

Apricots in Afghanistan



A Value Chain Approach

A Study by the National Union for Horticulture Development in Afghanistan (NUHDA); June 2008

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Abbreviations

Afs.	Afghani (mostly 1US\$=50 Afghanis)
AICC	Afghan International Chamber of Commerce
ARIA	Agriculture Research Institute of Afghanistan
ASAP	Accelerating Sustainable Agricultural Program (USAID)
EPAA	Export Promotion Agency of Afghanistan
FAO	Food and Agriculture Organisation
HLP	Horticulture and Livestock Project (WB/MAIL)
IPM	Integrated Pest Management
MAIL	Ministry of Agriculture, Irrigation and Livestock
MoCI	Ministry of Commerce and Industry
MoF	Ministry of Finance
MT	Metric Ton (1,000 kg)
NGO	Non-Governmental Organisation
NUHDA	Nation Union for Horticultural Development in Afghanistan
OTF	On-The Frontier Group
PHDP	Perennial Horticultural Development Project (EU)
RAMP	Rebuilding Agricultural Markets Program (USAID)
WB	World Bank

1 Introduction

1.1 Apricots in Afghanistan

Apricot is a traditional, high value crop in Afghanistan. The origin of apricot (*Prunus armeniaca*) is uncertain, but most likely somewhere in the region of Afghanistan. Apricots have been cultivated for many decades in Afghanistan. Pockets of production are scattered throughout the country and consequently a wide range of local varieties are cultivated often within clearly defined regional areas.

Like most perennial crops income per hectare for apricots is higher than for staple crops. The gross income of a well maintained orchard can be US\$3,000 - 4,000/ha which makes perennial horticulture crops, such as apricots, a viable alternative to poppy cultivation.

Apricots are widely spread over the six different agro-ecological zones of Afghanistan. On small farms it is often intercropped (particularly in the first six years) with food and fodder crops like clover that improve the ground cover management in an orchard. The main production areas are Zabul (20% of the national area), Uruzgan (15%), Ghazni (8%), Wardak (7%), Herat (6%), Helmand (6%), Bamyan (6%) and Balkh (6%)¹.

Apricot is the fourth most important perennial crop after grapes (raisins), pistachio and almonds, and is a priority crop in the master plan of the Ministry of Agriculture, Irrigation and Livestock (MAIL)². For 6% of the farmers, apricots are the most important cash crop³.

The aim of this Value Chain Analysis on apricots is to describe the (economics of) production, processing and trade of the crop and to assess possible support activities that could help improve the quality and quantity of the apricots produced in Afghanistan.

1.2 The Value Chain Approach

One can study a crop like apricots in many different ways: how is produced? How is processed? How does it fit in a farming system? How is it traded? The Value Chain Approach focuses on the flow of produce (apricots) from its conception (as a sapling) to the final consumer (as a fresh or dried apricot). What are the different actors along that chain doing and how does that influence what others in the chain are doing? Looking at the competitiveness of the whole chain we assess the cost structure of the chain as well: who makes the costs? Who get which part of the price on the final market? What are the profit margins in each step along the chain?

What is a Value Chain?

A Value Chain is an alliance or strategic network between independent enterprises, within a (vertical) chain of activities that competes on a specific market (defined by consumers

¹ FAO, 2003

² Other priorities for export-led development are raisins, pistachio, almonds, grapes and pomegranates

³ FAO, 2003

and retail outlets). In more practical terms: an Agricultural Value Chain covers all activities from input supply, production, processing, wholesale and retail to the final consumers.

Why is the concept important?

The Value Chain concept becomes increasingly prominent in a globalising world, as trade between countries greatly increases. Consumers can select from an ever-widening choice of products, which generates strong competition and effectively puts consumers in control - they demand better quality produce at lower prices. Such produce can only be delivered if all actors in production work efficiently and cooperate effectively.

In a global world, competition is between Value Chains, rather than between individual enterprises. The competitiveness of a Value Chain depends on the efficiency of individual enterprises and on the efficiency of their interactions. In other words, all actors in a Value Chain are interdependent; they depend on each other. An analysis of a Value Chain therefore has to cover all actors and their interactions.

The idea that a Value Chain is an *alliance* is very important. It is the recognition that actors in a Value Chain need one another. It is a reflection of the reality that the relationship between producers and processors is no longer antagonistic (one tries to get prices up, the other tries to reduce prices) but synergistic. Both groups have to cooperate in order to compete with a Value Chain from another area or country; so both have an interest to keep prices stable and to reduce transaction costs.

As consumers define the products they want, suppliers have to follow the market. Branding is an essential tool (especially in highly differentiated markets) and all actors in the chain have to coordinate their efforts, particularly in terms of quality, grading and packing, to make a brand sufficiently distinctive.

One particular element is that middle-class consumers in developed countries want to be assured of high quality in the products they purchase and that the products are made in an environmentally sustainable manner. Accreditation schemes are thus created in order to provide these assurances at all stages of the production process.

Value Chains are defined by their final market segments (i.e. where they compete), which can be defined in terms of product, client or marketing channel. For example, the Value Chain for fresh apricots exported to Dubai is different from the Value Chain for dried apricots sold in Kabul.

Report Structure

This report studies two Value Chains – fresh apricots and dried apricots – in Afghanistan. There is much overlap between these two industries, particularly during production. Obviously processing fruit within each Value Chain and (related) marketing are different. Dried Apricot production replaces fresh apricot production in isolated areas of Afghanistan where transport is unreliable and difficult. Therefore, farmers dry their fresh apricots as a means to preserve their annual production and then bring their dried apricots to market.

The Value Chain for fresh apricots is discussed first (Chapter 2) followed by the additional and special elements of the dried apricot Value Chain (Chapter 3). The final two chapters provide conclusions and recommendations for improving the apricot industry in Afghanistan.

2 Value Chain of Fresh Apricots

2.1 Apricot Production and Export

Accurate statistics are not readily available in Afghanistan. FAO surveys in 1996 and 2003 indicated Afghanistan had approximately 77,000 and 95,000 ha of perennial crops. According to the 1996 survey, about 13 percent of this area or 10,000 ha were devoted to apricots. Grapes (50 percent), almonds (20 percent), apple (8 percent) and pomegranate (7 percent) were other important crops. The 2003 survey estimated the area under apricots had dropped to less than 7,000 ha. According to the FAO statistical website⁴ the area under apricots in 2005 was some 5,200 ha.

A survey in 2007 by the EU-funded Perennial Horticulture Development Project (PHDP) on nurseries indicated that apricots were rising in importance. Nearly 3.5 million (29 percent) of the 11.5 million trees surveyed were apricots; with 2 million apricot trees in Kabul representing 38 percent of all surveyed trees in nurseries in the Kabul region. The 3.5 million are sufficient to plant 8,500 ha in the next two years (apricot trees stay two years in the nursery); this suggests an (unrealistic) annual growth rate of 40 percent. Which part of the equation is wrong; (the existing area or the number of trees) is difficult to determine, but perhaps nursery owners are too optimistic in their projections for the future demand for apricot trees.

Data on productivity differs widely. The ALTAI report (2004) mentions an average yield of 8.5 tonne/ha that can be increased to 12 tonne/ha with improved practices. They estimate total production at 63,000 tonnes. The USAID-funded Rebuilding Agriculture Markets Program (RAMP)⁵ reported yields between 8-20 tonne/ha. The FAO website (see below) puts total production at 38,000 tonnes and the area under apricots at 5,200 ha; so the average yield is 7.3 tonne/ha.

Country	Production (1,000 tonne)	Yield (tonne/ha)
Turkey	860	14.3
Iran,	276	5.6
Italy	233	13.4
Pakistan	197	6.8
Uzbekistan	180	6.0
France	177	12.7
Algeria	145	6.3
Spain	137	7.1
Japan	123	6.9
Morocco	104	8.6
Syria	101	8.0
<i>Afghanistan</i>	38	7.4

Table-1: FAO Statistics on Apricots, 2005

⁴ www.faostat.fao.org

⁵ L. Teshome, 2004

Afghan production is about 1 percent of the total world production of over 3.5 million tonnes. The largest producer is Turkey with 24 percent of world production. Afghanistan's neighbours are also significant producers (Iran-8 percent, Pakistan-6 percent, Uzbekistan - 5 percent).

Reliable export statistics are not available. The master plan of the Ministry of Agriculture, Irrigation and Livestock (MAIL) puts exports of *fresh* apricots in 2002 at over 3,300 tonnes with a value of US\$ 1 million. In 2003, exports dropped to 1,850 tonnes worth US\$ 0.7 million. A report by ALTAI Consulting⁶ mentions exports of 2,500 tonnes in 2004. Data from the Export Promotion Agency of Afghanistan (EPAA) shows exports at 1,900 tonnes in 2006, but does not break this figure into fresh or dried apricots. A rough estimate obtained during the field work suggests higher export levels in 2007 at about 4,000 tonnes. Indeed 2007 was a good year for apricot production compared to 2006. With most exported apricots going to Pakistan at prices ranging from US\$ 0.66 – 1.00 per kg, then the estimated value of exported apricots ranges from US\$ 2-3 million per year.

Data on exports of *dried* apricots is minimal. A 2007 survey among four exporters by Solidarités⁷ estimated annual exports of between 300 and 600 tonnes, which may be conservative. During the field study one exporter was interviewed who claimed to have 250 tonnes of dried apricots in store, ready for export. An average annual export of about 1,000 tonnes of dried apricots with a value of US\$ 1.5 million seems a reasonable estimate. Most of these exports go to Pakistan (and some to Iran) for the confectionary industry. It is of a bulk quality and consequently the price is low. Total world production of *dried* apricots is estimated at over 100,000 tonnes and worth about US\$ 300 million. Afghanistan, therefore, produces about 1 percent of the total world exports. Turkey is the world's leading exporter of dried apricots with some three quarters of the market.

