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THE ALBANIAN APPLE VALUE CHAIN: FSKG CASE STUDY

MICROREPORT #120

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ABBREVIATIONS

AAC	Albanian Agricultural Competitiveness Project
ACIT	Albanian Center for International Trade
CA	Controlled Atmosphere
ALL	Albanian Lek (80 = $1.00)
EDEM	Enterprise Development and Marketing Project
EU	European Union
GOA	Government of Albania
GDP	Gross Domestic Product
Ha	Hectares
INSTAT	Institute of Statistics, Republic of Albania
LSMS	Living Standards Measurement Survey
MAFCP	Ministry of Agriculture, Food and Consumer Protection
MT	Metric Tons
USAID	United States Agency for International Development
VAT	Value Added Tax
VC	Value Chain

NOTE ON EXCHANGE RATE

All calculations in this paper assume an exchange rate of 80 Albanian Lek for 1 USD.

VALUE CHAIN ANALYSIS

DEMAND AND SUPPLY

Apples are an important component of the Albanian diet and the most important tree fruit crop in terms of volume and value. The value of domestic production, taken at the official average 2007 wholesale market price for domestic apples, is $27 million. Published national level statistics for fruit production do not differentiate between apples and other tree fruit. However, using regional figures on apple production in Korça (roughly 67% of total national production) and some production data from other areas supplied by the MAFCP in Table 1, national production for the past two years has been in the 30,000 to 36,000 MT per year range. In the absence of exports (which are negligible, although some product inevitably does cross the borders), and including imports, this would imply an average consumption per capita of more than 19 kilograms in 2007—way above the 8 Kg figure for the United States and comparable to the European Union average of 18 Kg.[1] The relative importance of apples in household consumption also can be seen in the data collected by INSTAT under the Living Standards Measurement Survey (LSMS) effort in 2006–07. These show that apples occupy the second-most-important spot in household consumption among all fruits and vegetables, right behind tomatoes.[2]

TABLE 1: NATIONAL CONSUMPTION, METRIC TONS (MT)

	2004	2005	2006	2007
Production in Korça prefecture	6,492	10,020	25,229	24,140
Production rest of country	N/A	N/A	5,771	11,860
Total domestic production	N/A	N/A	31,000	36,000
Imports	N/A	41,064	37,237	25,290
Total Consumption	N/A	N/A	68,237	61,290

Source: Production from Ministry of Agriculture, Food and Consumer Protection; imports from ACIT data collected from the Direction of Customs.

Not only is apple consumption relatively high in Albania but the underlying demand conditions for the near future also seem favorable. With a current per capita real GDP growth rate of about 2% and a population growth rate of 0.58%, Albanian consumers will continue to be significantly richer and slightly more numerous. (However, the general pattern of rapidly rising real incomes that has driven significant reduction in poverty levels over the past five years—particularly in urban areas—may be slowing somewhat.)[3] Available household consumption data from the LSMS survey also confirm that apple consumption rises significantly with increases in income.[4] Although the exact correlation of apple consumption to changes in income levels could not be calculated,[5] given the sharp increase in

[1] Per capita consumption data from USDA/ERS, Fruit and Tree Nut S&O-FTS 292, September 2001.

[2] The sample average household spends 797 Lek per month on tomatoes and 624 Lek on apples.

[3] See World Bank, Poverty Assessment, Report # 40071, 2007.

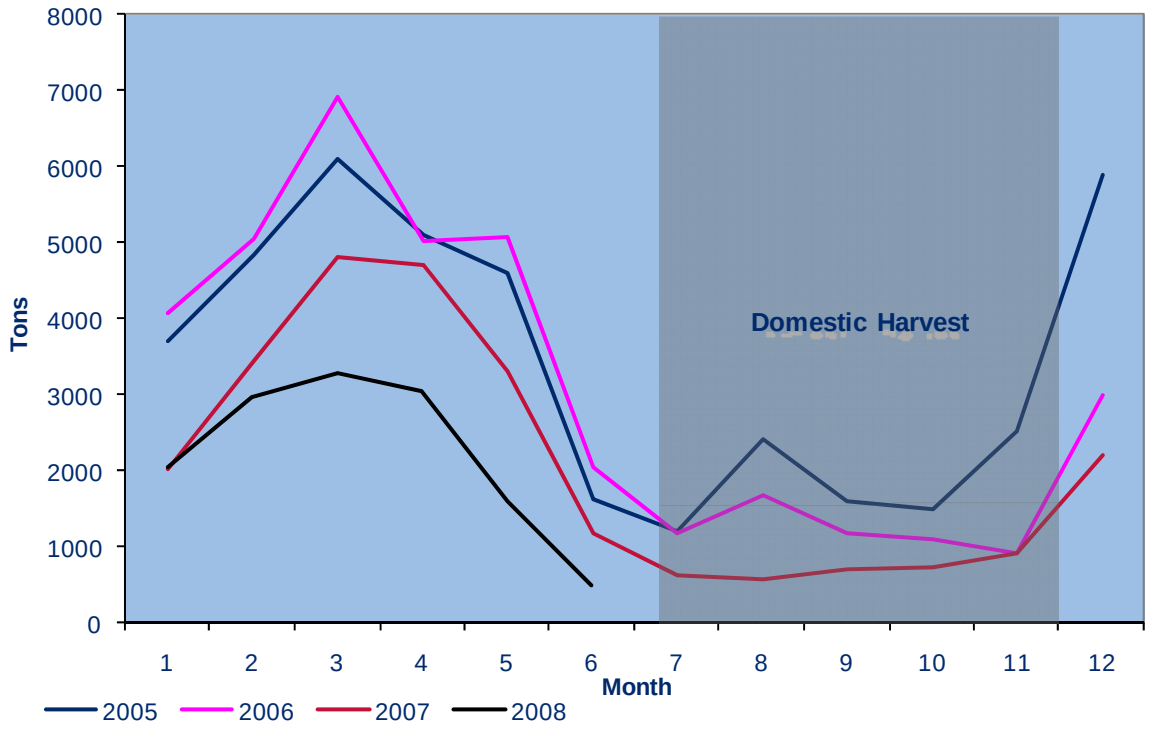
[4] In particular, between the fifth and eighth income deciles, apple consumption rises by 42%

[5] Data to make this calculation exists at INSTAT, but was not available in time for inclusion in this report.

consumption across the upper-middle income deciles (deciles five to eight), it is not unreasonable to expect that continued rising per capita GDP will have a positive multiplier effect on demand for apples.

As Table 1 makes clear, there has been a marked rise in local production over the past three-to-four years.[6] This phenomenon stems mainly from recent increases in apple plantings and is addressed in more detail in the discussion of value chain dynamic trends below. The seasonal impact of rising local production on apple imports is depicted in Figure 1. The clear trend of declining imports in the past four years is particularly pronounced starting in November and going into the first quarter of the following year. This corresponds to the period immediately after the domestic apple harvest, which begins with small quantities in mid-July in coastal areas and ends towards the last part of November in Korça.

FIGURE 1: APPLE IMPORT QUANTITIES, BY MONTH



Source: ACIT/Directorate of Customs

The trend to lower imports in Figure 1, matched with the increases in local apple production, provides a clear indication that, on average, domestic apples are competitive with imported apples, which they largely displace, during the four-month period when they are readily available. This statistical inference matches the opinion of apple importers and larger retailers who report that they are increasingly unable to sell imported apples during the September–November season of peak local availability. Volumes of consumption also rise significantly during this period, largely because domestic apples retail in season at 80-to-120 Lek/Kg, compared with 150-to-230 Lek/Kg for imported apples. The only supermarket venue

[6] Although, the discontinuity between 2004 and 2006 production levels in Korça shown in Table 1 probably has more to do with changes in MAFCP statistical methods than with increased production, all observers in the field concur that production is rising rapidly.

that carries domestic apples in Albania (EUROMAX) reports that its sales volumes triple during the local apple season when they mainly carry less-expensive domestic apples. Assuming that the entire domestic apple harvest is consumed between August and December and that import apple consumption is concentrated in the remaining seven months, this would imply a doubling in the rate of apple consumption during the local apple season as compared to the rest of the year.

VALUE CHAIN ACTORS

The apple value chain map shown in Figure 2 is based on the Korça region, which is the main center for commercial apple production and trade. Other minor areas of production, such as Lushnje and Durres, generally come on-stream before Korça and have similar marketing structures.[7] The main actors involved in production and trade are described below.

PRODUCTION

MAFCP data from Korça show that there were 12,265 farms cultivating fruit trees of which an estimated 80% were apple farms—implying that the Korça prefecture has a total of 9,800 apple farms. Of this number, 40 % are estimated to have land areas under 0.1 ha allotted to fruit-tree cultivation. Such farmers cannot be considered to be real fruit producers in any commercial sense because little, if any, of their production reaches the market. The remaining 5,000 to 6,000 apple producers can be grouped into two major categories:

- **Small farmers** with apple surfaces of between 0.1 ha and 0.7 ha, for whom apple production constitutes a major component of household revenue but is unlikely to be the most important source of income. These farmers will have a volume of production generally under 5-to-6 tons that justifies some effort spent at harvesting and marketing, but they do not treat apple production as a commercial activity with a rationalized system of production that seeks to maximize returns to land or labor. They have limited receptivity to improved technologies and little ability to make new investments in apple production. Yields among farmers in this category are estimated to be in the 10–15 ton per hectare range.
- **Large farmers** cultivating surfaces of over 0.8 ha (and up to 7 ha in one outlying case) that operate as true commercial apple orchards. Such farmers will invest in certified saplings of good genetic quality, prepare the soil on an annual basis, apply fertilizer and use gravity-fed flood irrigation. Most also apply pesticides, although recommended dosages and spraying schedules are rarely respected. These farms generally produce over 20 tons of apples in a season and many more if areas cultivated exceed one hectare. Yields may be similar to small farmers if no improved production technologies are used, but most farmers in this category can achieve yields in the 20–25 ton per hectare range.[8] Production costs for large farmers using improved technology (including drip irrigation) calculated by the AAC project are in the 18-to-19 Lek/Kg range. With farmgate prices ranging from 33 to 50 Lek, apple production for this category of farmer appears to be fairly profitable.

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[7] These early zones differ mainly in that their closer proximity to urban centers and smaller volumes means that there is a more pronounced tendency for direct sales by farmers or through smaller traders to retailers without passing through a distributor or larger wholesaler. Apples are also produced in the Preskopi zone, which is a higher altitude zone with a season similar to Korça's.

[8] Yield figures in this and previous paragraph are based on AAC staff experience and assume a standard planting density of around 800 fully productive trees per hectare.

The small size of most orchard plots is a major constraint for apple orchard development because it limits capital investment possibilities and, in the absence of any collective marketing, makes for a multiplicity of farm level points of sale that add to collection costs. Even the "large farmers" in Korça, would be considered small farmers in most producing countries beyond the Balkans.

