP targets, donor objectives and project life, the following interventions are proposed for the consideration of the TAP/USAID management:

a) Support improved orchard management and on-farm processing skills of apricot producers.

Several major changes are required to upgrade current apricot production into a commercially-oriented supply chain. In view of small farm size, organizing small growers into clusters of farmer groups seems a viable approach to alleviate constraints due to small size and capacities. Depending on whether such groups are organized for supplying fresh or dried apricot, these enterprises may be supported with shared washing, grading and packing lines or drying equipment.

b) Introduce, propagate and distribute improved commercial cultivars.

A recent value chain assessment study commissioned by the Agribusiness Project has recommended an intervention to support promotion of improved commercial cultivars suitable for fresh and dried markets. The study has proposed to develop a strategy with the Mountain Agricultural Research Council (MARC) in Gilgit to rapidly propagate and distribute the improved varieties amongst interested progressive growers. The study also proposed establishing a central garden in Gilgit for cloning and upgrading the Department of Agriculture nurseries in the target districts to bud/graft and propagate.

This consultant is of the opinion that establishment of commercially viable and organized orchards is imperative for the long term competitiveness of the apricot value chains in the GB region. Necessary quality and commercial yield may only be obtained in this way. The current scattered production on the field boundaries whereby apricot trees are generally of mixed varieties, does not offer either the scale or economic returns to enable transforming the production to the **high-input-high-output** business model. The current scale and model does not allow use of quality inputs, affordability to engage skilled manpower or hire services of extension or other service providers. A carefully designed intervention is needed to transform the current subsistence production model to commercial model. This may be achieved by either organizing farmers into enterprise groups, as envisaged in the TAP program, or supporting individual growers with bigger chunks of land and other resources that can be developed.

During interactions with members of AKRSP organized Tanzeems and FEGs, the consultant gathered that existing small growers neither had the motivation nor the means to participate in that kind of endeavor. They were of the opinion that in the current scenario where most of their produce was either wasted or sold at very low rates, there were hardly any incentives to make efforts and investments to change their existing plantations/trees into organized orchards. They also cited the long gestation time (5-6) years before commercial yields were obtainable from grafted trees or newly planted trees to be prohibitive for them. Some horticulture experts however believe that such an intervention could have better chances of success in Skardu and Ghizer areas where land holdings were generally bigger than Gilgit and Hunza apricot producing clusters, and the current yields from the apricot trees were significantly lower than those obtained in Gilgit and Hunza and certain parts of Ghizer districts. TAP may consider supporting a pilot orchard improvement or new orchard program in the above mentioned areas upon further study if the project has the appetite for such investments into future competitiveness of the production in view of its time horizon for impact creation and budget resources available. This may be initiated with the collaboration of other development forces like AKRSP, Department of Agriculture in GB and other donor supported programs so that TAP may exit without compromising the success and sustainability of such an intervention.

c) *Apricot Processing at Commercial Scale:*

As reported in the AKRSP/DoA survey report, there are only 8 private sector processing units which are engaged in small scale processing of fruits. Keeping in mind the huge volumes produced in the region, this figure is negligible.

Since 2005 a local enterprise by the name of Mountain Fruits Company has demonstrated the export potential of dried GB apricot by using improved techniques to dry apricots. A few other enterprises are following suit and have started exporting the improved product called “the Turkish” in local circles. Both organically prepared products as well as sulfur dioxide-treated products are being exported presently to UK, Germany and Japan as well as a few countries in the region. Processors and exporters are hoping to increase volumes in the coming season as the capacity to process and export increases. They are excited about market acceptability and demand, especially in neighboring countries like China, the Central Asian States and Russia (which is one of the largest importers of dried apricots. Due to discontinuation of transport services to China through Karakorum Highway route (KKH), trade with China has been disrupted. It is expected to resume once the reconstruction work is completed.

For enhancing dried apricot exports from GB, it is essential to establish several dried apricot processing facilities in Skardu, Hunza, Ghizer and Ghanche along the same lines as those used by Mountain Fruits Company in Gilgit.