Available data is inconsistent, but combining all data, the best guess could be that 50,000 tonnes of apricots are produced on some 6,000 ha (so productivity of slightly more than 8 tonne/ha). With farmers selling 51% of their production⁸, 25,000 tonnes comes to the market. At a drying ratio of 4:1, Afghanistan exports 4,000 tonnes of fresh apricots in the form of dried apricots. Combined with 2,000 tonnes of fresh apricot exports, total apricot exports represent some 25 percent of the total produce reaching markets. It represents an export value of US\$ 4 - 5 million per year.

2.2 Industry Strengths

Afghanistan has some well known strengths for high value perennial horticulture products:

- Excellent climate for fruit and nuts production
- Proximity to large, growing markets (India, Pakistan) where Afghan fruits and nuts have an excellent reputation
- Preferential trade agreements with India
- Low labour costs
- Several indigenous species
- Good surface water availability and lower irrigation costs compared to the Central Asian Republics (CARs) and Iran.

⁶ ALTAI, 2004

⁷ Differt, 2007.

⁸ FAO, 2003

A major advantage for Afghanistan is the naturally occurring species of several high quality fruit varieties that are in demand in regional markets. Apricot is well represented - an FAO survey⁹ of nurseries found that apricots had the most indigenous species.

2.3 Nurseries

Virtually without exception apricot trees are budded on to seedling rootstock. Grafting is also used. Tree rootstocks are expected to be virus free.

Specialised fruit tree nurseries do exist, yet they are few and usually small; mostly a few jeribs¹⁰. Most private fruit nurseries include a rootstock block, bud-wood block and stock plant block. However, due to inefficient crop management, the condition of trees is poor and skilled technicians are scarce. PHDP works on creating a healthy base for local rootstock and mother-stock nurseries, but it will take some time before this will be operational.

Most farmers produce their own trees, who sell trees to others for between 15-20 Afs. Private, specialised nurseries working with virusfree rootstocks (often obtained via NGOs) sell apricot trees for 50-70 Afs. each.

A wide range of varieties is found. The FAO, 2003, survey identified 18 different apricot varieties in nurseries. The most important varieties were Amiri (41%), Qasi (26%), Shakapara (10%), Narai (8%), Baghal Sorkh (5%) and Charmaghzi (4%).¹¹

The main problems for nurseries are:

- poor planning and administration: nursery owners mix varieties and therefore they cannot guarantee the varieties they sell
- poor pest management
- poor irrigation
- planting trees too close together causing excessive tree elongation
- poor pruning of trees
- no pruning of root systems

In order to improve the quality of trees, PHDP is organising nursery owners into an association that will aim to enforce quality standards through self-regulation from a national-level association.

2.4 Production

Crop Husbandry

Apricots are mostly grown on small farms in orchards mixed with other tree crops and on 'empty spaces' along irrigation canals. Typical planting distances are 4 - 6m by 5 - 6 m providing 250 to 500 plants per ha although wide variations are found. Farmers believe

⁹ FAO, 2003

¹⁰ The FAO survey in 2003 found an average of 1.5 jerib, or 0.3 ha

¹¹ Calculation by the author, based on original FAO data that were not published in detail

that higher planting densities provide higher yields, but this practice does not provide productive intercropping. Crop husbandry is generally extensive.

Farmers are generally planting young fruit tree seedlings in large spacing and intercrop with wheat. Tree management is minimal and this leads either for wheat to remain the most important crop grown in orchards or uncontrolled tree growth hampering the establishment of good soil cover. Existing trees are generally too old, the scion rootstocks have been buried inducing scion rooting and are in biennial bearing cycles¹².

A typical orchard in Khas Kunar is composed of 14 trees, including plum, apricot, citrus, guava, date and loquat. Although productivity is generally below 20 percent of the potential it is not generally perceived by farmers, due to the fact that most of the produce is consumed inside the household.¹³

The planting of trees in fields with annual crops is risky for a households' food security because high tree density will cause excessive shading which will impede annual crop production. Farmers prefer to replace a part of their food and fodder crops by cash crops and expect the sale of dried apricots and other fruits will provide them sufficient income to buy staples (e.g. wheat). Fruit and nut trees, with deep root systems are more resistant to drought than annual crops. Some farmers reportedly plant fruit trees only around plots of annual crops, while others said they only plant apple trees in plots of annual crops and not apricot trees, since they prune the apple trees, which will provide less shade¹⁴.

Fertilization to replace nutrients is necessary for sustained production, since nutrients are lost via the fruit harvested each year and additional nutrient losses occur through leaching and pruning. Based on a yield of 25 tonnes/ha, with 360 trees/ha, the quantity of nutrients removed in fruit at harvest each year is estimated at 37 kg/ha of nitrogen, 4 kg/ha of phosphorus, 80 kg/ha of potassium. Farmers are generally aware of the need to maintain soil fertility and most farmers apply fertilizers or, more rarely (if they do not have the financial capacity to buy fertilizers) use manure. The amounts varied (for a plot of 50 trees) from 50-200 kg of Di-Ammonium Phosphate (DAP) and 50-100 kg of Urea per application¹⁵. Solidarités¹⁶ reported that apricot farmers in Bamyán used variable amounts of fertilizers as they had received minimal technical support and did not know fertilization schedules for optimal results.

Irrigation

The critical stages for water stress in apricot trees are during blossoming, from fruit-set to ripening, during fruit growth and after harvesting. In areas where water is limited, trees are irrigated at the point where farmers judge their trees are beginning to stress. If the volume of water is insufficient for the tree's needs, then yields will be affected. If irrigation water is plentiful then farmers will irrigate their orchards 10-20 times per year (March - November).

An FAO survey (2003) found that 20 percent of farmers reported irrigation water deficiencies. Irrigation methods included furrow irrigation (54 percent), underground channels (karez; 17 percent), springs (21 percent) and wells (8 percent). Farmers do not

¹² HLP, 2006

¹³ Estrada, 2005

¹⁴ Ibid

¹⁵ Ibid

¹⁶ Differt, 2007

usually pay for irrigation water, but practices differ from region to region. Local *shuras* appoint a “Mirab” which is responsible for dividing water between farms. Obviously farmers can exercise considerable (financial) pressure on the “Mirab” to be served first.

Integrated Pest Management (IPM)

FAO (2003) estimated that 20 percent of fruit grown in Afghanistan is wasted due to pest and disease damages. According to the FAO survey, 78 percent of farmers use chemicals to control pests, which suggest a fairly active role of farmers in pest management. Most people in the field (experts and NGOs) are however adamant that farmers do very little, if anything about pests and diseases - most farmers do not even know how to apply pesticides.

Chemicals such as parathion and metamiphos, trade in which is subject to the Rotterdam Convention, are freely imported and sold in the bazaars by traders with no knowledge of their properties. Such products are hazards to those who use them, aggravate pest problems by killing natural enemies and reduce the value of export products which may be contaminated by them. Plant protection in Afghanistan suffers from a lack of trained and experienced personnel.¹⁷

Farmers do not receive any support from agricultural extension services and have no knowledge concerning apricot tree protection. Pesticide availability is limited and thus orchards are regularly attacked, particularly in hot years, with significant falls in yields.

Pruning

Most orchards have been neglected for decades and many farmers do not know how to prune or the benefits of pruning. Pruning provides a balance between leaves and fruits and prevents the problem of alternate/cycling fruit bearing: one year a bumper harvest and the next year virtually nothing. A well pruned tree allows more light to penetrate the centre of the tree, which ensures all fruit obtains sufficient light to ripen at the same time. This gives a more uniform quality and a higher percentage of first quality fruits.

FAO survey (2003) states that 44 percent of all fruit trees are pruned, although this varies between provinces – 10 – 15 percent (e.g. 7 percent in Logar, 12 percent in Zabul, 13 percent in Baghlan) while in others this is much higher (e.g. 100 percent in Bamyan; 45 percent in Herat and 61 percent in Paktia). Two explanations are offered for these differences. Some say that the tradition of pruning has started in a number of specific districts; others believe that in due to the scarcity of firewood in some areas the value of pruned wood becomes a strong incentive for farmers to practice ‘pruning’¹⁸.

Quality

Four quality grades of fresh apricots can be distinguished:

Quality	Characteristic
First	Red blush on white skin, mature, firm flesh (to withstand transport)
Second:	The same as first quality, but no blush.
Third:	White/green, hardly mature.
Fourth:	Damaged, infected

¹⁷ HLP 2006. Appendix 11.

¹⁸ Non-published data from ASAP suggest that income from selling pruning’s could reach US\$1,000/ha

When packed, the first three qualities were mixed usually in ratios of about 30:55:15. First quality apricots sold for 20 Afs/kg in 2007; second quality for 15 Afs/kg; and third quality 10 Afs/kg. The weighted average was 16 Afs/kg, or US\$0.32/kg. Consumers prefer larger fruit; therefore, larger fruit usually attracts a higher price. Long shelf-life and hardness (to survive transportation) are also important factors affecting quality. Increasingly the *Amiri* variety is being considered the best apricot variety.

Production Costs

Minimal data is available on production costs and yields. Figures from ALTAI Consulting (2004) are used and reworked for these costings. The total cost for land was estimated at US\$250/ha per year; labour costs were estimated at US\$2.40/day; but were revised upwards to US\$3.00/day (fieldwork proved that for easily accessible areas where fresh apricots were grown, labour costs were higher when compared to costs in more isolated areas at US\$2.00/day where dried apricots dominate).