The major varieties produced in the Korça prefecture are two derivatives of the Red Delicious apple (Red Chief and Starking) that are both referred to locally as "Starking," which make up 52% of orchard trees, and Golden Delicious apples that make up 42%. Other varieties of apples make up the other 6% of orchard trees. These include some recent introductions that are not traditional varieties grown in the region such as Gala (which is an early producer), Mutsu (a derivative of Golden Delicious), and Granny Smith apples. Ida Red apples are also a longstanding traditional variety that is grown in Korça and is generally considered to be an inferior apple that sells at a lower farmgate price.[9]

The USAID Albanian Agricultural Competitiveness (AAC) project has been working with over 40 model large farmers in Korça, introducing improved production practices based mainly on the introduction of drip irrigation and a technology called fertigation in which fertilizer doses are dissolved in water and added to the drip irrigation line. The AAC project also promotes the rigorous respect of fertilizer and pesticide dosages and application schedules, which is the exception rather than the rule in current agricultural practice. AAC estimates show that with an adoption of all the elements of the improved package, apple yields among large farmers can be raised to 40 tons per hectare while also improving quality.

WHOLESALE TRADE

The wholesale markets in major cities are the critical link in the apple value chain that is characterized by a diversity of relatively fluid and unspecialized actors. An estimated 90% of all apples (both domestic and imported) pass through the wholesale markets of Albania.[10] The market provides the physical space where farmers, traders, and retailers come together in the greatest volumes. Although some actors bypass the wholesale market, it is clear that the main tendencies of the Albanian apple market are determined within the confines of the wholesale markets—and particularly the one in Tirana. The major types of actors at this critical level are:

- **Small Wholesalers.** These players possess their own transport vehicles, most often a two-ton minivan or a five-ton truck. They are the major buyer at the farm level and the source of the largest volumes arriving in wholesale markets. A conservative estimate would put the number of such traders who are active in the Korça prefecture at 200 during the height of the apple season. These are, for the most part, small traders with no fixed warehouse or depot, who are often based in the major urban centers of Albania and who travel each day to Korça, as long as apples are available, to bring them to their home base, where they either sell into the wholesale market or make deliveries directly to green market retailers. Their principal market function is to serve as the main locus for assembly and transport of apples from the farm level to the wholesale markets. They are in competition with farmers who may perform the same function if they have access to transport.
- **Large Wholesalers/Importers.** These are generally incorporated registered businesses who have a fixed warehouse inside the wholesale market. Most are registered as importers, as they import apples

[9] Distribution of trees by variety from Korça Apple Production brief (untitled), MAFCP.

[10] This figure is an estimate of a knowledgeable wholesaler in the Tirana market.

and other products. These actors buy domestic apples from individual larger farmers and use their own transport vehicles, generally trucks that have a capacity of over five tons, to evacuate the product. In general, actors in this category are small or medium enterprises with diversified activities and other sources of income that may include agribusiness activities, construction and real estate. They sell to distributors in the wholesale market, although they may also sell occasionally further downstream to retailers when they are dealing with domestic apples in smaller quantities.

- **Major Apple Importers.** This category of actor is practically the only true specialist in the entire apple value chain; they limit their activities to the import and wholesaling of imported food products, including apples. They do not sell in less than pallet sized loads, whereas all other actors deal in 18-to-26 Kg crates of domestic apples. They sell mainly to distributors in the wholesale market. Like the large wholesalers/importers, they are officially registered enterprises. Apple importers often also have other lines of business activity.

- **Distributors.** These traders, who are largely unincorporated "physical persons," assemble a variety of fresh produce from different sources, including imported and local products, and offer a basket of different fruits and vegetables that meets the desired needs of retailers. They generally rent smaller depots inside the wholesale market around the parking area where small wholesaler trucks park when they arrive to sell in the market. Others are located inside the main warehouse close to the apple importers or in the near vicinity of the market. They purchase pallets of imported products, which they stack and combine with purchases of domestic products of all types from small wholesalers arriving in the market (or apples from larger wholesalers/importers). They usually purchase domestic produce in crates. While the mix of both Albanian and imported products changes during the seasons, distributors will seek to constitute a relatively constant array of the main fruits and vegetables so that they can attract a regular clientele of retailers who appreciate the convenience of rapid shopping and not having to conduct too many transactions with different small wholesalers. Thus the ability to offer key products that are high in demand throughout the year, including apples, is a key factor in the success of individual distributors. There also seems to be some differentiation among distributors by quality levels, with the distributors located inside the main warehouses making an effort to offer a higher quality of produce at a higher price than those in the small wholesaler transactions zone of the market.

RETAIL TRADE

No data on the breakdown of fresh fruit and vegetable sales volumes between the different retail market segments shown in Figure 2 was found during the research for this report. Thus it is extremely difficult to assess trends in changing market shares of fruit and vegetables in general, or apples, in particular. Anecdotal observation and the reported opinion of market actors tend to support the view that the retail sector in Albania remains largely dominated by small neighborhood retail grocery stores (including stores with a range of products and fruit and vegetable specialty retailers) and, especially, by the green (retail) market vendors. In contrast to regional trends, the supermarket segment remains undeveloped with only two current chains (CONAD and EUROMAX)—neither of which has a more than an infinitesimal share of market share of the apple market.[11] All categories of retailers (even EUROMAX) buy local and imported apples mainly from distributors and occasionally from other sellers in the wholesale markets. No clear quality or product differentiation is practiced at the retail level, although market observers agree

[11] At the peak apple consumption season in the fall, EUROMAX's flagship supermarket reports that its apple sales average only 450 Kg per day, while CONAD, which only offers imported apples, has even smaller volumes.

that some retailers in wealthier areas tend to buy and sell produce that is of better and more standard quality than retailers in lower income areas. One fruit and vegetable specialist retailer has begun to rent space outside one of the main Big Market chain stores in Tirana and supplies another of the chain's locations with fresh produce. In general, however, all retail fruit and vegetable units are managed individually and there is little or no centralized buying of apples at the retail level.

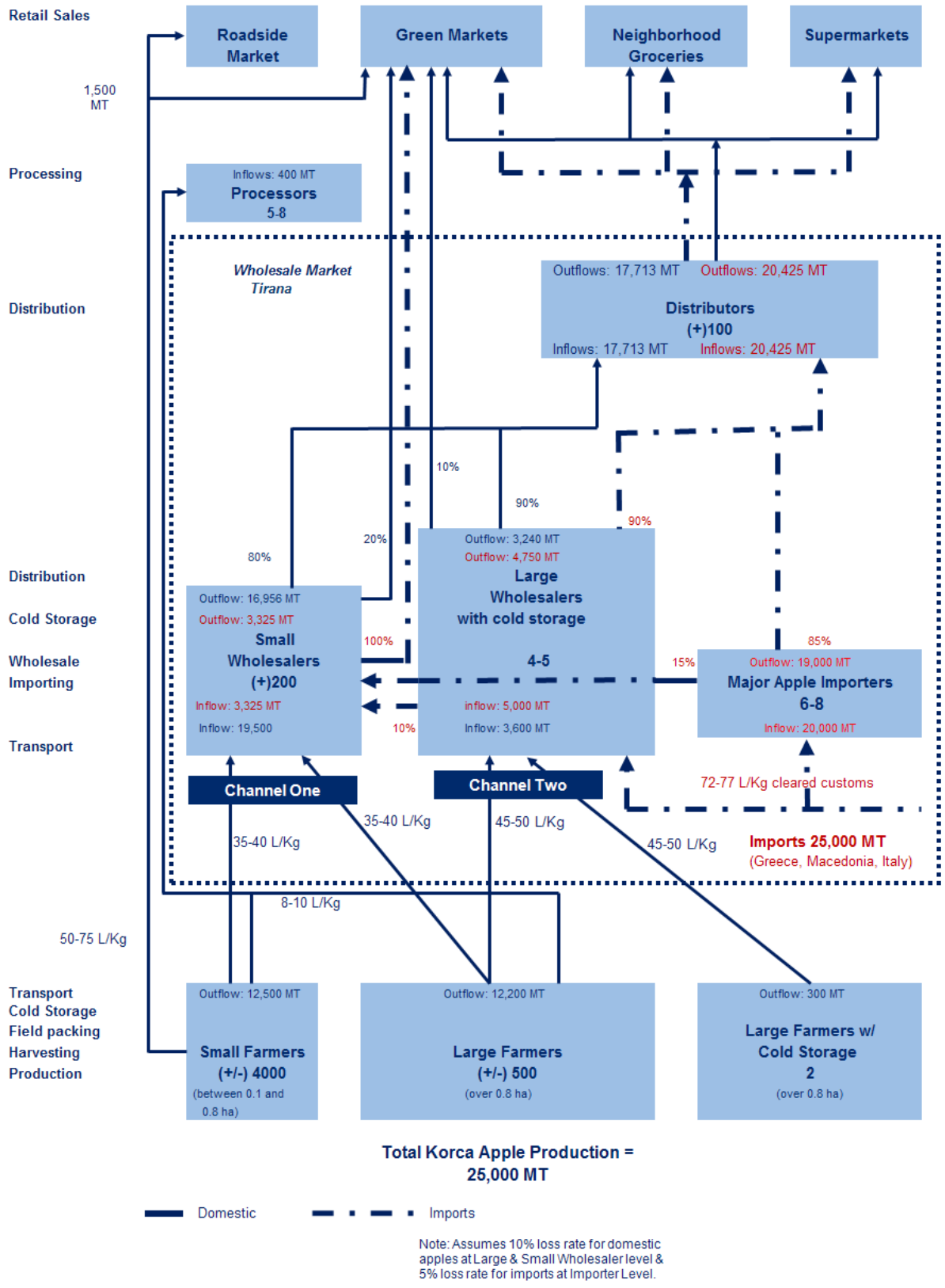
VALUE CHAIN MAP AND CHANNELS

Figure 2 presents the apple value chain map using volumes and supply relationships based on the Korça region, which provides nearly two-thirds of the total apple volume. Apple value chain maps for the other apple producing regions (Lushnje/Durres and Peshkopi) would look similar to this, with the main difference being that the large wholesaler/importer dominated branch of the map would be absent. The estimated number of actors appears in each of the boxes, as do the volumes of both imported and domestic products flowing through each type of actor. These figures are estimates based on volumes of production from Korça and interviews with market actors along with confirmation interviews to review and correct the map with input from two large wholesalers/importers.

The Albanian apple value chain is characterized by a multiplicity of potential sellers and buyers between the wholesale and retail levels of the chain, while the farm-to-wholesale parts of the chain are relatively distinct with clearly defined channels. This fact, which is represented by the numerous arrows at the upper part of Figure 2 in contrast to the less numerous arrows at the bottom, is a clear consequence of the small scale and large number of small wholesalers and distributors who buy and sell in crate loads of 18 to 26 Kg. Even small farmers will try to sell to retailers directly (especially those in the green markets), if they are located not very far from the markets.