The traders and exporters involved in the dried apricot business are confident about product acceptability and claim that if modern facilities were setup on the lines of MF or one they have seen in Turkey, the export of dried GB apricots can also be enhanced.

Stakeholders assert that in order to realize the potential of dried apricot from the region, the following measures are necessary:

- Development of international market linkages for export of fresh and dried apricots;
- Improvement of phyto-sanitary conditions for increasing the export of apricots (HACCP, etc.);
- Support for acquiring other certifications such as fair trade, organic, etc.;
- Support for setting up pilot projects for demonstration purposes.

d) *Support product development for processed apricots.*

Apricot can be used as a flavoring in processed foods such as cereal/fruit bars, yogurt, ice-cream and cheese. Dried apricot can be packaged into small heat-sealed bags as a healthy ready-to-eat snack. Lesser quality apricot can be processed into jams and juices. Oil can be made from the discarded kernel of dried apricots. However, opportunities for product development are largely limited to improving the quality, packaging and marketing of dried apricot. Activities will include funding new product development, exposure trips to other apricot processors, training and certification in food safety and quality management systems (e.g. HACCP, ISO 22000) and gaining organic and Geographical Indication certification.

e) *Support Cool Chain infrastructure for fresh Apricot trading:*

In addition to apricots, Gilgit is a hub for other temperate fruits like apples, grapes, pears, peaches, and cherries. Fresh fruit is the prime option for realizing the highest prices.

Establishing a cool chain requires providing washing, grading and packing facilities to clusters of fruit producers. A central cold store in Gilgit town will then be required to chill the fruit before transporting down-country in small refrigerated vans. Establishing fresh fruit supply chains will require considerable work establishing producer organizations and improving post-harvest skills. Consequently, this activity can only be initiated after orchard management and on-farm processing skills of fruit producers have been improved, as described above.

f) Facilitate Establishment of Wholesale Market at Gilgit:

As discussed in the constraints section above, the absence of an organized wholesale market is impeding effective buying and selling of the produce at a central place. Presently, growers do not have an option to bring their products to buyers; because of this, buyers have to go farm to farm to approach growers to purchase desired products. This inhibits trade, especially in view of the fragmented production base and the distances involved.

Growers have expressed the need for a fresh fruit market in Gilgit. This consultant understands that such an initiative is imperative for effective trade of produce. The need of such a market is further enhanced due to the perishable nature of fruits and vegetables, especially apricots. It is expressed by the traders that availability of cold storage at the market may be a necessary to keep fruits and vegetables intact before shipping to down country markets.

This consultant therefore suggest that TAP should approach the government of GB through the proposed apricot value chain platform, and do the necessary advocacy for the allocation of funds for such a development project.

TAP may also consider facilitating apricot growers through its proposed value chain platform to support other needs of the apricot value chain actors that cannot be arranged at their own level, and usually fall under the domain of local or provincial governments or may be facilitated/ supported by institutions, development agencies or projects.

This consultant understands that many such provisions are also available under the various components of TAP programs. Training of growers and other actors in technical and managerial areas, technical assistance for upgrading technologies, processes and systems at the enterprise level, technical assistance to research and develop efficient business models and conducting techno-commercial feasibility studies to promote investments are some of the provisions available as per the study of project documents by the consultant.

g) Commercial Enterprises for Apricot Pulping:

Mountain Fruit is a unique example as a pioneer private sector dried fruit company in Gilgit which has linkages in the global dried fruit value-chain and has succeeded in exporting to the United Kingdom market under Fair Trade and Organic labels. The company is making efforts to expand its processing capacity as well as market volumes. According to the CEO, they are constrained at the moment due to non availability of financial resources to modernize and expand their processing facilities for dried apricots. They also think that converting fresh apricots during the harvesting season into apricot pulp and storing it in aseptic packaging is the only viable solution to increasing utilization of the fruit at the industrial level and thereby decreasing wastages. MF is considering setting up a pulp line at their newly constructed purpose built facilities at Nasirabad (Hunza-Nagar). The company is looking for appropriate avenues/options to leverage finances for the expansion. Their proposal for a challenge grant has been under consideration with the Agribusiness Project. This consultant is of the opinion that the MF proposal may be reviewed for a possible partnership with the company.