Years:	1 - 2	3 - 4	5 - 6	7 - 8	9 - 10	> 10 yrs annually
Investment (a)	900	0				
Operational costs (b)	1.500	2.300	2.500	2.650	2.650	1.300
Labour days invested (c)	160	240	400	450	450	216
Costs of labour (3 \$/day) (d)	480	720	1.200	1.350	1.350	650
Cum. Costs (e=a+b+d)	2.880	5.900	9.600	13.600	17.600	1.950
Yield (kg) (max.12ton/ha) (f)		4.000	20.000	24.000	24.000	12.000
Cum. Yield (g)		4.000	24.000	48.000	72.000	12.000
Gross income (h)	0	1.300	6.500	7.800	7.800	3.650
Cum. Income (i)	0	1.300	7.800	15.600	23.400	
Cash flow (=h-a-b)	-2.400	- 1.000	4.000	5.150	5.150	
Cash flow cumulative	- 2.400	- 3.400	600	5.750	10.900	
Investment flow (i - e)	- 2.880	- 4.600	- 1.800	2.000	5.800	
Costs price (\$/kg) (f/h)		1.5	0.4	0.28	0.24	0.16

Table-2: Total Production Cost for Fresh Apricots (Source: Altai Consulting, 2004)

Total costs per kg of fresh apricots in a given year, were estimated by dividing all costs until that year by the total yield until that year. (No discounting of future income; based on a yield of 12 tonnes/ha - if average yields are lower e.g. 8.5 tonnes/ha is used, the costs price will increase considerably).

Cumulative investments rise to US\$4,600/ha and up to year six, the balance between costs and income is negative. Only after year six does investment in an apricot orchard begin to provide positive returns. The last column shows that once an orchard is mature (>10 years) the cost/kg incurred during a year equals half the average farm-gate price.

Therefore, growing apricots can be profitable with average farm-gate prices 50 percent above than long-term average costs¹⁹. However, considering the long-term nature of the investment and farmer's limited resources, investments are gradual and extensive (low costs/low output). This has a negative impact on efficiency and quality. If the natural comparative advantages of Afghanistan in apricot production are to be realised, substantial investment needs to be encouraged, so that orchardists can specialise in intensive production and become more productive, efficient and quality oriented.

¹⁹ Non-published data from ASAP and MADERA lead to the same conclusion

2.5 Local Traders and Wholesalers

Farmers usually sell their entire apricot crop to local traders, who visit farmers a few months/weeks before the harvest season and offer them a price for the whole orchard. Following mutual agreement, the farmer usually receives a 20 percent down-payment of the expected yield. The trader is then responsible for organising the harvest, employing labourers and packaging etc.

Henceforward farmers are not overly concerned about quality because their crop has been pre-sold. Quality suffers further once harvesting begins. Labourers are employed for only one or a few days to harvest everything. They are not always careful when picking or sorting fruit – everything is harvested including un-ripened fruit. Traders employ other labourers to sort top-quality fruit (these people receive 200 Afs/day compared to 100 Afs/day plus food for pickers). These labourers mix fruit of different quality grades into wooden boxes. In each box, first quality apricots are on top, second quality apricots on the bottom and sides; and the third quality apricots 'hidden' in the middle.

The trader is responsible for packing and transportation. The following costs for local traders were obtained during the fieldwork:

Typical costs from the farm to a regional market

- Farm gate prices: 15 Afs/kg.
- Packing costs (boxes and labour): 3 Afs/kg (incl. residual value of the box)
- Transport: 1 Afs/kg (from 0.7 Afs/kg for 20 km up to 2 Afs/kg for 100 km)
- Transport losses: near town little, far away: 10 percent. Weight loss due to evaporation. Loss of quality. Left over on market - assume 10 % or 2 Afs/kg.
- Margin of agent between farmer and regional wholesaler: 1.5 Afs/kg.

On arrival at the regional market, costs are estimated to equal 22.5 Afs/kg.

A margin of 1.5 Afs/kg (7.5 percent) for the local trader needs to cover all his risks, his time invested, troubles along the road, etc. He also pre-financed the harvest. If a trader has provided credit two months in advance, and assuming an interest rate of 10 percent, he has already lost 2 percent of his margin on a 20 percent down-payment to the farmer. The small margins for middlemen are due to the strong competition amongst them for orchards. Also many farmers are middlemen. In order to reduce their risks, middlemen establish close working (and social) relationships with both their suppliers (farmers) and their clients (wholesalers), in order to retain at least a small, but secure, margin.

Most middlemen are linked to a wholesaler. Some are simply an agent of the wholesaler; others are nominally independent traders, but in actual fact have a patronage relationship with one or more wholesalers. The social fabric is very strong.

It is useful to contrast the Afghan perennial horticulture market with western horticulture markets, where large retail chains sometimes control 20-60 percent of the market of a country. These large retailers enjoy a dominating and sometimes monopolistic position in the market and can focus on food safety, appearance and taste. In the presence of monopolistic buyers, producers benefit from cooperative organizations to negotiate prices. In the Afghan context, farmers may not see direct

benefit in organizing themselves into cooperatives or farmer's associations (social networks are well-established and more reliable).²⁰

2.6 Regional Wholesalers and Kabul

More than 2,000 wholesalers operate in Afghanistan located in five main markets (Kabul, Mazar, Herat, Jalalabad and Kandahar) and in smaller wholesale markets in 34 provinces²¹. Wholesalers usually have a store in the vicinity of the market, where they sell mostly to middlemen in regional and Kabul markets, and in some instances, to retailers as well. These middlemen purchase large quantities from the wholesale store, break these quantities down and sell smaller lots, often only a few hundred meters from the wholesale store.

Wholesalers aim for a margin of 10 percent. With physical losses to the apricots and overhead costs, net profit is usually limited to a few percentage points; however, they operate on high turnovers.

A major constraint is the seasonality of production and the fact that different districts (and villages at different altitudes) sell their produce at different times dependent on the apricot variety they are growing. Timing of the harvest is also influenced by local weather conditions, and therefore it is difficult to predict supply and market prices for apricots at any given time. Large price fluctuations therefore result:

A wholesaler in Mazar bought a load of fresh apricots for 300 Afs/crate; he hoped to sell for 350 Afs/crate, but had to settle for 250 Afs/crate as the price had collapsed. Such risks have to be (re-)covered by the normal margins.

The regional wholesale system works more or less the same as the local middlemen: the margins are small and many have created strong links with both their suppliers and their clients. These links can be so strong that even in case of financial misconduct of one of the business partners; the relationship is able to continue.

Apricots sold in Kabul add 5 Afs/kg to the costs - 2 Afs/kg are direct costs and 3 Afs/kg due to losses and damage. The margin of wholesalers in Kabul is generally lower (but turnover is higher), at about 10 Afs/crate or 1.5 Afs/kg. This brings the final cost price in Kabul for the wholesaler to 32 Afs/kg.

2.7 Transporters

Transport companies are well organised in Afghanistan; they cooperate in transport "unions" and focus on both practical coordination (e.g. help each other when a truck has technical problems) and on price setting. Compared to other actors in the apricot value chain the transporters are more professional. They also often work for foreigners, for example with the International Security Assistance Force (ISAF).

However, there is considerable competition within the transportation market although prices are fairly well established. In such an environment, one transporter explained how he attracted a major client.

²⁰ HLP Annex 11

²¹ Annex 11 of HLP-project document

By pre-financing a wholesaler working with local fruit growers, a transport company enabled a local wholesaler to expand his business and increase his turnover during the harvest season. This increase in business leads the wholesaler to increase his demand for the transporter's services.

There are a limited number of cool-trucks in Afghanistan (some 50), but they currently primarily serve ISAF. No apricots are currently transported in cool-trucks.

2.8 Processing and Packaging

Packaging should protect fruit and vegetables from injury and water loss, and be convenient for handling and marketing. Packaging should also provide information about the product, including the grade, handling instructions, and appropriate storage temperatures when the product is on display. The cost of the packaging is important, including whether the container can be recycled or reused.

Insufficient attention is paid to the manner in which produce is packed and transported to market. A wide range of often-inappropriate packaging materials are currently used in selling fruit. These range from sacks, woven baskets, and plastic shopping bags to different sized wooden crates. The situation is further aggravated by poor packing techniques.

There is no processing industry for fresh apricots, and thus, poorer quality fruit is not processed; farmers simply include all quality produce in one box. Virtually all boxes are made from thin (ply) wood, and contain one *mann*; or seven kg. The basic materials for packaging are imported (mostly from Pakistan) and assembled in Kabul or in regional markets (by wholesalers).

The development of a domestic packaging industry is a prerequisite in the development of horticulture sector, which would help reduce losses and promote products in domestic and foreign markets. Some development projects in Afghanistan import cardboard cartons from Pakistan, India, Iran and Europe. But this may not prove cost-effective in the long term and thus unsustainable. Domestic experiences need to be studied to identify constraints and recommendations to improve the situation for the supply of packaging from domestic producers. Impediments to the local package manufacturing industry include the seasonality of demand and the lack of economically significant volumes to currently make the industry viable. But the establishment of a packaging industry in Kabul, a central location, is important for the steady supply of packaging to other regions in Afghanistan on sustainable basis.

2.9 Retail

Many of the problems that accumulate throughout the value chain are realised at the retail level. Retailers need to re-sort the packaged produce so that apricots which had been carefully mixed at farm-level (see par. 2.4) now need to be separated. This not only creates double handling, but in most cases retailers are unable to sell poor quality apricots. They will dispose of these apricots and the loss is added to their margin which simply adds further costs to the whole chain.