The fluidity and lack of specialization in the wholesale-to-retail part of the value chain is practically institutionalized within the urban wholesale markets through which the vast majority of apples flow. In general, small wholesalers or farmers will arrive in wholesale markets before 4 AM with small trucks or minivan loads of apples and other produce. They prefer to sell directly to retailers, who begin arriving at 4 AM. Depending on the willingness of these early sellers to prolong their stay in the market, they may decide to sell to distributors in the wholesale market at a discount that is generally about 10% under what they hoped to sell to retailers. During the peak apple season (September and October), when most small apple wholesalers seek to make as many rotations as possible in a week and a lot of product is moving through the market, many more apples can be found in the distributor portion of the wholesale market than in the shoulder seasons (mid-July through August and mid-November to mid-December) when a greater portion of apples transit directly from small wholesalers to retailers.

FIGURE 2: APPLE VALUE CHAIN MAP



Despite this mixing of supply channels at the top of the value chain map, there are clear differences in the channels through which apples arrive to their final destination. The two major channels are described below along with some minor channels which do not have a great impact on the overall value chain's performance. The last channel concerns imports.

CHANNEL ONE: SMALL WHOLESALER DOMINATED BRANCH

This branch of the value chain is by far the most important in terms of overall volumes with nearly 20,000 tons of Korça produced apples passing through it in 2007. This branch represents what most Albanians think of as the "traditional apple marketing system." It is characterized by a large number of traders, matched by an equally large number of farmers with a limited scope for developing market relationships that persist over time. This stems in large part from the opportunistic nature of small wholesalers, who are mainly spatial arbitragers of differences in market prices all over Albania for any agricultural product vis-à-vis the prices in their home base location—usually one of the main urban centers of Albania. With a working capital consisting of two or three rotations of plastic crates and enough cash to fill their 2-to-5 ton trucks with product, they circulate all over Albania in search of potential opportunities.

During the apple campaign, these small wholesalers generally circulate on the main roads of the Korça prefecture looking for farmers wanting to make sales, or they go directly to the Korça wholesale market where small and large farmers congregate with samples looking to attract buyers who then travel to the farm to make the transaction. In general, pricing in this branch is done on a fixed price for a farmer's entire production. Lower-quality apples result in a lower price, with all products being bought with little or no sorting or selection. Plastic crates for packing and transport are generally supplied by the small wholesaler and can be provided one or two days in advance. Harvesting and packing in the crates is the responsibility of the farmer. All transactions are done in cash. Following the purchase, the small wholesaler takes his load of crates to his base wholesale market and generally seeks to sell either to retailers or to distributors in the manner described above—virtually always in cash. Although the quality of apples passing through this branch of the value chain is highly variable, in general, quality is poor compared to Channel Two, described below.

CHANNEL TWO: LARGE WHOLESALER/IMPORTER DOMINATED BRANCH

In the second major branch of the value chain, the actual roles of the farmer-sellers and large wholesale buyers are still much like that in Channel One. The buyers provide the crates and transport and the sellers are responsible for harvesting and packing the buyers' crates on the farm where the sale takes place. However, despite this apparent similarity, there are a number of important differences.

The first and most fundamental difference is that Channel Two brings together a lower number of sellers with a much smaller and more selective pool of buyers. The principal consequence of this is that the large wholesalers/importers with their larger trucks (above 5 tons) need larger transaction volumes and only wish to deal with farmers that have the potential to supply a minimum of 20–30 tons during the season. Since the number of such farmers is limited, this provides the large wholesalers with more incentive to establish stable supplier relationships with a much higher degree of collaboration between the two parties than in Channel One. The development of buyer-seller forms of collaboration in this channel is, however, still in its early stages, but signs of its emergence are clear from a number or recent market practices:

- The payment of advances on apple purchases reported for the first time by at least one large wholesaler in 2007, which is a dramatic break with standard Albanian apple marketing practice of basing all transactions on cash payments on delivery of the product;
- The practice of having large wholesalers actually visit large-farmer apple orchards in person prior to harvest to assess fruit quality and quantities along with the pre-negotiation of prices and quality standards between the two parties;
- The statement of one of the large wholesaler/importers to the study team that he was willing to provide payment for late-season apple spraying for his large suppliers in connection with a planned apple storage initiative.

A further key difference in Channel Two is that there is a much greater emphasis on the quality of the apple. Large farmers and large wholesalers both report that transactions are not generally done for an entire crop but that farmers are expected to conduct a selection as they load the buyers' crates.[12] In return, farmgate prices are significantly higher as shown below in Table 2. Many large farmers that sell to large wholesalers also sell their second quality apples to small wholesalers in separate transactions.

CHANNELS THREE AND FOUR: ROADSIDE AND PROCESSING BRANCHES

In addition to the two primary marketing channels, smaller channels exist in the margins of the apple value chain. The first of these is Channel Three: the direct marketing channel between small farmers and consumers along the roadside or to smaller retailers in green markets. Product flowing through this channel comes almost exclusively from small farmers for whom the effort spent to capture the larger margins available in retailing or transporting to urban green markets is worth the effort due to the small volumes of product they have to sell. This channel is proportionally more important in the Lushnje/Durres coastal production zones that are in close proximity to urban consumption markets and which produce much lower volumes than Korça.

In Channel Four, third quality apples are bought directly at the farm by processors. As with roadside markets, volumes in this branch are quite small, figures from the USAID EDEM project show 340 tons of apples processed nationally which should mean that no more than 400 tons is processed. The main processed product is apple sauce (kompote). In 2007, the Sidney factory in Berat bought over 100 tons of low-grade apples for apple sauce from farmers in Korça for an average price of 8–10 Lek/Kg. Farmers generally report that little or no apples are left un-marketed, even at these low-quality levels.

CHANNEL FIVE: IMPORTS

Imports come in through 10–12 larger importers and large wholesaler/importers—most of whom are based either in Tirana or in Korça. Apple importers are responsible for all the import documentation and are registered as importers with the Customs Directorate. While apples constitute the biggest volumes for most of these importers, they will also deal in other fruits and vegetables when market opportunities are right. Although apple importers have large warehouses and many have some facilities for cold storage (often refrigerated containers placed inside their warehouses), they generally do not seek to store apples and use their refrigeration capacity mainly for more perishable imported products for short periods of

[12] It proved to be quite difficult to get the details on what exact selection standards or tolerances for deviations are used by large wholesalers, as most have not developed written quality specifications and there are no written sales contracts. However, in general, farm-level selection seems to involve some elimination of malformed apples and apples below a threshold size.

time. Their main clients are the larger distributors located in the wholesaler markets who, in turn, sell to small wholesalers who furnish retailers in other markets all over Albania, or directly to retailers in the nearby urban zones.

In contrast to the domestic market channel, the import channel exhibits a much greater standardization in product and prices, as it is relatively concentrated with the majority of product coming from at most a dozen major importers, as opposed to the thousands of farmers (many of whom want to sell to retailers) and hundreds of wholesalers who populate the domestic apple supply chain.

PRICES IN THE VARIOUS CHANNELS

The analysis of market prices for apples is handicapped by the lack of serious price data. No time series data on apple prices are available which distinguish between varieties, quality levels, or account for quantities being marketed. Data reported by the MAFCP on domestic apple wholesale market process for instance is reported as an average of all wholesale markets in the county with no distinction by quality or variety and no indication of how much volumes are in the market. Figures are reported for 12 months, while all market participants interviewed for this report state that local apples are virtually absent from wholesale markets starting in January until July—except for occasional batches of thinned apples or seriously degraded artisanally stored apples that may be marketed by small farmers in isolated transactions. The consulting firm Green Market has just started in the past three months a market-price-reporting service that reports prices for apples by variety in urban wholesale markets. This will provide a very important missing analytical tool that should facilitate market actor decision-making and analysis in the future.

Given the lack of historical price data, estimates of prices at different market levels in the different channels were constructed based on interviews with value chain actors and from AAC project data on farmgate prices in 2007. These estimates, presented in Table 2, provide a rough indication of the normal mark-ups between the different levels of the market during the peak season in September. (Column 3 is an exception in that it shows prices based under the assumption of a storage period of three months during which there is an increase in the wholesale price of first quality domestic apples. This will be discussed in more detail below.)

TABLE 2: ESTIMATED AVERAGE PRICE BREAKDOWN FOR PEAK SEASON, 2007 (LEK/KG)

Market Level	Channel One Small Wholesalers to Distributor (second quality)	Channel Two Large Wholesalers to Distributors (first quality No storage	Channel Two Large Wholesalers to Distributors (first quality) With storage	Channel Three Small Farmer to Roadside/ Green Market[13] (unknown quality)	Channel Four Small and Large farmers to Processors (third quality)	Channel Five Imports
Farmgate /Import	33 – 38	45 – 50	45 – 50	N/A	8 – 10	72 -77[14]
Wholesaler/Importer to Distributor	38 – 44	50 – 60	80	N/A	N/A	80 -- 90
Wholesaler to Retailer	43 – 50	N/A	N/A	N/A	N/A	N/A
Distributor to Retailer	55 – 60	60 – 70	90 -- 100	50 -- 70	N/A	92 – 105
Retailer to Consumer	69 -- 75	80 – 95	120 – 140	55 – 75	N/A	115 -- 135

The key point in Table 2 is the emergence of Channel Two as a specialized channel in which price premiums for domestic apples of higher quality are paid at the farm level and flow through the entire marketing system. In addition, the table shows that prices for domestic apples rise by a factor of two between farmgate and final consumption—which value chain actors confirm as a realistic mark-up.

VALUE CHAIN DYNAMICS

The apple value chain is in the midst of a major mutation due to the clear trend shown in Table 1 and Figure 1 for increased domestic production and rapidly falling imports. The principal dynamic consequences of this are:

- **Apple importers are under increased competitive pressure, which is pushing them to begin handling domestic apples.** Before the increase in domestic volumes, apple importers were the clear value chain governance leaders whose volume of business dropped somewhat in the domestic harvest period, but who could expect to continue to be the main furnishers of apples over the course of the year to wholesale market distributors. With the rise in local apple production, this model is coming under pressure, as more small wholesalers are offering larger quantities of favorably priced, fresh local apples beginning in August until the end of November and even into December. This is pushing the importers, who possess significant financial resources, into the market for domestic apples in order to not lose their client distributors who have less and less reason to continue to patronize importers who are unable to supply competitively priced apples for much of the last two quarters of the year. This is the main reason for the emergence of Channel Two over the past two to three years, as at least two of

[13] Last two rows are for direct farmer sales to retailers and consumers.