There is a stated need to have modern pulping lines in the area which could process apricots along with other available fruits. Supporting a private sector initiative can serve many purposes at the same time:

- Demonstrating the technology and business model for encouraging other investors;
- Creating local employment, especially of women in the Nasirabad apricot growing area;
- Increasing income for apricot and other fruit growers in the area as their fruit is currently wasted due to perishability.

This consultant is suggesting further research to evaluate the benefits of cost ratio and economic and financial feasibility of such an investment in the project

In order to mitigate the risk associated with such an investment, due to above mentioned disadvantages, support through the following possible means may be considered by TAP:

- Technical assistance to conduct a detailed technical and financial feasibility analysis on GB apricot pulp and other processed products. This document should precisely identify and document the available opportunity along with a detailed risk analysis. The detailed techno-commercial feasibility analysis should guide a prospective investor in establishing a commercial scale pulping facility in Gilgit, Hunza, Ghizer and Skardu.
- Seminars/Workshops to market Investment opportunities to potential investors;
- Facilitation in collaboration with GB government to secure suitable sites, utilities and necessary permissions from the various concerned departments and agencies;
- Financial assistance in the following areas:
 - Purchase of Plant and machinery;
 - Procurement of technical services for design, planning, construction, commissioning and trial production phases;
 - Achieving necessary Certification for the enterprise required by international buyers (Quality Systems, Environment Compliances, Social Compliances, Food Safety, Product traceability, Fair Trade and others);
 - Product development as per international market needs;
 - Market linkage related activities like participation in international trade fairs and exhibitions.
- TAP may also engage services of a professional business development service provider for identifying potential investors, marketing the project to them and facilitating the project partners in a number of ways, including achieving financial closing for the investment and planning, and design and implementation phases of project.

h) Support Cluster of Micro enterprises for Apricot kernel processing: :

This consultant is of this view that supporting groups of small apricot growers organized as enterprises (FEGs) or individual growers (particularly women) to grow into micro enterprises by providing processing services (de-hulling and grading of apricot kernels) may contribute to reducing wastages significantly besides improving incomes for the growers.

The possibility of supporting establishing commercial scale apricot kernel processing units should also be explored for Skardu and Ghanche areas.

i) Support Micro enterprises for Apricot kernel Oil Extraction:

It was also ascertained during interviews with some of the key informants that vast apricot growing areas in Skardu and Ghanche have significant portions of wild varieties grown without the application of either chemical fertilizers or plant protection chemicals/pesticides. It is therefore concluded that production of apricot kernel oil from the bitter wild varieties and marketing the same as a value added “organic” or “natural” product may be the best way forward to extract better commercial value from produce that is either wasted on the tree, or from which very little value is salvaged, by selling apricot kernels for industrial purposes on a negligible scale.

It is recommended to support a technical assistance study under the TAP program to further explore the option for supporting small oil extraction at the cottage level or establish commercial scale production in areas of Skardu and Ghanche where wild varieties are available in large quantities. The output of such TA should be a bankable techno-commercial feasibility study to determine feasibility of such an investment. TAP may present the study to a group of interested investors.