Additional costs are added by the retailer to the final retail price. Apricots are usually transported for many hours in unrefrigerated trucks and losses increase quickly. Additionally, retailers may be unable to sell all the apricots they purchased before they begin to rot. Retailers are also inefficient; they usually visit wholesale markets themselves to purchase the limited (daily) quantity they need. Therefore the retail margin needs to be high in order to absorb all these costs.

A regional market price of 35 Afs/kg is normal. With a wholesale price of 25 Afs/kg the margin for retailers is 40 percent. This may seem high, but similar cost structures were found in Jalalabad with apples (33%) and oranges (39%) retailers²².

In Kabul, market prices depend on quality - top quality apricots fetch 50 Afs/kg, second quality 35-40 Afs/kg and poor quality about 25 Afs/kg. The latter indicates that it is not profitable to bring poor quality apricots to Kabul. Most farmers simply mix the qualities in a single box, which leads to a weighted average price of 40 Afs/kg. With a wholesale purchase price of 32 Afs/kg (see 2.6) the retail margin is 25 percent. This is a smaller margin than in regional markets because in Kabul there is more competition, higher turnovers and more demand for higher quality produce (mostly poor quality fruit is sold at regional levels).

This discussion is an amalgamation of many different kinds of price information gathered during the fieldwork, so there are significant variations. Prices change during the season and price trends change over several years. In years with low yields, farm-gate prices reach 20 Afs/kg, and this will probably produce average prices in Kabul of 50 Afs/kg with 60-70 Afs/kg for first quality. In Kabul there is a top-niche market where prices are much higher, even in normal years: a few supermarkets, restaurants and the expatriate community. Prices can be up to 80-100 Afs/kg. During the fieldwork, a street vendor who specialised in apricots was interviewed and he claimed he sold fresh apricots for 100 Afs/kg in the most exclusives districts of Kabul. He purchased top quality fresh apricots for 80 Afs/kg, and earned a margin of 25 percent.

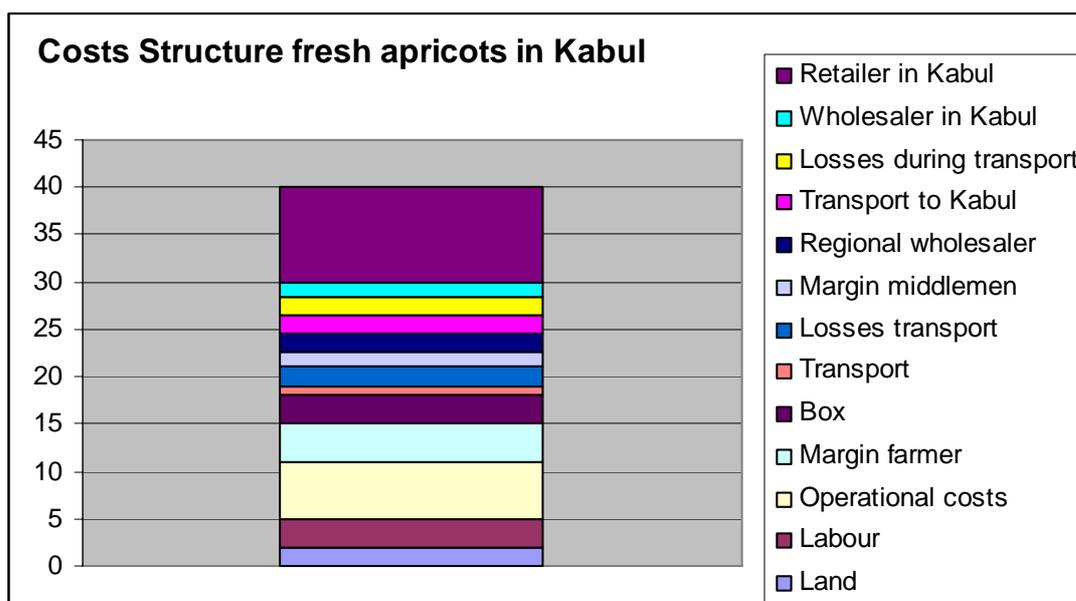


Figure-1: Summary of cost structure for fresh apricots sold in Kabul (Afs/kg)

²² Estrada, 2005

2.10 Export Markets

Internationally, Afghan dried fruit and nuts have a mixed reputation. In India, with potentially the largest demand for Afghan produce, Afghan (dried) fruit and nuts are popular. Indian consumers pay premiums for Afghan dried fruit and nuts as opposed to similar Indian products. In many cases, Afghan products fetch double the price of similar local Indian produce. Contrastingly, Afghanistan's reputation in European and U.S. markets is poor, mainly due to poor quality of production, processing and packaging. Afghan traders are considered unreliable, and their uncertified products do not meet hygienic standards.

Pakistan and India have a combined population of over 1.3 billion people and represent a rapidly growing market for high value products like fresh apricots. India's population has been growing at an average of six percent over the last decade with an accordingly strong growth in import demand. Pakistan has been the destination for 69 percent of all Afghan exports, India for about eight percent (2004 data)²³. A preferential trade agreement with India (50 percent lower trade tariffs) has already boosted exports and there are good opportunities for Afghan horticulture products. Similar negotiations are ongoing with other neighbouring countries. Of interest are the United Arab Emirates, as an export destination. Dubai serves as a major hub for the entire Middle East region, so this market is a door opener to many other markets.

In India packing and branding are less important, as large wholesalers and supermarket chains prefer to pack and brand products themselves. The Indian wholesale fruit markets are concentrated in a few places that serve major cities and therefore, market access for Afghan traders, particularly to North Indian markets should not be difficult. Indeed the fieldwork showed that Indian importers are actively seeking Afghan produce. To reap possible rewards from the opportunities offered by the Indian market will require collaboration and coordinated efforts by all players within the apricot value chain.

The ALTAI report of 2004 indicated that costs of fresh apricot production in Afghanistan were roughly equal to those in Turkey (the largest producer) and USA, but costs were substantially (50-100 percent) higher than costs of production in neighbouring countries such as Pakistan, Iran and Uzbekistan.

Pakistan

Virtually all apricots produced in Afghanistan are exported to Pakistan, with substantial amounts sold directly through Peshawar, bypassing Kabul, and thus, reducing the number of middlemen in the chain and potentially increasing profits. For example, indicative costs for apricots sold in Peshawar for first quality *Amiri* apricots:

- Farm-gate - 22 Afs/kg
- careful harvesting, sorting and packing - 5 Afs/kg;
- transport - 3 Afs/kg,
- Afghan customs - 1 Afs/kg
- Pakistan import duty - 2 Afs/kg
- Road blocks and bribery - 1 Afs/kg
- Price at Peshawar markets - 34 Afs/kg.
- This leaves a margin of 50 percent for the wholesaler and retailer in Peshawar where the market price is estimated to be 50 Afs/kg.

²³ Unpublished data from EPAA

The cost structure for exports to Peshawar is similar to those for fresh apricots sold in Kabul markets (see Figure 1.)

India

Some Pakistani traders sell high quality Afghan fresh apricots onto the Indian market. Transport from Peshawar to India affects quality as the produce has to be manually loaded onto Pakistani trucks, which are again manually unloaded at the Indian border, carried a few hundred metres through no-man's-land and re-loaded onto Indian trucks. A cumbersome procedure that is costly in terms of quality. An alternative would be to air freight fresh apricots to India.

One exporter provided the team with cost data for air freight to India of premium quality apricots:

- farm gate price: 22 Afs/kg
- cardboard cartons: 8 Afs/kg
- transport to airport: 4 Afs/kg
- Taxes / duties: 12-15 Afs/kg
- Losses: limited but if custom officers are rude, 2 Afs/kg
- Airfreight: 35 Afs/kg (commercial price)
- Total costs to India 85-87 Afs/kg.
- Wholesale price - 95 Afs/kg

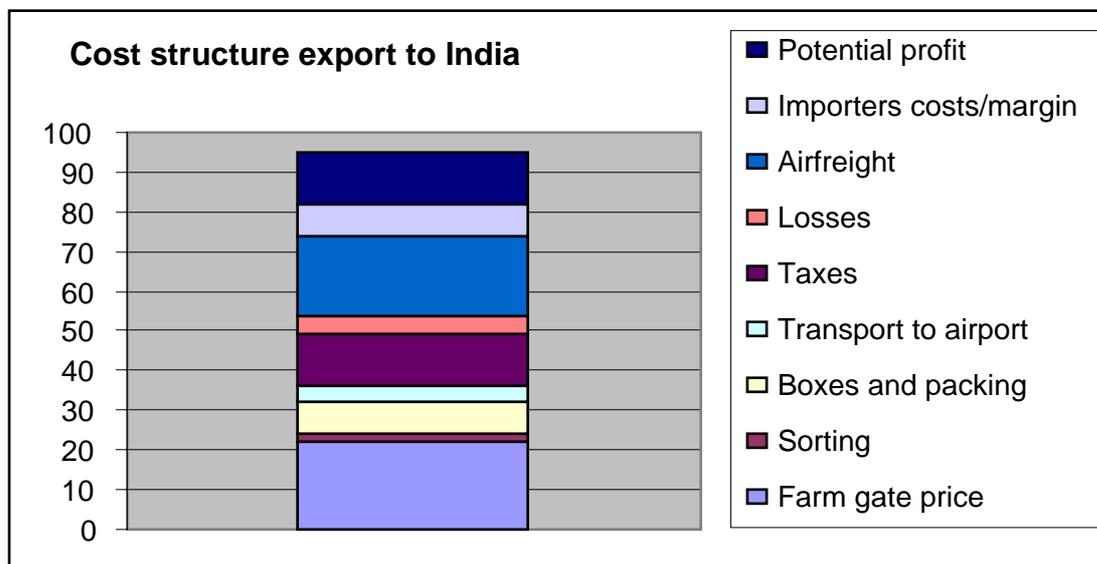


Figure-2: Cost structure for fresh apricots sold in India (New Delhi, Afs/kg)

Potential profit is limited to only 10 percent. But if the airfreight rate could possibly be negotiated down to 20-25 Afs/kg (as achieved by AICC for Dubai in 2006 and ASAP in 2007 with Ariana Airlines) profits would then increase to more than 20 Afs/kg, or some 30 percent.