[14] The import price was estimated around a mean import price of 71.5 Lek/Kg calculated by using average declared 2007 cif import value (55 Lek) from available customs data with the addition of customs duties (10%) and VAT (20%).

the largest importers based in Tirana and Korça have effectively migrated to the Large Wholesale/Importer box in the Value Chain map. With this movement, these actors are exposed to a whole host of new problems which include managing apple buying campaigns at the farm level, dealing in smaller quantities of purchases and sales, more variable product quality and the need for increased vigilance of purchases and dealing with a downstream wholesaler-to-retail market chain that is more competitive due to the presence of multiple sales channels and a multiplicity of domestic apple suppliers compared with the relatively concentrated import channel. The degree to which these actors are able to grow their apple business rests primarily on their ability to resolve these emerging challenges of working in the domestic product supply chain.

- **The large increase in production has spurred a new interest in storing domestic apples.** It is generally reported that until now, there has been little if any cold or controlled atmosphere (CA) storage of apples in Albania. While the rise in domestic production may have generally escaped public attention, it has certainly not gone unnoticed among apple wholesalers, importers and the larger farmers—leading all these actors to make investments in cold storage facilities for the express purpose of storing apples. The regional Director of Agriculture in Korça cites a figure of 5,000 tons in new cold storage capacity construction that is underway for the 2008 campaign. When this is taken together with unidentified projects, it seems likely that there is at least 6,000 tons of cold storage capacity now being created by apple value chain actors—most of it at the large wholesaler level but with an estimated 1,000 tons of the capacity also being shared by two large farmers in Korça. All these actors are anticipating that they will be able to take advantage of the seasonal price swings by storing apples bought at harvest and the selling them beginning in December (or later) when local apples become rarer and demand spikes up with the New Year celebrations. The interest in doing this is shown in column two of Table 2 which is based on the reported case of one wholesaler in 2007 who bought first quality red starking apples in September, put them into cold storage and sold them in December for the holidays over which time the wholesale level prices rose by 40 to 50%. Obviously, actors expect the profitability of such operations to continue or to increase as seasonal price fluctuations increase with rising volumes at harvest time.[15]

ENVIRONMENTAL FACTORS

Key elements of the environment surrounding the apple value chain are described below.

MAFCP SUBSIDY PROGRAMS

The MAFCP is administering several GOA-funded subsidy programs designed to promote investments in new orchards and cold storage. The first of these, a 30,000 Lek per duna[16] subsidy for certified saplings from approved sapling providers, is granted to farmer applicants planting new tree fruit orchards with more than 4 duna in a single block. One-hundred-fifty hectares per year have been brought in under this program over the past two years in Korça, with 190 applications accepted out of the 403 that were submitted. At full production after six years this would represent a 25% to 35% increase over current production levels. The level of subsidy offered to farmers is sufficient to cover about 80% of the cost of certified saplings or 30% of total first year orchard establishment costs with drip irrigation included.

[15] The absence of price data makes it hard to judge the accuracy of these expectations based on firm historical data.

[16] One duna of land area is equal to 0.1 ha.

Funds for further awards are currently exhausted, but new funding is expected by the MAFCP during the next fiscal year. If received, the program is likely to be continued.

The second GOA subsidy scheme, which is in its first year, is designed to promote investment in drip irrigation. To qualify applicants must establish drip irrigation systems in orchard blocs exceeding a minimum of 5 duna. Like saplings, it is set at 30,000 Lek per duna. Forty-six applicants have qualified for the subsidy so far with a potential area of 42 hectares. The subsidy is sufficient to cover the entire cost of establishing a drip irrigation system.[17] As with the sapling scheme, further subsidy distribution in the next fiscal year will be dependent on new funding.

The final GOA subsidy scheme is an interest payment subsidy for entrepreneurs building new cold storage facilities who commit to using these for the storage of domestic products. In 2008, six applications have been taken and accepted for investments in 5,000 tons of capacity. Under the scheme, the subsidy will pay an interest subsidy direct to the issuing bank for up to 2 million Lek per year for three years. Qualifying applicants are expected to contribute two-thirds of the total cost as their investment contribution with one third of the project cost being eligible for bank financing to which the interest subsidy will apply. The total estimated outstanding loan principal under the project according to the MAFCP is €1 million with another €2 million in investments from the six entrepreneurs approved to date.[18]

ACCESS TO IMPROVED GENETIC MATERIAL AND INPUTS

There are roughly 20 inputs supply dealers in Korça, all of whom carry pesticides and fertilizers for apples—making these widely available. However, local sources of drip irrigation technology are much less widespread, as only two inputs dealers provide drip irrigation systems. One of the dealers who does carry drip irrigation equipment is linked to a large input supply house in Tirana and would be easily able to arrange for increased availability with firm orders. While many farmers have complained about the quality of inputs, with substandard mixes being imported and misleadingly labeled, this is not a serious impediment, as knowledgeable apple farmers have no problem obtaining good quality inputs from reputable local dealers.

Access to certified genetic material of known purity, both for scion-wood and for root stock, has been a problem in the recent past, as Korça area farmers have generally used their own trees for saplings or bought saplings that were imported from Macedonia or Greece and turned out to be of mixed genetic stock that often did not correspond to the variety the farmers thought they were buying. Largely to supply the MAFCP's fruit tree subsidy program, two large nurseries in Korça have begun to import certified genetic material of good quality from Italy and France and using this to produce saplings. With the larger part of their business coming from farmers who need to purchase certified saplings to qualify for the subsidy, these nurseries are producing a combined production of 90,000 saplings per year. This program seems to have made a significant improvement in the varietal purity of apple trees in the Korça region.

[17] AAC project figures estimate that actual costs of drip irrigation installation would be around 250,000 per hectare, actually less than the 300,000 per hectare made available under the subsidy program.

[18] Based on discussions with some of the intended beneficiaries, most seem to be covering the investment costs entirely from their own sources and plan on using the bank loan mainly for working capital. The details of this scheme were still being negotiated at the time of the study mission and it was unclear if it would be operational by the advent of the peak part of the 2008 campaign.

EMIGRANT REMITTANCES TO FARM HOUSEHOLDS

The Korça region has a strong tradition of emigration with fully 40% of the reported 42,520 farm households receiving income from members of the family working abroad either full time or part time—for the most part from across the nearby border with Greece. The structure of remittances indicate that 2.4 % of households receiving remittances received under $625 a year; 28.2% received between $625 and $2,500 per year; and 69.4% received over $2,500 per year.[19] The implication of these figures, that over one-quarter of all rural farms are receiving at least $2,500 a year in remittance income, has an important impact on the ability of rural households to make investments and qualify for credit.

VAT IMPOSITION

Evidence from field interviews with apple value chain actors on all levels confirms that little, if any, of the flow of domestic apples from farmgate to the consumer's shopping basket is subject to the 20% VAT. Despite a recent input tax credit program to encourage farmers to register with the tax authority by giving them a subsidy of 6% of declared sales to cover estimated VAT rebate on farm inputs, it is unlikely that apple farmers (even larger ones) will register and enter the VAT system. This is all the more true since their main buyers, whether small or large wholesalers, consumers or retailers in green markets do not ask for or want receipts or recuperate any VAT. With the exception of large wholesalers, all these actors are generally non-incorporated personal enterprises with turnover under the VAT threshold of 80 million Lek. In this manner, domestic apples are able to flow though the value chain largely with no mark-up for VAT.[20] Imported apples, however, do face obligatory VAT imposition at the importer level and flow through the chain between importers and the major distributors with the use of receipts and transparent VAT mark-ups. Downstream from distributors, with the exception of supermarkets who do charge VAT to clients, VAT is simply integrated into the cost of the product to the retailer (and hence to the consumer). This system results in a fiscal bias in favor of domestic product which would be significantly reduced should the GOA follow through on proposals now under discussion to broaden the VAT tax base by seeking to systematically collect VAT on all goods now being sold in green markets and neighborhood shops.

EU STANDARDS

As a requirement for EU accession and as part of its EU partnership plan, Albania will be required to define regulations governing quality levels for fresh fruit and vegetables. No such regulations or standards exist at the present time. Although no specific timetable for establishing such legislation has been set, the setting of labeling requirements and quality standards governing fresh fruit will be on the MAFCP's policy agenda in the near future. As of yet, the issue of setting common product standards for fresh apples has not emerged as a priority for actors at any level of the value chain.

GROWTH STRATEGY AND VISION

Although the GOA has not developed a formal apple sector strategy, the main objectives of the MAFCP subsidy programs are clearly to increase production volumes and cold storage capacity. With the

[19] Data is from MAFCP briefing paper on Korça region (untitled).

[20] The case of large wholesaler/importers is somewhat special, since they are inside the VAT system and subject to full fiscal reporting requirements. According to information obtained from several informants, these actors as a rule do not apply VAT mark-ups or ask for receipts for domestic apple purchase. Since they deal at the same time with many imported products, they seem able to satisfy tax reporting requirements based on their imported goods turnover.

convergence of good underlying farm-level profitability (at least for larger farmers), and public subsidies for both production and storage, it seems clear that *both these objectives have been or are on the verge of being achieved in the current season.* Given MAFCP estimates of 400 ha of plantings in the last two years in Korça,[21] together with six new cold storage facilities having a combined 6,000 tons of capacity (enough to handle one-quarter of the 2007 Korça apple crop), two of the most difficult challenges facing value chain actors—making the needed investments in production and storage infrastructure—have already been or are well on the way to being addressed.

Therefore the apple sector growth strategy, rather than concentrating on spurring new investments in production and cold storage, needs most of all to focus on helping value chain actors to maximize their return on these investments. This will not be easy, since the consequences of the dynamic trends identified above will expose value chain actors to a rapidly changing competitive context with a new set of risks. In particular two issues are likely to difficulties:

- **There is likely to be increased pressure for lower prices from increases in production that outstrip demand.** As of yet, there is little basis for projecting how such pressure will manifest itself in the value chain. Will this affect both first and second quality apples? Will it apply to all varieties? When, during the season, will it be the most pronounced? Value chain actors who manage to mitigate this risk, either through storage or through product differentiation, will be better placed to ride out or even to transform this into an opportunity. For actors at the production level, achieving maximum productive efficiency is likely to become more important than it has been in the past.
- **Storage is a logical response to the potential impact of increased production—but it also brings new risks.** No one yet can predict how the market will react to increased production. Actors embarking on a competitive strategy based on storage will be faced with the critical twin challenges of minimizing physical losses and correctly timing the release of their product into the market. As of now, none of them have much experience dealing with either problem.