Annex A: List of Sources, List of Interviews and List of Validation Workshop Attendees

a) Studies and Literature Reviewed/Knowledge Sources Consulted:

1	United States Standards for Grades of Dehydrated (Low Moisture) Apricots, USDA
2	Kyrgyz Republic Dried Apricot Sub-Sector Report, by Chemonics International Inc.
3	Apricot Value Chain Assessment Final Report by Adam Sendall, 2013 for USAID Agribusiness Project
4	Commercial Potential of GB Apricot by Apex Consulting for Swiss Agency Development and Cooperation
5	Basic Study on the Horticulture Sector in Gilgit-Baltistan, Study conducted by Aga Khan Rural Support Programme (AKRSP)

Sources Consulted:

CODEX alimentarius-CAC : <https://www.codexalimentarius.net>

Pakistan Standards & Quality Control Authority (PSQCA): <https://www.psqca.com.pk>

Food and Agricultural Organization – FAO: <https://www.fao.org>

International Trade Centre – Market Access Map-UNCTAD/WTO: <https://www.intracen.org>

International Plant Protection Convention – IPPC: <https://www.ippc.int>

The world health organization WHO: <https://www.who.int>

United Nations Industrial Development Organization (UNIDO): <https://www.unido.org>

International Organization for Standardization (ISO): <https://www.iso.org>

The United Nations Development Program (UNDP): <https://www.undp.org>

United States Department of Agriculture (USDA): <https://www.usda.gov>

The United Nations Conference on Trade and Development (UNCTAD): <https://www.unctad.org>

b) List of People Interviewed:

Sr. No.	Name	Designation	Organization
1	Sher Jahan	Director Water Management	Department of Agriculture,
2	Javed Akhtar	Deputy Director	Department of Agriculture,
3	Sakhi Murad	Manager Finance and Admin	Mountain Fruits
4	Azhar Bhatti	Director	Hunza Seeds
5	Akbar Shah	CEO	Hashwan Traders
6	Jan Alam	President	Apricot Grower
7	Asif Khanani	Director	Foodex
8	Sher Ghazi	Executive Director	Mountain Fruits
9	Arif Rahim	Director Bussines Devolpment	Botanica Organo
10	Ghulam Ishaq	Assistant Manger	SGS
11	Dr. Jochen Currle	PacTeam Manager	PacTeam
12	Masood Mir	Value Chain Lead Apricot	TAP-ASF
13	Zeb Alam	Value Chain Specialist	Plan International
14	Meer Ali	Apricot Grower	Gahkush, Gizer
15	Ameer Ali	Apricot Grower	Gahkush, Gizer
16	Fareeda	Apricot Grower/Social Mobiliser	Gilgit
17	Abdul Khabir	Director Department of	Gilgit Baltistan
18	Imran Yusuf Shami	Country Programme Manager	Plan-International
19	Naveed Ayyub	CEO	Agrihealth Association
20	Muhammad Zaman	Deputy Regional Program	TAP-ASF
21	Aashi Ali	NGO Coordinator	TAP-ASF
22	Zulfiqar Ali Ghazi	Coordinator	JICA Apricot Project
23	Muhammmad Zeb	Partner	Zeb Dry Fruit Merchants,

Note: Contact coordinates of participants are available from the consultant.

c) List of Participants, Validation Workshop, Lahore October 02, 2013

Sr. No.	Name	Designation & Organization
1	Dr. Hamid Jalil	JAA – TAP
2	Marcos Arocha	JAA consultant
3	Azhar Hunzai	KRR Chairman
4	Masood Mir	TAP - ASF VC Lead
5	Mohammad Zaman	DRPM TAP ASF
6	Muzaffar ud din	BRAC
7	Emad Ahmed	Organo CEO
8	Naeem ullah Khan	Al - Karam Traders Farmer
9	Khan Bahadur	North Pole Trader M.D
10	Jan Alam	M. D. Green Food Traders M.D
11	Akbar Shah	CEO Hashwan Traders
12	Javed Akhtar	Deputy Director Department of Agriculture GB
13	Mohammad Iqbal	LSO Chairman
14	Hamza Hassan	JAA – TAP
15	Derald Smart	JAA – TAP
16	Mathew Brown	JAA – TAP
17	Ayesha Gulzar	TAP
18	Muhammad Aleem	JAA – TAP
19	Ch Usman Ali	JAA – TAP

Note: Contact coordinates of participants are available from the consultant.