Dubai

In 2006 an Afghan businessmen exported fresh apricots to Dubai, where retail prices can be up to 200 Afs/kg, with potential wholesale prices for Afghan traders in the range 125 -

150 Afs/kg. In this case Ariana Airlines offered a special airfreight price of 20 Afs/kg, instead of its normal cost of 55 Afs/kg. In this example the same costs for export to India were used and the costs at Kabul airport were estimated to be about 45 Afs/kg and at Dubai Airport about 65 Afs/kg. With some additional handling costs during transportation, the margins for sale of fresh apricots in Dubai are still attractive.

But the trial shipment to Dubai failed because more than half the shipment was refused in Dubai by wholesalers. This was caused by several mistakes:

- Insufficient quality; the trader bought the fruits on the wholesale market in Kabul, i.e. he was not responsible for harvesting and therefore ensuring quality standards from picking through to sale on the wholesale market
- Packing was in standard 15 kg wooden boxes – export markets demand packing 24 fruits individually in foam and coloured tissue paper
- Customs delays effectively destroyed 10 percent in quality control
- Lack of certificates (of origin, phyto-sanitary and health)
- Insufficient branding by an independent authority which quality assures the produce (this requires careful planning for at least 2-3 years).

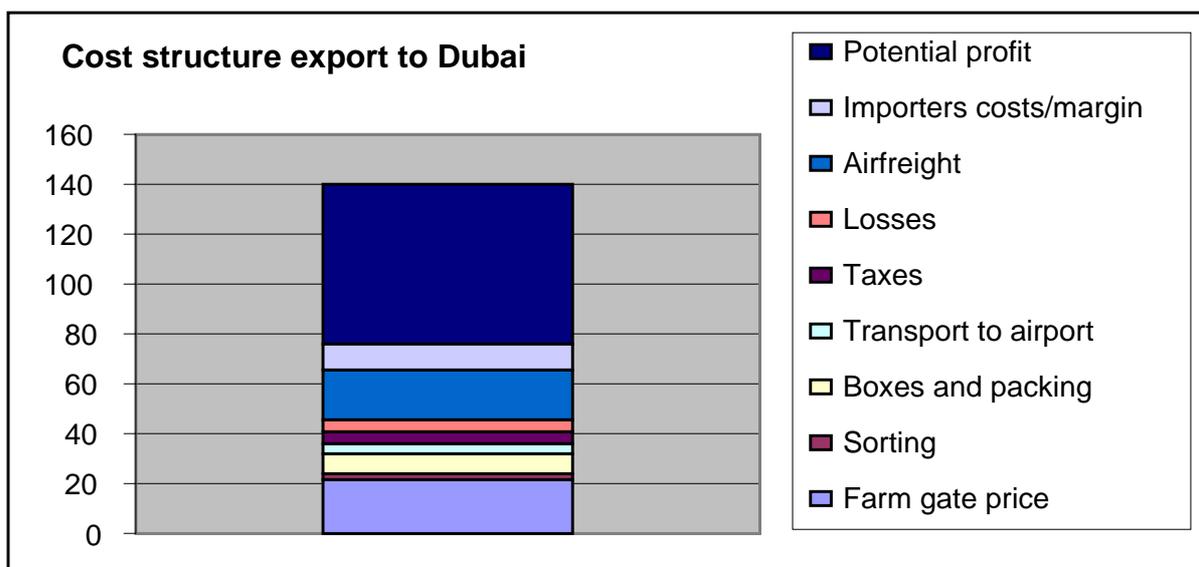


Figure-3: Estimated cost structure for fresh apricot exports to Dubai (Afs/kg)

This underlines a crucial problem in the Value Chain - lack of specialisation. The businessman concerned was not a horticulture export specialist – he simply identified an opportunity (actually a project did this for him), tried, failed to make a profit and will not persist in this venture, even though the opportunities in these markets are immense. But the poor quality that was delivered to the Dubai wholesaler on this occasion further undermines Afghanistan's reputation as a reliable partner and creates difficulties for future Afghan traders trying to enter this market.

It is difficult to conclude definite cost structures for fresh apricot exports because much of the data is based on one-off marketing exercises, such as the negotiation of more favourable airfreight costs out of Kabul. These costing exercises suggest that export market opportunities need to be further investigated.

The price data presented in this report is comparable to similar data presented by Swanberg (2004) for the RAMP project. He concluded that a profit margin of 45 percent could be achieved in export markets, such as Dubai. Similar to the 2006 experience described in this report, Swanberg based his conclusions on a 90-tonne shipment of fresh apricots to Dubai in 2004, again as a one-off exercise with no apparent follow up.

2.11 The Commercial Support System

Input Supply

Farmers use fertiliser on a commercial scale when they are able to purchase fertiliser at reasonable prices. Supplying fertiliser is one of the main tasks of the more than 1100 agricultural cooperatives registered in Afghanistan. One project (ASAP) commenced a support program to establish a network of 'Ag-depots', which may form the nucleus for improvements in the supply of horticultural inputs. As previously mentioned, farmers are often illiterate, possess minimal knowledge on the use of chemicals and issues such as Integrated Pest Management (IPM). Thus, there are concerns that poor quality pesticides will flood the Afghan market and be used indiscriminately by Afghan farmers.

Technical Assistance

The demand from farmers for technical assistance is substantial but most farmers are unable or unwilling to pay for such services. Many NGOs, and of course the government, provide free extension services, so it will be many years before extension service provision would be profitable for private sector provision. To overcome these difficulties some input dealers assist and advise farmers in virtually all aspects of farming: laying out orchards, training and service provision on a contract basis in pruning, pest control, fertilisation and manuring practices. Some dealers import special Crop Protection Chemicals and concentrated organic manure from abroad (e.g. Iran), and are often cooperating with NGOs and donor-funded projects.

Financial Services

Financial services are poorly developed throughout Afghanistan. Commercial banking and insurance provision are lacking in rural areas, as virtually all banks only operate in Kabul. A World Bank survey found that only 30 percent of all firms have a bank account²⁴. There is no long-term finance provided from any commercial bank. The maximum tenure of financing is up to three years. In the World Bank survey only 1 percent of private sector investment in Afghanistan was covered by credit from banks; most was coming from retained earnings. Commercial loans have interest rates of 25 percent which are prohibitively expensive. Some businesses apply for special credit lines which are subsidised by the Government of Afghanistan. The nominal interest rate of these loans are lower at 12 percent, but involve huge amounts of paperwork, delays and bribes which adds to the costs and also produces an expensive product (some say it is even more expensive than a commercial loan).

While the majority of business transactions are in cash, over 10 percent of domestic customers pay through money exchange dealers also known as *hawala* transfers. The *hawala* system is even more important for foreign customers; almost 14 percent. *Hawala*

²⁴ World Bank, 2005

transfers for foreign trade appear to be at least as efficient as bank transfers. *Hawaladars* also provide short-term loans to finance working capital needs of 21 percent of the firms interviewed in the World Bank survey²⁵, with an average term of 3.8 months. As a result, an estimated 80–90 percent of all financial transactions in Afghanistan remain informal.

Barter is also used extensively. One exporter explained how a barter transaction works. The trader would deliver apricots to Peshawar and receive other commercial products as payment (delivered with the same truck). In this way both partners are reducing their need for cash. On the negative side it prevents specialisation and reduces efficiency.

As in many other countries microfinance is promoted in rural areas of Afghanistan. The latest data on the Microfinance Investment Support Facility for Afghanistan (MISFA)²⁶ provide the following data (February 2008): 15 Microfinance Institutions (MFI) in 112 districts, with a total staff of 4,532 people. Since 2002 over US\$402 million in loans has been dispersed, mainly to poor household enterprises; the outstanding loans were US\$105 million. The number of active borrowers was over 364,000 with women constituting 70 percent of borrowers. The average loan is nearly US\$290 but only 8 percent of these loans are used in agriculture, with most (61 percent) used in trade and 12 percent in livestock. Therefore, microfinance cannot be considered a viable means of financing the further development of high-value horticulture production in Afghanistan.

Tailor-made and affordable credit to farmers and other stakeholders in the Value Chain would encourage investment in apricots. Such credit schemes could lead to substantial increases in exports in the medium term. Providing credit to farmers would encourage farmers to invest in perennial crops and reduce their dependence on middlemen for pre-financing their harvest. Since orchards are a relatively easy source of collateral a tailor-made loan scheme for (new) orchards could be a pre-cursor for a more general agricultural (rural) credit system.

2.12 The Non-Commercial Support System

After decades of war, the knowledge infrastructure in Afghanistan is weak. Some say farmers have “forgotten” how important it is to prune fruit trees. Many are illiterate and few understand proper pest management techniques.

Agricultural research is organized at two levels²⁷. At the central level the Agriculture Research Institute of Afghanistan (ARIA) consists of ten units and three research stations located in Kabul (Darul Aman, Qargha and Badam Bagh) with a total of 150 employees.

At the provincial level, ARIA has 17 research farm stations. It has 100 staff members outside Kabul; of these only 2 have MSc degrees; 58 have BSc. Directors of Research Stations also serve as chief of the research unit at the agriculture department of the province in which they are located. The biggest problems of the system are:

- lack of qualified staff
- inadequate funding: low salaries and no operational funds

²⁵ World Bank, 2005

²⁶ www.misfa.org.af

²⁷ Details on research and extension from *Biçoku*, Y. 2007.