The main elements of a value chain growth strategy to help actors navigate these risks would include the following axes:

- **Focus production improvement efforts on increasing farm-level efficiency, not on expanding areas under cultivation.** Efforts spent by the MAFCP to both increase areas planted and spur demand for certified saplings of known genetic quality have laid the ground for much needed further progress in improved orchard technologies and management practices that the USAID AAC project is well placed to promote. This will become critical as downward price pressure builds due to increases in production over the next five to six years.
- **Build the technical capacity of cold storage operators.** Of the six reported investors in cold storage facilities, not more than one has had any past experience with cold storage for apples. And most of the others will be in their first year of operation. Most are relying on technical advice from the refrigeration technologists from whom they have bought their equipment. There is a clear risk of product losses due to improper storage techniques which, combined with anticipated high rates of leverage for working

[21] This includes the 300 ha under the subsidy program and an estimated 100 ha in unsubsidized plantings. It should be noted that Annex C Table 1 figures present negative cumulative net cash flows for a traditional orchard after 6 years with a potentially positive figure only after 8 years. Thus there are some grounds for remaining prudent about the long-term returns to be had from these investments under the traditional unimproved orchard model.

capital loans (i.e. the loan discussed below in the section on financing under "Up-Grading Opportunity 4"), could prove fatal to these pilot initiatives.

- **Expand on existing initiatives to foster a higher degree of vertical integration in value chain Channel Two between large farmers and large wholesalers/importers.** The commercial success of apple storage initiatives will be conditional on improved cooperation between large farmers and the large wholesalers/importers with cold storage. Harvesting and post-harvest handling protocols need to be established to ensure the quality and lack of contamination of apples allocated to storage. Treatment of apples prior to storage will also need to be arranged. Currently, there is little basis of understanding between these categories of value chin actors around which these types of procedures can be established.
- **Develop a product profile for an improved-quality Albanian apple with an appropriate marketing strategy.** Currently the Albanian apple's main advantages over the imported apple are its relative cheapness and freshness. For an product that is destined to compete mainly with imports during the December to March period and which may not have the same freshness advantages as the in-season local apple, it will be important to develop a true product strategy based on creating a perceived value that will help the sellers set a price as close to the competing import wholesale price as is possible. Doing this will require intensive work to explore consumer preferences and attitudes to apple consumption as well as the development of product positioning and distribution strategies at the large wholesaler/importer to retailer level.

With progress on all these axes, it should be possible to achieve the following vision of what the apple value chain would look like in 2012:

- Over 32,000 MT of apples are being produced in the Korça prefecture
- Annual imports have fallen to under 17,000 MT per year
- At least 200 large farmers have adopted drip-fertigation technology
- At least 30 large farmers have adopted a new more efficient intensive orchard model of production.
- At least 6,000 MT of apples are being placed into cold storage (or CA storage) and released into the market over a period that lasts until the end of March at a price that is competitive with comparable imported apples.
- At least three apple wholesalers are marketing stored apples with written quality standards and clear product branding that identifies the apples as Albanian/or by production region.

VALUE CHAIN UPGRADING PLAN

The core axis of the apple value chain upgrading plan is the linkage between large farmers and large wholesalers/importers. The emergence of these two actors and their attempts to develop improved vertical linkages in this branch of the value chain are a significant development for the sector as a whole. Whereas the marketing of apples through the small wholesaler channel leaves little room for developing the strengthened vertical linkages that will provide the foundations of a value chain upgrading plan, this all changes drastically with the minor revolution represented by the evolution of a few apple importers into large wholesalers/importers who want to buy large quantities of good quality domestic apples. With this critical development, the underlying governance structure of the apple value chain is at the beginning of a transformation from a market-based governance system (characterized by the Channel One small wholesaler branch of the value chain) to a balanced system of value chain governance (represented by the Channel Two branch dominated by the large wholesalers/importers). While the flow of product over the near future is likely to be much larger in the small wholesaler led channel, the key innovations that will drive the structural transformation of the value chain for the next decade are most likely to be introduced along the large wholesaler to large farmer axis in which we can already see the signs of increased vertical and (to a much lesser degree) horizontal cooperation between firms that is a precondition for successful value chain upgrading.

In the absence of integrated large commercial orchards, the introduction of all the new practices and investments that constitute the value chain upgrading plan described below will depend largely on the degree and speed at which the large farmers and the large wholesalers can come together to plan and implement mutually beneficial commercial projects based on the large wholesalers' need for more and more concentrated higher quality apples. To make this happen, in an environment in which there is considerable suspicion between firms and weak judicial capacity to enforce commercial contracts, there is a clear role for an outside value chain facilitator, such as the USAID AAC project, that can bring value chain actors together around the vision for value chain growth, and help incubate the critical mass of the large farmer—large wholesaler commercial partnerships that needs to be created. This can happen in a number of ways: having 'match maker' round tables, meetings and farm visits in which large wholesalers and farmers are brought together either for the express purpose of developing commercial partnerships or to work on the joint elaboration of a value chain growth strategy; using technical assistance missions for issues of common interest (storage, post harvest handling and EU standards compliance); or by developing value chain financing mechanisms that involve collaboration between actors on both levels.

While these "facilitation services" do not appear as a discreet component of the value chain up-grading plan presented below, they are an essential component of the overall growth strategy. They can provide much of the underlying institutional and relationship "glue" that is necessary to build the key stronger vertical linkages in Channel Two on which the different components of the up-grading plan will rest.

The value chain upgrading plan presented below contains specific opportunities for upgrading that consist of new investments to increase efficiency and product quality as well as new operational practices and managerial strategies. These are listed according to the level in the value chain at which they occur.

PRODUCTION

As noted above, with considerable recent investment in new orchards that have yet to come on-stream, it would be imprudent to for value chain actors to continue making large-scale investments in new apple plantings—at least until they are in a position to gauge how the market is reacting to increased volumes. In contrast, raising productive efficiency at the farm will be increasingly vital to protect against likely increases in downward seasonal price fluctuations. There are two main opportunities for achieving this—one of which involves the adoption of drip-irrigation/fertigation technology. The other involves the introduction of new model of orchard production with smaller trees on more densely planted areas that can yield quicker and lower cost production. Each of these up-grading opportunities is described in turn.

OPPORTUNITY 1: INCREASE DISSEMINATION OF FERTIGATION TECHNOLOGY TO 200 FARMERS

Fertigation is a more efficient way of applying fertilizer that can have an important impact in increasing yields when applied correctly. Models employed by the AAC project show that it can increase yields by a factor of up to two relative to drip irrigation models applying the standard mix of fertilizers used by farmers in Korça.[22] It requires investments in the purchase and installation of a combined drip irrigation/doser unit and involves higher cash outlays for a more expensive set of chemical fertilizers. This new technology is important to apple producers not only for its impact on yields, but also for the effect on fruit quality.

The impact of fertigation on farm profitability is substantial. Figures from Tables 1 and 2 in Annex C show that, once installed, a one ha farm operating with a fertigation system will see its annual cash operating costs (excluding overhead charges) increase relative to a farm with only drip irrigation from 316,000 Lek to 947,000 Lek. At the same time, due to a near doubling in yields, its revenue should rise from 937,500 to 1,800,000 Lek—resulting in an increased net cash flow of 224,000 Lek—a 36% increase. With the installed cost of fertigation systems of around 350,000 Lek/ha, farmers should be easily recoup their investment within two years of operation. At the same time, however, the significant increase in working capital costs (nearly tripled), coupled with the initial investment, can pose a real constraint to dissemination of fertigation technology and points to the need for some financing alternatives as part of the upgrading strategy.

Because fertigation also helps farmers achieve better and more uniform quality with less annual variation in quantities, its adoption should also be in the interest of large wholesalers who are interested in encouraging higher quality production. Input suppliers, who are potential vendors of drip irrigation technology, also stand to gain from a more widespread adoption of fertigation technology. With the aid of a third party actor, such as the AAC project, to work on brokering alliances between these potential partners and developing financing options (see Financing section below), the goal of reaching 200 farmers by 2012 is quite realistic. The potential benefit from the adoption by 200 farmers would be an increase of high quality apple production of around 4,000 tons.

[22] The cash flow model for fertigation presented in Annex C, Table 2 assumes a representative yield of 40 MT/ha whereas a normal yield for a farm with drip irrigation and traditional fertilizer application would be around 20 – 25 MT per ha. The model of a traditional orchard with drip irrigation and no fertigation presented in Annex C, Table 1 assumes a full production yields of 21 MT/ha.

OPPORTUNITY 2: INTRODUCE THE INTENSIVE ORCHARD MODEL OF PRODUCTION TO A CORE GROUP OF 30 LARGE FARMERS.

A small number of apple farmers in the Lushnje region have pioneered the introduction of the latest international orchard innovation of planting in densities of around 2,000 trees per hectare, as opposed to the traditional guidelines on optimal densities in Albanian orchards which call for planting around 800 trees per hectare. These farmers have been influenced by a lead progressive farmer/agronomist from Diviaka who left the extension service in the 1990s to cultivate his family orchard and by returning workers from Italy who had experience working as laborers in intensively planted Italian orchards.

While at full production, intensive orchards may achieve slightly higher yields over optimally managed traditional orchards employing fertigation, their main advantage is in yielding faster achievement of full production rates, with significant harvests after only three years and full production in five, as opposed to first harvest only in year five with full production in six or seven years in the traditional model. Because intensive orchards produce smaller trees with much easier access to the canopy, spraying, pruning and harvesting are significantly less costly with savings in labor and in reduced quantities of pesticides.[23] These orchards are also more flexible, as new scion-wood grafts on dwarf varieties of rootstock can be productive sooner—reducing the opportunity costs of changing fully productive trees to new varieties. These advantages make intensive orchards particularly attractive in environments where land and labor are in short supply. Although there is not yet enough long-term experience in Albania to judge risk, internationally the main risks associated with intensive apple orchards are a greater susceptibility to attack from aphids and less resistance to drought.

As shown in Table 3, cash-flow models developed by the AAC project presented in Annex C show a significant cost advantage to intensive apple orchards in full production vis-à-vis traditional orchards even when fertigation is employed.

TABLE 3: ANNUAL FULL PRODUCTION COSTS FOR 1 HA ORCHARD (LEK)

	Traditional Orchard with fertigation (833 trees/ha)	Intensive Orchard (2,090 trees/ha)
Labor costs	212,500	130,500
Mechanical costs (irrigation fuel, land tillage, transport)	48,000	65,000
Inputs (fertilizer, pesticide)	687,000	269,600
Total Annual Cash Costs	947,500	465,100

Source: Annex C Tables 2 and 3.

Annualized full production cost models produced by the AAC Project, with depreciation of investment costs taken into account, show a much smaller advantage in favor of the intensive orchard, with a reduction in production from 18-19 Lek/Kg to 15-16 Lek/Kg—implying a long term costs savings of 15% to 20% rather than the 50% reduction shown in Table 3.[24] The lower cost savings reflects the higher investment costs of establishing an intensive orchard, as well as the reduction in the duration of fully

[23] One trial in New Zealand found that, even with a 50% reduction in the quantity of sprayed chemical applications on dwarf tree orchards as opposed to traditional orchards, there was a 300% increase in actual chemical deposits on leaves. See Sustainable Farming Fund, Spray Application Technology in Dwarf Apple Orchards, Grant No 05/073.