Consequently the research agenda is practically decided upon by donors, which means that it is not coordinated and sustainable.

Research Stations are not specialised. With 10 out of 16 stations working on fruit production it appears horticulture is a focus of attention. Yet, a review of staff of the six main stations revealed that only three of the 69 researchers were horticulturalists. Another weakness is the absence of attention to economic and socio-economic aspects.

There are about 650 people involved in agricultural extension with MAIL. In each of the 34 provinces a few subject matter specialists are employed; some 150 in total. One extension officer is located in each of the 371 districts of Afghanistan, sometimes two. In total there are some 400 at this level. The World Bank-sponsored Horticulture and Livestock Project (HLP) will recruit and train 220 extension officers in the planned orchard rehabilitation component of the project.

The quality of government extension workers is unknown. Field visits suggest that few are able to draft marketing or business plans. Without reliable information farmers base their decisions on tradition and their own intuition, including investment planning. Fieldwork indicated that even large businessmen did not conduct careful analysis of a new business venture before investing and therefore, poor outcomes usually result. This problem is often accentuated by some donor projects which provide financial support, without sufficient investigation into the actual business beforehand.

Infrastructure is poor throughout Afghanistan. Irrigation systems are problematic for most farmers. A lack of clean water and a reliable electricity supply are constraints for processors. Road networks throughout the country are inadequate and although labour costs are low (productivity is also low), transport costs per km are more expensive than Europe. This is deleterious for the apricot industry (and many other products) as it prevents people in isolated areas profiting from their climatic and cultivar advantages.

Information dissemination to producers is also weak. Reliable data and statistics are almost non-existent, and little market data is collected, analysed and distributed. The same can be said about information on equipment, inputs, technologies etc.

There are many NGOs active in the country, but the quality of their human resources differs enormously. Those with a humanitarian background have great difficulties in re-orienting themselves towards longer-term development assistance. They have many local staff members on the ground, but they rarely have the necessary professional and commercial skills. The more professional organisations have difficulties recruiting suitable local and international staff.

Export promotion is the task of the Export Promotion Agency of Afghanistan (EPAA)²⁸, an executive arm of the Ministry of Commerce and Industries established in 2006 with support from GTZ. EPAA implements the export promotion policies of MoCI, through:

- Export promotion (including training, exhibitions/fairs, promotion of the use of standards etc.)
- Individual advice to companies and advocacy
- Market research and collection and dissemination of export data

²⁸ Information from the EPAA website: www.epaa.org.af

- Coordinating public and private initiatives to create a business enabling environment for competitive exports which contributes to job generation.

Both fresh and dried fruits are a priority commodity for EPAA, which is streamlining export procedures (EPAA wants to become a one-stop-shop) to make it easier to export products from Afghanistan. EPAA also provides market data and training to their clientele.

2.13 Policy Environment

Afghan farmers and agribusiness entrepreneurs believe their government should do more to protect their industry from cheap imports and assist them in exporting. But farmers, like many others in Afghanistan, pay few taxes, and the state provides few services. Afghanistan has become a 'renter state'. The government announcement that a land tax will be reintroduced could be a first step forwards.

Exporters complain that Afghan exporters face unfair competition from subsidised products from other countries (Lebanon, Egypt, Turkey and Iran) on international markets. Also, traders and processors complain about government red-tape. For example, the number of licenses that companies need in order to operate and the frequency for licence renewal retards investment. The government is working on simplifying these procedures and on better communication (a new roadmap for investors was recently published by the Ministry of Commerce and Industry to help guide this process).

2.14 Chain Integration, Cooperation and Coordination

The lack of coordination and cooperation at many levels within the Apricot Value Chain prevents realisation of the full potential of the industry. For example, local traders employ pickers to mix different qualities of apricots into one box at the orchard; retailers are then forced to separate these grades. But at other levels there is significant integration. For example, the more successful farmers have nurseries, act as middlemen and have a business at local and/or regional markets.

During the fieldwork, a company owner explained that they imported production inputs (e.g. pesticides), owned a nursery, several large orchards and exported fruit. Such a turnkey operation reduced transaction costs and allows specialisation.

The underlying rationale for integration is risk avoidance and lack of trust in other actors in the chain. Lack of trust among all actors is a barrier to developing the industry. A Mental Models survey by OTF (2006) showed that only 39% of respondents stated that people can be trusted in Afghanistan. To reduce risk, pre-financing is prevalent throughout the apricot value chain. As mentioned, local traders pre-finance farmers and wholesalers pre-finance these local traders. Regional wholesalers are linked to larger national wholesalers at major markets; larger national-level companies are further linked to companies and investors in major export destinations such as Peshawar and Dubai. According to Estrada (2004), in practice, most pre-financing arrangements are costly for farmers because of the unrealised value they lose in such transactions. Farmers accept these losses because they are dependent on the buyers of their produce, not only for an advance for the harvest but also in times of (high costs) illness and other social needs. One of the reasons for the distrust in the chain is the lack of quality standards. The main result is a lack of specialisation and efficiencies throughout the industry.

The third dimension in the value chain is the lack of horizontal cooperation. Cooperatives do exist²⁹ but these mainly focus on input supply. They are registered with the Cooperatives Department in MAIL. When they deposit their savings in a bank, they are entitled to government support to purchase equipment, and other production inputs, such as fertilisers (and some seeds) for their members. For example in Mazar a cooperative bought a tractor with a 75 percent subsidy from the government. This support is one of the reasons for the number of cooperatives to be increasing.

Marketing cooperatives are rare. To establish a marketing cooperative for products like apricots where timing of operations and quality issues are crucial requires a higher level of trust among members. With few (objective) quality standards available, any form of cooperation is difficult. So, in practice, cooperation is only found where NGOs support and stimulate farmers and/or traders to work together.

²⁹ Over 1100 agricultural cooperatives were registered by the cooperative department of MAIL in 2007

3 Dried Apricot Value Chain

3.1 Introduction

In isolated areas of Afghanistan it is not possible to market fresh apricots so farmers dry their apricots. What has been said above for fresh apricots also applies to dried apricots. Additional information is provided on the varieties used, drying processes, sorting, export and the Value Added Structure.

3.2 Varieties

While most agree the best variety for fresh apricot production is *Amiri*, there is confusion about the qualities of the many varieties for dried apricots. This is caused by the many different local varieties and the different drying methods used in different regions of Afghanistan. Some drying methods are exclusively used with specific varieties and vice-versa. Next to the many local varieties new ones are also being introduced from outside the country, mostly via NGOs. Differt (2007) explains the decision-making process:

Farmers did not select apricot trees to obtain “improved” varieties and most of the trees are not grafted (Khasak). Six years ago, farmers began to graft various new varieties, available in the neighbouring Kahmard district: mainly Soqi, in order to produce chapanemak (dried apricot having the highest commercial value), but also Abkhorak, Bodjgahi, Amirey, Naial-e-Said Muhammad.

New varieties introduced into Afghanistan are not properly studied beforehand and therefore, little is known about the characteristics of different varieties; either in agronomic, technical or economic terms.

3.3 Drying



Harvesting is done manually, which allows selective picking depending on the ripeness of the apricots and the processing capacity of the farmer's family. Apricots are not picked if they cannot be processed on the same day, which avoids rotting fruit. Because most apricot trees are tall, fruit is harvested by shaking the branches or striking the branches with a stick. Thus, the falling apricots are mainly the ripest. They are collected on a sheet in order to decrease spoilage. One person can harvest about 25 kg of apricots per hour. There are few physical losses during the harvest and almost all the apricots harvested will be processed. Nevertheless, due to crude picking techniques a percentage of apricots will be spoiled or harvested when too ripe and will be processed using the *parak* drying method, which returns dried apricots of lowest commercial value, and results in a loss to farmers (Differt, 2007).

Traditionally, fresh apricots are laid out to dry on a roof for 4-12 days, depending on the type of apricot variety and the drying method. One improved method is dehydrating apricots in closed fumigation rooms with Sulphur. The apricots are Sulphur-fumigated for only one (or a few) hours and are then further dried in the sun. This drying technique produces a dried apricot with a more natural orange colour and a softer dried apricot that is more in demand from consumers than the traditional dried apricots sold in Afghanistan. Sulphur-dried apricots fetch higher prices, although in some developed country markets consumers are increasingly rejecting the use of chemicals (Sulphur) in food processing.

With traditional drying techniques, 8 kg of fresh apricots are needed to produce 1 kg of dried apricots. No data on production costs are available, but fieldwork suggests the labour costs are about US\$2/day (rather than US\$3/day for labourers working with fresh apricot harvest). Land rent is considerably less in more isolated areas of Afghanistan and fewer inputs are required to produce dried apricots. But yields/ha may be lower. Therefore, for these purposes it is assumed that costs are about one third lower, at 6-7 Afs/kg compared to costs of fresh apricot production.

This equates to a cost for producing 1 kg of dried apricots at 50 Afs/kg (8 kg of fresh fruit). The fieldwork demonstrated that the farm-gate price for apricots dried using traditional techniques was 50-60 Afs/kg, which provided minimal or nil returns to the farmer (i.e. the farmer's labour invested in drying apricots was not rewarded). However, labour involved in drying apricots is minimal and was estimated at most, at 1 Afs/kg. Therefore, the primary reason for drying apricots is to facilitate transport and sale of apricots, which would otherwise simply rot and be worth nothing to the farmer.