[24] The base of reference for these annualized cost comparisons is for a traditional orchard using drip irrigation but no fertigation.

productive tree life (25 years to 20 years)[25]. These models are, however, quite sensitive to assumed values for yields and tree life, which are themselves highly variable and subject to doubt given the lack of experience with the intensive model in the Albanian context. Therefore they should be taken only as approximate indicators. Still, while there is some doubt as to the degree of cost advantage represented by the intensive model, its fundamental existence and the advantages it confers in terms of a more rapidly positive cash flow and shorter time to production seem clear.

The investment cost represented by the maximum cumulative negative cash flow obtained in year three after planting of 3.1 million Lek ($39,000) for a 1 ha intensive orchard is significantly higher than even the maximum cumulative negative cash flow of a new traditional orchard obtained in year 5 of 1.9 million Lek ($22,000) (See Annex C, Table 1). This higher investment cost, together with the lack of supply of the dwarf variety root stock needed for intensive orchards, as well as the general lack of familiarity of it among farmers and MAFCP extension agents, constitute the main obstacles to a wider propagation of the technique. [26]

Given the near total lack of familiarity with the intensive model in the main producing region of Korça, and the potential danger of oversupply of apples in the next five years, rather than promoting the diffusion of this model by promoting widespread adoption, it is more important to simply establish a core critical mass of progressive lead farmers who understand and use the intensive model. In this manner, the foundations for rapid future dissemination will already exist in the region should there be a widespread general move to lower prices that would put a premium on cost efficiency. For the most part, this initial foothold is likely to be based both on conversions of parts of existing orchards (for large farmers who can maintain a significant fraction of their production) and on the planting of small plots on lands adjacent to existing orchards (where such land is available). Because of the high investment and opportunity costs (if it is a conversion of productive strands), the main targets of this up-grading activity are likely to be a small number of financially well-off large farmers who can either self-finance the investment or qualify for longer-term financing on the basis of other revenue sources. (See financing section below). Value Chain actors will need outside assistance for developing financing options and for helping to overcome the technical obstacles related mainly to lack of knowledge of the model and to ensure the adequate supply of appropriate genetic material for rootstock among the several nurseries in the Korça prefecture.

HARVEST & POST-HARVEST HANDLING

The improvement of systems of harvest and post harvest handling must occur at the critical juncture in the value chain between the large farmers and the large wholesalers/importers. The key to making this happen will be the development of closer and more effective coordination between these two categories of value chain actors. This is necessary so that once good quality apples are produced, the needed post-harvest procedures and infrastructure are in place so that the product delivered to the cold storage unit will actually meet the agreed quality standards and be properly treated for prolonged storage. This increased vertical cooperation is at the core of opportunity three.

[25] Since the oldest traditional orchards in Albania only have about eight years of life behind them, the estimate of the productive life of a tree is based only on international experience as reported by AAC agronomists.

[26] A number of the early adopters in Lushnje seem to have imported dwarf rootstock informally from Italy using their own personal connections.

OPPORTUNITY 3: ESTABLISH CLEAR HARVEST AND POST HARVEST HANDLING PROTOCOLS THAT ARE PART OF A LONGER-TERM SUPPLY RELATIONSHIP, LINKING LARGE FARMERS TO LARGE WHOLESALERS/IMPORTERS.

The clearest possibility for an immediate increase in value that can be shared between large farmers and wholesalers is in the success of the various apple storage projects now being formulated by both categories of actors. Reaching the target supply of up to 6,000 MT of apples for storage, most of which should be top-level quality if they are to be part of an import-competing product, will require that large wholesalers, who have an estimated 5,000 MT of the 6,000 capacity, develop clear selection criteria and handling guidelines with several large farmer suppliers and that these parties reach agreement on the application of these measures—which will likely also require prior-negotiation of the sales price and terms of sale.

Currently, where only about half of the large wholesalers/importers now investing in storage capacity have any domestic apple buying experience, there is a clear need for outside project assistance both to improve links between large farmers and large wholesalers and to establish technical treatment and handling standards for apples destined for cold storage. The setting of harvest maturity guidelines, phyto-sanitary treatment, picking and packing procedures, field equipment needs and calendars for evacuation will need to be developed and accepted by all before harvest. As a precondition for this, farmers and large wholesalers must have established prior implicit, if not explicit written supply contracts. The targeting of external technical assistance from a project such as AAC in the from an international expert on harvest and post-harvest handling for apples, if clearly focused on those large wholesaler/importers ready to buy apples for cold storage in the 2008 season, could serve as a catalyst in actually developing a number of pilot improved post harvest handling initiatives. While there is no standard institutional blueprint for what exact form these pilot initiatives might take—it is important to begin the first steps and create a critical mass of core relationships where technical and commercial forms of collaboration can be tested before moving to wider dissemination.

OPPORTUNITY 4: ENSURE TECHNICAL SUCCESS OF APPLE COLD STORAGE INITIATIVES

The experience of most actors in the value chain with improved storage of apples is haphazard or non-existent. The main supply of technical advice seems to be the Greek or Macedonian refrigeration technology vendors from whom most actors are buying their equipment. Those large wholesaler/importers with the longest experience as major apple importers seem to be favoring storage operations aimed mainly at red delicious/Starking apple based on two factors: (a) that, of all the major type of apples available in Albania, it exhibits the least physical degradation in storage;[27] and (b) that its local harvest period ends significantly before the golden delicious/Mutsu type apples. This later fact, even accounting for the two weeks of easy availability of red Starking-type apples from Greece that continue after Albanian red apples are no longer available, means that red apples are the first Albanian and regionally produced apples to totally disappear from the domestic market around the holiday season.[28] Provisional estimates produced by the AAC project, based only on two months of cold storage in Korça (where temperatures drop significantly in October) and a 5% loss rate, show that the costs of storage

[27] This perception is corroborated by international data showing that red delicious does have the longest shelf-life in storage of major apple types

[28] It should be noted that one of the large wholesalers investing in cold storage is also a large importer of Greek apples and is especially well positioned to make market timing decisions on releasing red Albanian apples into the local market.

should be around 10 Lek/Kg for a 500 MT facility. [29] Thus to make a profit on storage there would have to be at least a 10 Lek/Kg price increase between purchase and sales price. As shown in Table 2, price movements in 2007 were such that it would not have been too difficult to surpass this threshold.

However, virtually all actors will require initial technical advice on cold storage for apples. The potential for commercially damaging loss rates due to improper selection, handling and storage methods cannot be ignored. Actors (including the two large farmers who are also investing) need advice on selection and treatment in the harvest and post-harvest period, washing, handling and packing for storage, pre-cooling guidelines, in addition to establishing cold storage quality control and verification procedures. The presentation of cost benefit analysis of further investments in Controlled Atmosphere storage would also be valuable, but the realization of such investments is likely to be a medium-term project that will be justified only if current pilot cold storage initiatives meet with success.

Given the high level of investment in cold storage capacity during the past year, as well as the general underutilization of cold storage capacity in Albania in general,[30] there is little need at present to promote new investments in cold storage. Should apple storage prove to be profitable, there is little doubt that it will attract more investment from existing large wholesalers and even importers. The main financing need at this point in the value chain is rather for ensuring that existing cold storage operators have access to working capital. This is addressed in the financing section below.

MARKETING AND DISTRIBUTION

In the current state of the Albanian apple market, there is little to no attempt at product differentiation—either by variety or by quality level or by brand. At the farm level, there is little difference in apple prices by variety except for Ida Red which seems to be consistently priced underneath the other major varieties at similar levels of quality. In contrast, quality has a clear impact on farmgate prices, as all classes of buyers will lower purchase prices if too many of a farmers' lot appears to be damaged or of inferior quality. Despite this, there is little or no attempt to sort or discriminate apples by quality once they leave the farm. In general poor quality lots will receive lower farm gate prices and be sold intact all the way down to the retail level with little or no repacking or sorting, indeed as is also the case with higher quality lots. While certain distributors and retailers do appear to be prepared to pay higher prices for higher quality and more homogenous lots, there has been no movement as yet in the market to adopt any sort of quality standards that would be transparent to the consumer.

In this context, there is a near total lack of information with which longer-term apple marketing and product positioning plans could be developed. Without clear answers to such questions as "are Albanian consumers ready to pay more for specific varieties at similar levels of quality?" and "if so, which ones and which consumers?" Or "what are the elements that signify quality to different classes of consumers?" it will be a hard for the key actors in Channel Two to see what exactly should be the basis of product differentiation. To do this, they will require market research that provides them with a quantitative basis for making strategic choices that have long term implications on such key value chain upgrading decisions as what varieties to promote, what level of quality standards should be adopted, what distribution strategies will be most effective, and what should be the focus of marketing campaign. This

[29] Annex C, Table 4.

[30] See Thomai and Skreli, Post Harvest/Cold Chain Survey, USAID/EDEM project, undated.

underlines the need for the last key component of the value chain upgrading plan—additional market research.

OPPORTUNITY 5: CONDUCT MARKET RESEARCH TO FACILITATE THE DEVELOPMENT OF A DIFFERENTIATED ALBANIAN APPLE WITH A CLEAR PRODUCT POSITIONING STRATEGY

Although ideally there would be an apple board ready to conduct consumer research for all members, the existence of such a body is not a likely occurrence in the near term. To fill the immediate needs, value chain actors clearly have a need for outside consulting assistance to help them develop their product positioning strategies and marketing campaigns. Such assistance would address the following information needs:

- What are the key selection criteria of different classes of apple consumers?
- What retail outlets does each type of consumer frequent?
- How price sensitive are different consumers?
- What types of packaging are desired by different consumers?
- What image attributes are important to different consumers when they are buying apples?
- How important are “national” or “regional” origins?
- What elements are determinant for ensuring consumer loyalty?
- What are the distribution constraints and costs to working through different retail channels? How may they be influenced?
- How fast are retail trends changing and what are the main contours of these dynamics?

One or more market studies addressing these needs would provide at least initial blueprints that would help the large wholesalers/importers to start developing their own product positioning strategies.[31] By combining better market research with the simultaneous development of stronger vertical links between large wholesalers and larger farmers, especially those with a production base in intensive orchards capable of accelerated response to identified market opportunities, the Albanian apple sector would be poised with a number of core operators capable of meeting EU and international standards.

Table 5 on the next two pages presents a schematic presentation of the apple value chain up-grading plan.

[31] One recent development that may provide some marketing impetus is the launching of a “Korça Origin” product label as part of GTZ project involving the Korça Chamber of Commerce. While there are numerous questions to be answered about the process for attributing this label and whether it would be useful as a sign of quality in addition to being a sign of origin, it is certain that the utility of this label for premium apples could be better judged after some prior market research.