With Sulphur-drying techniques³⁰, the ratio of fresh apricots producing dried apricots is much better than traditional drying techniques - 5 kg of fresh apricots producing 1 kg of a higher quality product valued at 60-80 Afs/kg. Both issues are related: with Sulphur-drying, the dried apricots contain more moisture which produces a better 'bite' for consumers. Sulphur also prevents mould and thus, the higher moisture content in Sulphur-dried apricots is not a problem. This compares favourably to traditional sun-dried apricots, which are hard to bite and suffer from the problem of fungal growth.

A small Sulphur-drying room (1.5x1.2x1.3 meter) suffices for an average farmer's production and costs about 1000 Afs. It can be used for 5 years. The plastic sheet needs to be renewed each year at 200-400 Afs. If families cooperate in buying and using the plastic sheets, then costs are reduced. Sulphur is inexpensive (although estimates vary widely, between 0.1 and 1 Afs/kg of dried produce) and labour costs are low at about 2 Afs/kg of dried fruits. Many developed markets for dried apricots have strict limits on the amounts of chemicals that can be used in processing and incorporated into the finished product. Most proponents of Sulphur drying in Afghanistan are using quantities of Sulphur at half the recommended EU rates for dried apricots. Therefore, this drying methodology is being actively promoted in Afghanistan.

Another important distinction between processing techniques is the preparation of fresh apricots for drying. Apricots can be dried whole called *gholing* - this is done with small fruits; e.g.



³⁰ All photos courtesy of Solidatres (2007)

the *abkhorak* variety. The stone can be removed after drying or left in the finished product. Drying can start on the tree. When the drying process is completed on the tree; producing tree-dried apricots known as *shaker-panar* apricots, which are mostly used in southern Afghanistan. It is estimated that about one third of dried apricots are dried whole.



The kernel can be squeezed out of the apricot before drying but without cutting the fruit open which is called *parak*. Apricots dried using this methodology have the lowest commercial value. This process is generally used on inferior quality apricots of any variety either damaged during harvest, marked by pests or over-ripe at harvest.

Apricots opened along the median furrow, but not halved, and then dried in a process called *bargak*. This method is used in about half of all apricots dried in Afghanistan. In this method the internal flesh of the fruit is exposed to air, which allows the dried apricot to be easily contaminated by dust and microbes.



The final method involves removing the stone without cutting the fruit totally open and then turning the fruit inside-out so that the inner flesh of the apricot is exposed and dried in a process known as *chapanemak*, which is done only with the *soqi* apricot variety (about 10-20 percent of all apricots dried by this technique). The price of *chapanemak* is much higher than for dried apricots using the other drying methods. At the time of the field study one kg of *chapanemak* dried apricots sold for 280 Afs/kg in Kabul compared to 110-160 Afs/kg for apricots dried using other techniques.



Without sulphuring, one person can harvest and process 40 kg of fresh apricots per day (1.6 hours for harvest, 6.4 hours for stoning). With sulphuring, one person can harvest and process 25 kg of fresh apricots per day (1 hour for harvest, 4 hours for stoning, 1 hour for sulphuring, and 2 hours for transferring to the drying area). If apricots are processed in *chapanemak*, 1 person can process 75 kg of fresh apricots in 6 days (12.5 kg of fresh apricots/day).

3.4 Trade

After drying most farmers store their dried apricots until winter. If they have dried their apricots effectively, then losses are minimized and their dried apricots may even gain some weight by absorbing humidity, but this may also attract mould.

The trade network is similar to the system described above for fresh apricots. Most middlemen act as an “agent” for wholesalers in regional centres. Since the product is not perishable, trade is much less seasonal and fewer traders are needed. The value chain between farmers, regional and Kabul markets is therefore much shorter than fresh apricots. For example, farmers in the Ghorband valley have collaborated and formed the Ghorband-Kabul Association, which has a retail outlet in the dried fruit market in Kabul.

Differt (2007) reports that there are no contracts between buyers and farmers: farmers are free to sell to who they want. The buying period starts at the end of July and concludes by the beginning of September. Dried apricots are sold:

- To shopkeepers-collectors of the local bazaars. These shopkeepers buy all types of dried apricots and stones. They sell this produce in Kabul and generally pay farmers only after they have sold their dried apricots in Kabul, or barter with goods from their shop. They usually offer lower prices to farmers than traders from other areas;
- To traders coming from other areas. They are not always present and sometimes purchase only one type of dried apricot or stones. They buy larger quantities than the local shopkeepers and pay cash. These traders stay 1-2 days in the villages in order to collect the amount of dried apricots/stones they need and then go to larger regional markets to sell their produce. They can also give money to local commission agents in order to buy on their behalf;
- More rarely, to other farmers (who are not shopkeepers), who buy local produce to sell in Kabul.

The margin of the traders is limited and estimated at 5 percent, which is lower than the margin for fresh apricots (25 percent) because the losses and risks are much less. Price fluctuations are limited. Transport costs to Kabul are 2-5 Afs/kg depending on the distance but generally, they are higher than for fresh fruits because dried apricots are transported longer distances from isolated areas.

3.5 Sorting and Packing

Dried apricots are sorted and packed (in 1 kg plastic bags) in regional centres and Kabul, by companies dependent on an itinerant workforce. No specific cost estimates for apricots were obtained, but one company explained that for all dried fruits and nuts their average costs for sorting and packing were 12 percent. The margin of the processor/wholesaler was 3 percent, which is less than the fresh fruits.

The general characteristics of good quality dried apricots are: cleanliness (dust and bacterial contamination), shiny/bright surface (sometimes a kind of wax is used to polish the dried fruits), yellow colour, soft bite and large size.

Packing in plastic (normally 1 kg bags) is common and better packaging can produce higher prices. Processors usually pack dried apricots in foam and thin, transparent plastic which allows the consumer to see the produce.

In Bamyan the Aga Khan Foundation packed 500 gms. of dried apricots in coloured cardboard boxes that advertised 'Bamyan Dried Apricots' which helped to improve the image of the product. These apricots sold for a premium to other Afghan dried apricots dried, sorted and packed using traditional methods, in supermarkets in Kabul.

However, there is a tremendous scope for improvements in packaging and sorting for selling dried apricots.

3.6 Retail

Dried apricots are sold through bazaars, small shops and street vendors in all urban centres throughout Afghanistan. Retail margins are lower than for fresh apricots with an average of about 10 percent.

In a normal production year prices for dried apricots in Kabul are 80-100 Afs/kg, and in regional centres about 10-20 Afs/kg lower. Prices differ enormously according to quality, method of drying, taste etc. so it is difficult to use 'average figures'. Apricots dried by the *chapanemak* method fetch the highest prices. For example, in Kabul the price of *chapanemak* dried apricots (200 Afs/kg) can be double the price of apricots dried using other methods (80-100 Afs/kg). This could be due to a number of factors that limit supplies such as this drying method can only be applied to *soqi* apricots, which only grow in certain areas of Bamyan province (although some locals claim planting of the *soqi* apricot variety is spreading from its current limited range); the *chapanemak* process to turn fruits inside out is complicated and time consuming; plus these dried apricots are in higher demand during various ceremonies and festivals in Afghanistan. For whatever reasons, the demand for apricots dried by the *chapanemak* process is higher than supply and further marketing studies could be warranted to determine the fullest potential for these dried apricots in Afghanistan.

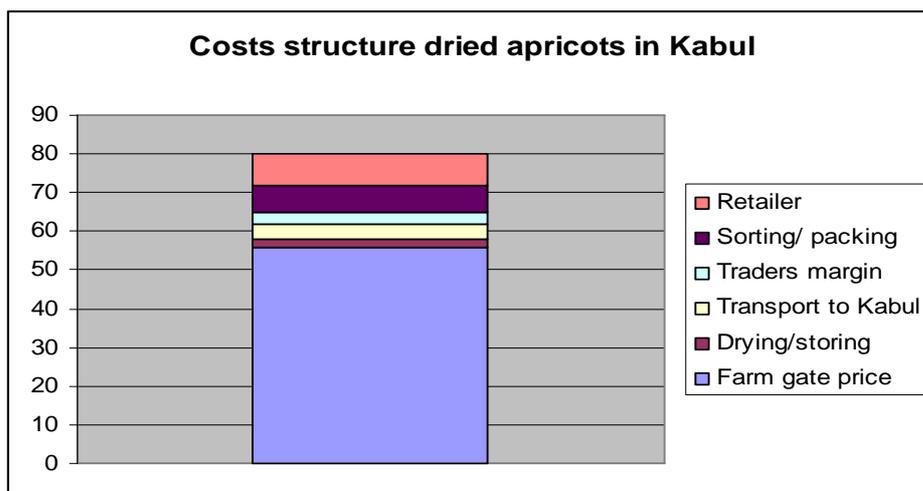


Figure-4: Margins for dried apricots sold in Kabul (Afs/kg)

Differt (2007) states that the time required to dry apricots using the *chapanemak* method is roughly double the time required for other methods. Differt (2007) estimated that an experienced person can only roll and dry about 12.5 kg of fresh apricots per day; yielding some 2.5 kg of dried apricots by the *chapanemak* method. An experienced drier can therefore only handle the produce from five apricot trees using the *chapanemak* method. However, using other drying methodologies allows a labourer to double or even triple (up to 17 trees per person) their daily output during the harvest period.

Differt (2007) added that high demand for labour during the peak season in July when most perennial horticulture crops are harvested conflicts with the time-consuming requirements for drying apricots using the *chapanemak* method. However, the potential margins for farmers producing dried apricots using this method are sufficiently attractive to prompt some NGOs to actively promote *soqi* apricot variety production and marketing of *chapanemak* dried apricots.