TABLE 5: APPLE VALUE CHAIN UP-GRADING PLAN

Main VC Actor	Role	Secondary VC Actors	Roles	Role of Outside Assistance	Importance of Finance Constraint
Opportunity 1: Disseminate fertigation technology to 200 large farmers					
Large farmers	• make investment • implement technology	Input suppliers Large wholesalers	• supply technology • provide TA & promotion • assist clients large farmers in securing financing	• help input supply houses to establish product packages and advice packages • fine tune technical model at farm level & trouble shooting assistance • provide models of financing	High
Opportunity 2: Introduce intensive orchard model to 30 lead farmers					
Large farmers	• make investments • implement technology	Input suppliers	• supply saplings with dwarf rootstock & other inputs	• provide extension advice and knowledge of model to targeted large farmers • work with inputs suppliers to develop supply package • provide models of financing • possible use of grants to helps secure financing for test cases	High
Opportunity 3: Establish improved harvest and post-harvest handling protocols that encourage closer links between large farmers and large wholesalers					
Large farmers/ Large wholesalers	• set guidelines and standards for improved apple handling • implement agreed protocols	N/A	N/A	• provide required technical input to develop handling protocols based on international practice tailored to actors' technical capacities and operational plans • bring key large farmers and large wholesalers together to broker longer term relationships with development of contractual models if necessary • provide troubleshooting and honest third party oversight to help establish trust between parties • provide feasibility analysis of any investment needs that are diagnosed	Low

Main VC Actor	Role	Secondary VC Actors	Roles	Role of Outside Assistance	Importance of Finance Constraint
Opportunity 4: Ensure technical success of cold apple storage initiatives					
Large wholesalers/large farmers	• develop and implement improved handling and storage protocols • make needed physical and operational changes	N/A	N/A	• provide expert technical assistance with site audits of cold storage facilities for all investors in cold storage units; • provide follow up control visits and technical assistance to help key actors develop and implement needed cold storage improvements	Medium
Opportunity 5: Conduct needed market research to develop a product positioning strategy for a high-value differentiated Albanian apple					
Large wholesalers	• participate in design and monitoring of research on consumer behavior. • develop and implement commercial strategies and longer-term product positioning plans for differentiated apple product	Market research firms	• implement market research projects and advise apple value chain actors on strategic options	• help set terms of reference for initial consumer research studies; • provide technical assistance and guidance on international apple market trends • ensure methodological soundness of research products • help actors in apple value chain advocate for needed public policy measures to foster market for improved Albanian apple	Low

FINANCING THE UPGRADING PLAN

As shown in Table 5, financing poses a significant constraint for three of the five identified value chain up-grading opportunities. Each of these is discussed in the following section.

OPPORTUNITY 1: FINANCING INVESTMENTS IN FERTIGATION TECHNOLOGY

The lack of drip irrigation/fertigation packages in the Korça region is a major obstacle to both increasing farm level efficiency and obtaining the quality and reliability that is desired by large wholesalers. As identified in the value chain map, the potential pool of adopters consists of the roughly 500 large farmers with more than 0.8 ha planted in apple orchards. While such larger farmers are generally not among the poorer households of the region, and a significant number are no doubt capable of providing the needed 350,000 Lek in capital investment from accumulated household (or extended family) assets, there is little doubt that the availability of a financing solution to cover investments costs and the significant increase in working capital needs will accelerate the rate of adoption.

Financing Fertigation

- Average financing need: 350,000 to 1,000,000 Lek
- Estimated loan period required: 7 months to 2 years
- Target clients: Large farmers with fully productive orchards
- Potential no. of loans: over 200

The amount to be financed falls within the micro-finance lending thresholds of two major micro-finance lenders active in the Korça prefecture—Opportunity Albania and Procredit Bank. Both institutions currently serve agricultural borrowers in the region and employ credit officers who are familiar with the farm environment of larger apple farmers.[32] Both institutions were shown a cash flow example similar to Annex C, Table 5 during the research for this report and indicated that it would fall inside their normal micro-credit product line and that the essential principal of scheduling agricultural loans with balloon payments covering both principal and interest was already being done on a large scale. With effective interest rates for both institutions quoted as in the 19–24% per year rate (Opportunity Albania offers more liberal grace periods that could lower their effective rate) there is little doubt that the model presented in Annex C, Table 5 would be financeable by both institutions—either in one year, as presented, or with a longer repayment schedule stretching over two years with interim payments after the first year. Credit decisions in this loan range will lie at the branch level, with the major elements of the application being personal guarantees (other signatories willing to commit to repayment in the event of default) and prior cash flow history which, for fully productive orchards, should not pose a significant obstacle for credit officers possessing some minimal experience in agricultural lending.

Another option for financing would be to structure this through a SME loan attributed to input dealers who would in turn agree to offer a fertigation package to known clients on credit. This sort of package has

[32] Raiffeisen Bank was also shown the cash flows, but it indicated that since it has only just begun its new microfinance operations, it was not yet able to say whether it can offer any appropriate credit products.

been pioneered by the largest input supply house, Agro-Blend for the sales of inputs to watermelon and greenhouse vegetable farmers, but has not yet been tried with apple farmers or in the Korça region. In this scheme, Agro-Blend, an agro-chemical blending facility in Tirana, imports the fertilizer and pesticide components, produces the blends, and then packages the final product in appropriate doses for small farmers. It then provides a guarantee by co-signing for its most trusted dealers who can contract credit from a bank after pledging their own fixed collateral. The dealers in rural zones then contract a loan (usually $10,000 to $30,000) to pay Agro-Blend for their input orders which are distributed to farmers with a payback schedule and prices that internalize the cost of credit set by the dealer as a function of the agricultural cycle. Agro-Blend reports that, after over three years of experimentation with different formulas for offering input credit to farmers, this formula is by far the most promising. To make this work in Korça for fertigation, however, where only two input supply dealers carry drip irrigation equipment, and for which the demand is not yet clear, the dealers would require substantial external support to reach the point where they could promote, deliver and support the provision of equipment and fertilizers on credit. While over the longer term this solution may offer superior sustainability, it seems likely that more rapid expansion at lower risk can be had initially by limiting the role of input suppliers to filling orders and having farmers access credit directly through the financial institutions who are already equipped to supply it.

Given the large amounts of remittance income in the Korça region and the evident willingness of farm households to invest in apple orchards (despite the questionable cash-flow evidence for new orchard investments, as shown in Annex C, Table 1), the rate at which new drip irrigation/fertigation technology is adopted probably will have as much to do with how fast input supply dealers and development project staff can make the case about its technical and financial benefits, as with the availability of financing packages. A key part of the equation may be prove to be the attitude of the large wholesalers, who could help speed financing by adding their guarantees to the credit application of large farmers---likely as part of a longer term supply strategy. While initial reticence to doing this seems quite strong,[33] once the initial steps have been taken to develop improved handling protocols (with implicit or explicit commitments to buying) under Up-Grading Opportunity Three, large wholesaler should begin to perceive these types of guarantees as being less risky.

OPPORTUNITY 2: FINANCING LONGER-TERM INVESTMENTS IN INTENSIVE ORCHARDS

The financing requirements for establishing an intensive orchard of 1 ha would be 3 million Lek with the maximum negative cash flow coming in year three. As shown in Annex C Table 3, overall cash flows (without any financing) do not turn positive until year 6. Financing of this need requires that institutions be willing to offer longer term investment loans to the target group of larger farmer households.

Financing Intensive Orchards

- Average financing need: +/- 3 million Lek
- Portion covered through credit: 70%
- Estimated loan period required: 5 years
- Target clients: Large farmers with other income sources
- Potential no. of loans: initial target of around 20 farmers

Although the cash flows presented in Annex C, Table 3 present a much more challenging financing case for potential lenders than in the fertigation case, again, both Opportunity

[33] Each of the three large wholesalers interviewed for this report indicated that they viewed this idea as being unworkable.

Albania and Procredit Bank indicated to the team that they had SME credit products that would correspond to the cash flow profile presented. Each stated that, with five-year loan duration, they would not finance more than 70% of the total need and would charge annual effective interest rates (in Lek) that were in the 15% to 18% range.[34] This information was used to develop a cash flow model incorporating financing that is shown in Annex C, Table 6. This demonstrates that lending is clearly feasible under these conditions, although at the modeled 18% interest rate, the borrower is still left with a net decrease in available cash at the term of the loan. (This should not discourage qualifying farmers from taking such loans, however, since the ending cash balance would be almost enough to cover the next years' projected operating costs with little or no new borrowing.)

The key elements of the credit dossier are similar for both potential lenders. No start-up activity will be financed and borrowers will be expected to be able to show significant sources of income other than the orchard in which the investment is being made. Finally, given the higher loan amounts, borrowers will be required to pledge fixed collateral. These conditions essentially limit the applicability of this loan to the category of wealthier larger farmers who also have other SME business activities, or have fully productive orchard holdings that cover a surface as big as the land on which the intensive orchard is planned. Although the pool of such "entrepreneur-farmers" is relatively limited, it would not be unreasonable to project that there are at least 30 potential borrowers drawn from among the larger apple farmers.

Again, while finding financial products to facilitate investments in intensive orchard conversions is an important factor, the issues of ensuring that farmers get the critical certified dwarf variety rootstock from nurseries, as well as the basic familiarity of large farmers with the intensive orchard model are equally important obstacles that will have to be addressed.[35]

OPPORTUNITY 4: PROVIDE FACILITATING FINANCING FOR COLD STORAGE INITIATIVES NOW UNDERWAY

Access to working capital, for at least some of the entrepreneurs (large farmers and large wholesalers) investing in cold storage facilities, is emerging as a potentially important issue in value chain up-grading. While the process of qualifying for the interest rate subsidies offered through the MAFCP seem to be complicating this season's financing, it is clear that the potentially large working capital requirements for a 500 MT facility may be too big for some potential cold storage investors—particularly the large farmers. (Most large wholesalers should have little problem obtaining working capital financing on the required scale, based on their diversified business holdings.)

Annex C Table 7 gives a basic cash flow with financing case for a 500 Ton farmer-operated storage operation assuming that apples are purchased in October and November for 50 Lek and sold in February for 80 Lek---with only three months of electric expenses for the refrigeration unit. Operating under these assumptions, even with an overdraft facility to finance 70% of the stock at an interest rate of 18.5%,

[34] Opportunity Albanian actually provided a payment schedule which shows an effective rate of 18% p.a. This was used to develop the cash flow model presented in Annex C Table 5. Procredit also stated that they would apply flexible rates with adjustments keyed to the Albanian Central Bank's Treasury bill rate.