3.7 Export

Contrary to the export of fresh apricots, the bulk of dried apricots that are exported are of low quality and used primarily in the Pakistan confectionary industry. The main exports are from the Ghorband Valley to Peshawar, Pakistan. Estimated profits are limited as demonstrated in the following example:

- Ghorband prices: 56 Afs/kg (4 kg gives 1 dried fruit)
- Transport costs: 4 Afs/kg
- Taxes / duties: 3 Afs/kg
- Losses: limited
- Wholesale price in Pakistan: 70 Afs/kg
- Potential profit: 10 percent.

In India prices of dried apricots are much higher at about 250 Afs/kg and during religious festivals such as Deevali (c.25 Oct.) prices can rise as high as 300 Afs/kg. The Khari Bawte wholesale market in Delhi absorbs large quantities of dried apricots from Afghanistan as does the Chrucha bazaar in Ahmadabad.

Export data suggests that about 30 tonnes of tree-dried apricots are exported annually to India from Kandahar. Two exporters contacted during the field work aimed at exporting dried apricots to India; one 10 tonnes and one 250 tonnes. The Ghorband-Kabul Association stated that its members stopped exporting to India mainly due to logistical difficulties, as it is difficult to ship any product into India overland. A Pakistani truck has to be hired (Afghan trucks cannot drive in Pakistan) to transport produce to the Indian border. At this border the produce has to be man-handled and carried over the border to an Indian truck (200-300 metres of no-man's-land). This traditionally added an extra cost to the shipment known as a 'head weight' cost. However, this cost has been substantially reduced since Indian trucks are permitted to back-up to Pakistani trucks at the border which greatly facilitates this transfer cost.

Additionally, paperwork is immense which provides many opportunities for corruption. A World Bank report (2005) claimed the following export charges for the export of raisins from the Afghan Government:

- Trading license to be renewed annually at a cost of Afs 3,500. A new, simplified and more transparent process for this was introduced in April 2004.
- Phytosanitary certificate from MAIL in duplicate or triplicate—Afs 40–60.
- Certificate from Raisin Export Institute—50 Afs/tonne
- Export tax—temporarily removed by presidential decree on September 24, 2002, but a 0.5 percent tax has been temporarily re-imposed on all export and import operations and must be paid to Ministry of Finance (MoF).
- Export license fee of 0.018 percent payable to MoF.
- Income tax of 20 percent on trading profits payable to MoF.
- Sales tax of 2.5 percent payable to MoF
- Additional "local government" taxes and payments at checkpoints.
- Additional taxes; e.g. in the north a "security tax" of 0.5 percent of the price of raisins is levied. This is supposed to be refundable; but is never actually refunded.

In addition, total bribes and port handling fees payable on export are estimated at US\$8/ton. Enforced delays cause more problems and costs. In 2005, on average it took

firms nearly 10 days to clear exports³¹. During an Afghan International Chamber of Commerce (AICC) seminar in 2007, many traders complained of these delays, with some examples of trucks taking 30 days to deliver their produce to India.

Swanberg (2004) demonstrated that exports of dried apricots from Afghanistan to Europe could provide returns of about 23 percent on a price basis only. However, Afghan dried apricots are not of a quality or standard demanded by Europeans – they are unhygienic, poorly sorted and packaged to be sold in more sophisticated world markets.

³¹ World Bank, 2005

4 Conclusions

The main conclusions of the apricot value chain study are:

- The potential for export and increased sales on local markets of apricots is possible, especially sales of fresh apricots to Pakistan and Kabul, and dried apricots using the *chapanemak* method in Kabul.
- The main problem for increased sales is poor quality of production caused by a lack of pruning, insufficient care during harvesting, poor grading (even: mixing of qualities) and poor packing of fresh fruits. For dried apricots unhygienic drying is a major constraint; also packing and branding leaves much to be desired.
- One underlying cause for poor quality produce is caused by a lack of specialisation - seasonality of production (different varieties in different districts/regions of Afghanistan), lack of proper skills, lack of credit to make necessary long-term investments and the poor investment climate
- Chain integration is strong, but mostly for defensive reasons (risk-avoidance and lack of trust). Due to lack of credit, most actors at the bottom of the chain (farmers and middlemen) depend on more affluent traders to pre-finance their activities (and often other family expenditures also).
- Chain coordination is poor. Despite strong vertical networks, communication on issues like consumer demands and quality is limited, and often confined to social networks.
- Horizontal coordination and cooperation is also limited. Farmers are organised in cooperatives, but these are closely linked to the government and focus on obtaining subsidized inputs and equipment (via governmental support). Some NGOs have started promoting cooperatives specifically for marketing.
- Individual enterprises lack marketing and business planning skills and investments are made intuitively.
- The support network in the apricot and other horticulture industries is weak: poor packing materials, no standards or certification, corruption, lack of credit, no access to land, poor roads etc.

The Afghan apricot value chains are less competitive than they could be. Most actors lack the knowledge and skills to be effective (to deliver quality) and efficient. There are no (agreed and enforceable) standards so it is difficult to establish business links outside a personal network. A lack of credit aggravates problems in production. Often influential businessmen will exploit this situation by creating extensive business networks that enforce dependency by farmers and local traders (by pre-financing their operations). These businesses are highly diversified (in order to avoid risks), and thus, do not make the necessary long-term investments required for a more specialised industry.

5 Priority setting

Afghan farmers and traders in apricots are inefficient and not as competitive as possible. More specialisation and long-term investment is required at each level of the apricot value chain. For this a better investment climate is needed, better access to information, advisory services and training and (better) access to (cheaper) credit.

These are long term orientation, but what can organisations like NUHDA do? A number of priorities are presented here. Some can be implemented immediately; e.g. train farmers in pruning. Others need further exploration; e.g. the idea to create a tailor-made credit line for perennial crops. Such issues need to be discussed with all stakeholders. In those discussions the outcomes of the VCA can serve as a starting point, rather than as 'conclusions cut in stone'.

Inventory of Varieties and Names of Products

The present study suffered from confusion on the terminology on a number of occasions. There is a need for a booklet on the basics of apricot production in Afghanistan from a technical point of view: What are the varieties? Where are they grown? What are their characteristics (agronomic, fruits, suitability for drying methods, susceptibility for diseases, etc.)? Which drying methods are used? What are the names used for the different types of produce?

Marketing

Export is feasible but information on (export) markets is lacking. There is a role for collection and dissemination of market information (qualities; quantities; prices); assistance in matchmaking between producers, processors, traders and importers in export markets; trade fairs to promote apricot exports, and the commissioning of more market surveys. The Export Promotion Agency for Afghanistan (EPAA) has commenced many of these marketing activities, and collaboration with EPAA would be a good start.

Export market information on fresh apricots to India and Pakistan would be useful, and more information is required for dried apricots sold in Kabul and India.

Quality

For fresh apricots training farmers on pruning will lead to higher and more stable yields, and higher percentages of first quality apricots and to less alternate/cyclic bearing of trees. Many NGOs and projects are active in this field, but their efforts need to be more coordinated. Horizontal coordination means learning from each other and avoiding (geographic) overlaps. Vertical coordination means linking the farmers to markets.

For dried apricots improved post-harvest technologies are needed, especially drying and packing. The *chapanemak* method of drying seems to have a higher economic potential and deserves further study. Sulphur-drying of apricots could be further encouraged. Also, more attention is needed for promoting more hygienic drying of apricots.

Improved Coordination and Standardisation

There is a lot of vertical integration but there is no (transparent) coordination. Improving vertical linkages (with a focus on quality) outside the existing networks will be very useful in creating a more transparent and efficient market where potential partners can meet.

Just one example; if the exporter to Dubai would have been able to link up to some of the best farmers he would have been able to take the best quality directly from their orchards, which would have led to a much better product in Dubai.

Via round table discussions, product-specific associations could be created, such as an Apricot Association. In a first meeting the results of this study could be presented and validated. Participants could be involved in designing the Terms of Reference for a (export) market study.

One particular function of an apricot association could be to set standards for the industry; e.g. on the type of packing to be used, on improving pest management and control, on paying according to quality, on proper hygienic measures during drying etc. If the more advanced actors in the Value Chain can team up to introduce such innovations, this can have a beneficial effect on the sub-sector in the long run. Exchange visits and study tours can be useful tools to aid understanding and discussions.

In general product-specific associations could become a special and prominent form of membership of NUHDA. It will allow large producers to be members of NUHDA without being forced to become members of a cooperative.

Business Development Support

In order to encourage specialisation, tailor-made business support services are needed. This counts specifically for investment planning. In the case of apricots a number of investments need to be economically analysed: different drying techniques (not only S-drying but also drying in trays in dust-free environments). For fresh and dried fruits more appropriate packaging is needed. Some projects worked on packaging but quality of local packaging remains poor and most packaging is still sourced from Pakistan. The investment potential of the local industry needs investigation. Study visits by stakeholders to neighbouring countries may be required to provide this understanding.

Training is also needed to improve general business skills within the industry in terms of Business Planning, Marketing and Investment Planning.

Credit

Tailor-made and affordable credit to farmers and other stakeholders in the Value Chain would increase investment in the apricot industry. Providing credit to farmers will encourage them to invest in perennial crops, making them less dependent on middlemen for pre-financing their harvest. Since orchards are a relatively easy source of collateral a tailor-made loan scheme for (new) orchards could be a pre-cursor for a more general agricultural (rural) credit system.

Lobbying

Lobbying is one of the main tasks of NUHDA and it should collaborate with others in trying to reduce the poor business enabling environment for horticulture production in Afghanistan. As for apricots, the impact of the poor performance of government agencies is felt via:

- poor transport infrastructure throughout the country
- bribes (particularly) along the roads
- lack of skills at all levels of the value chain
- lack of (tailor-made-affordable) credit.

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