[35] The progress made over the past three years in developing MAFCP-certified sources of saplings with high quality scion wood and rootstock, leaves considerable room for optimism about the feasibility of ensuring similar access to dwarf rootstock.

profitability is quite good and such short-term financing needs could easily be met by standard SME overdraft facilities from a handful of Albanian banks.[36]

Although SME working capital overdraft facilities of this type are relatively common in Albania, the main issue facing large farmers will be the need for them to demonstrate a cash flow history commensurate with the working capital requirements of the refrigeration unit. This will be hard for most of them, since the scale of operations for filling a 500 Ton facility dwarfs the single farm output of any single large farmer. The result is that farmers will be subject to a *de facto* obligation that they have other business income to qualify for such a loan. In reality, with only two farmers investing so far in such facilities, one of them does have a diversified group of businesses and seemed to be in the processes of concluding a loan at the close of the team's mission. The other farmer, who did not have such diversified income generating activities, was projecting to fill two-fifths of the facility with his own production (he is the largest apple farmer in Korça) and the rest with several neighbors' production. In this manner he plans to avoid assuming any additional debt for financing stock purchases.

In any case, should there be more farmer investment in cold storage facilities, there will be a need for outside assistance in helping these farmers find working capital to ensure full capacity utilization. While such aid will logically consist of helping them with developing financial projections in the hope of obtaining credit, it would be more strategic for outside technical assistance to ensure that such farmers consider establishing arrangements with large wholesalers or apple importers who possess the deeper pockets to finance purchasing campaigns, but who may well lack both access to farm-level product and refrigeration capacity. The potential for using farm-level storage capacity as a "lure" for attracting upper-value chain actors and linking them to farmers with cold storage though advance purchase agreements with pre-campaign financing, storage-service contracts, and other such agreements needs to be vigorously pursued. The development of such links will, in the long-term, be more important to the value chain's development than the simple question of whether or not individual large farmers with cold storage obtain access to working capital loans.

[36] The 18.5% effective rate estimate is based on an actual quote from Opportunity Albania.

CONCLUSION

Overall, the apple value chain shows considerable dynamic growth potential. Actors in it, at both the farm level and at the key large wholesaler/importer level are making significant new investments in upgrading production and storage capacities. However, they may be *overinvesting* to the extent that the value chain itself has not yet evolved to the point where there is sufficient vertical coordination between farmers and downstream buyers and packers to lay the base for the development of a product that can compete as anything other than a relatively undifferentiated commodity. This lack of clear product differentiation based on quality, variety or even image, will prove to be a severe handicap for the value chain as a whole, if production volumes do outstrip demand, as is likely over the next three to five years.

The role for outside assistance in speeding value chain upgrading is quite clear. In many ways, the value chain actors and the GOA, led by the MAFCP, are tackling the most difficult obstacles—i.e. improvement of the genetic base of production and mobilizing new investments in production and storage. They lack, however, a dynamic vision of how the value chain is evolving and of the strategic necessity for catalyzing stronger market linkages between the emerging large wholesalers/importers and the large farmers. Fortunately this missing element in the existing value chain growth strategy is precisely where a donor-supported value chain project can be of most assistance. Value chain projects have a unique advantage in helping actors in the chain to develop the foundations for closer vertical links by virtue of their ability to work with all types of clients and foster inter-firm collaboration through targeted technical assistance, and cost and risk sharing. With the small number of actors along the critical value chain axes (a half dozen large wholesaler/importers and around 500 large farmers) it is entirely possible for a value chain project such as AAC to contribute to major restructuring of the entire value chain in as little as three to four years. Although the number of players involved is not very large, innovations with a small core of serious value chain actors could lead to the introduction of new methods of production, sorting and grading, post-harvest handling and storage coupled with a real product positioning plan and distribution strategy that would bring Albanian apples into the emerging European market on a more equal footing with the apples it is still importing from its neighbors.

COMMENTS ON VALUE CHAIN FINANCE GUIDELINES

GENERAL COMMENTS ON USEFULNESS

Comment 1: The usefulness of the guidelines and, more specifically, the parts of them that are most relevant will vary largely by the type of governance system that applies to a particular value chain. Easily the single most important slide in the guidelines in this case is slide no. 8, which points out that the constellation of incentives facing users of finance is highly dependent on the governance structure of a value chain—or really even of a branch inside a value chain. (Market actors do not necessarily have access to all the options inside the whole value chain, but only the "branch" of it that they are on. This is an important point here, since we have two main branches of the chain—each of which has a different type of governance system.) Developing value chain finance solutions that involve vertical cooperation between firms at different levels is a much more difficult proposition in a market-type VC governance system, such as Channel One in the Albanian apple value chain. In this case, since this is not a promising branch offering the relevant upgrading opportunities, we did not really consider developing these types of vertically linked financial solutions. But in Channel Two, where we have the beginnings of a balance relationship type of governance system, in theory this type of VC financing arrangement should be possible---and the team pressed in its interviews with input suppliers and large wholesalers to see how they would be open to providing credit for farm-level improvements and working capital. With the sole exception of possibly devolving credit within the input supply chain at the local dealer level (described in text), the lack of receptivity among these actors to even considering taking on credit exposure at the farm level for anything other than some wholesaler advances on apple purchases for a month or two was quite clear. The perception of risk exposure and the lack of knowledge about the borrowers are just too great right now for any sort of risk sharing between the production and wholesale trading levels to take place. In contrast, the two main credit institutions (Procredit Bank and Opportunity Albania) both have the credit officers, products and liquidity to serve the type of clients and needs identified in the VC analysis. In many ways they are actually closer to the targeted audience than are the large wholesaler buyers at this point. Thus while the team found itself often trying to push actors towards considering financing solutions that would involve higher levels of cooperation, at least for the Up-Grading Opportunities 1 and 2, really the simplest most direct way of financing these is to look to the appropriate standard credit products from the two largest suppliers who are already providing agricultural credit in the region.

This brings up the observation that if by "VC finance" we necessarily mean finance that is articulated through more than one VC actor, then it may be wise to not focus too much on value chains that are structured like apples in Albania, where we are basically governed under a market relationship system and are only at the very earliest stage of moving into a more conducive balanced relationship governance system. As it is, the incipient movement by large farmers and large wholesalers to collaborate is still too new and tenuous to be a feasible anchor for the development of any larger-scale VC financing solutions. In this type of value chain, it is harder to develop the complex sort of articulated finance solutions than in value chains with governance systems characterized by higher degrees of inter-firm cooperation. The implications is that for these types of value chains, the guidelines might need to place a little less emphasis on the construction of finance solutions that span different levels and more on the analysis of

financial institution capacity and willingness to lend. Since USAID is often choosing to do a lot of work in value chains that are at a relatively "primitive" stage of development, it should be recognized that the major challenges in these environments are laying the basis for inter-firm cooperation and developing the needed vertical market linkages so that articulated VC financing solutions can even exist. These types of value chains may often lack the pre-existing market relationships that can be leveraging to overcome financing constraints. In the Albanian apple VC case, this seems to be the case as it is still at the "strengthening the vertical market linkages" stage even in Channel Two.

Comment 2: The emphasis placed in the guidelines on developing cash flow models of financing needs is an extremely useful exercise for teams developing value chain strategies. The cash flow analysis of Up-Grading Opportunity 1 pointed out the fact, not immediately apparent to the AAC team who had the model, that the financing need for fertigation is as much for working capital as it is for the specific equipment investment. Thus the need for planning for overdraft facilities up to the 1 million Lek amount proved to be critical---whereas most of the team's initial was thinking only in terms of the much lower equipment investment.

SUGGESTIONS FOR ADDITIONS/CHANGES TO VC GUIDELINES

Suggestion 1: incorporate one or more slides after slide 8 developing the likely consequences of different types of governance systems on the provision of value chain finance.

Suggestion 2: it might be possible to note that the design of financing solutions has a larger impact on the structure of the value chain beyond the simple function of helping actors overcome finance constraints. In the case of apples in Albania, for instance, we were acutely aware that by encouraging large wholesalers to enter into agreements with large farmers to help them invest in improved farm technologies, we would actually be helping to strengthen the key vertical links in the value chain on whose development the whole upgrading strategy is based. However, due to the presence of well established lenders with the products and capacities to reach the farmers, pressing too hard in this direction goes against the natural tendency of the farmers—which is to retain full autonomy and not get into an inferior position in a power structure with buyers. To a certain extent, in the absence of Opportunity Albania and Procredit Bank, these types of value chain solutions would be more attractive to farmers and large wholesalers due to the simple lack of alternatives. Thus although the presence of an active financial market with institutions capable of responding to farmers' needs is clearly beneficial, it is somewhat ironic that, at times the team was wishing that the market for rural credit in Korça was not quite so promising, since this would provide more incentives for the key actors to collaborate.

ANNEX A: INTERVIEW LIST

KORÇA:

Shkelqim Mullalli, President, Agro-Vet, (input supplier/nursery)
Adrian Maho, Director of Agriculture, MAFCP
Eqerem Mecollari, Deputy Director, Technology Transfer Center
Ferdinand Hyseni, Large Farmer
Edmond Duro, Opportunity Albania, Branch Manager
Raqip Musa, Large Farmer
Engjel Dervishi, Large Farmer
Group interview with farmers in Zvirina:
- Jorgaq Taci
- Thoma Cobani
- Pandi Taci
- Dhimitraq Taci
- Berti Thanasi

Aurel Qyfeku, Large wholesaler/importer
Artan Zoto, A&A (Processor)

TIRANA:

Ervin Xhono, SME Credit Manager, American-Albanian Bank
Rushdi Koni, Large Wholeslaer/Importer
Myslym Osmani, Director of Policy, MAFCP
Skender Rexhepi, Retailer
Edison Jazxhiu, Importer
Roland Larashi, Baradhyl Qilimi, Green Market
Selim Belortaja, Executive Director, Albanian Center for International Trade
Elion Tira, Fruit & Vegetable Manager, EUROMAX
Muhat Valunes, Distributor
Alma Hasania, Risk Director, Opportunity Albania
Holta Kasemi, Raiffeisen Bank
Renato Vasili, Procredit Bank
Sami Thana, Sales & Marketing Manager, Agro-Blend (input supplier)

LUSHNJE:

Irakli Gorrea, Large wholesaler
Pellumb Vrabi, Farmer

In addition, market visits to wholesale markets with multiple interviews of small wholesalers, retailers and distributors were conducted in Korça and Tirana

ANNEX B: REFERENCES

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ANNEX C: CASH FLOW AND COST TABLES

TABLE C-1:ANNUAL CASH FLOW; TRADITIONAL ORCHARD WITH DRIP IRRIGATION ONLY

Name:	Total Time Period:	
New Plantation	Year 1 to Year 6	Plot: 1 ha, 833 trees
Traditional apple orchard		

	Individual Time Periods						Total for
CASH INFLOWS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	All Periods
Sales 2,499kg x 45lek					112,455.00		112,455
Sales 20,825 x 45lek						937,125.00	937,125
other income							0
Total Cash Inflows	0	0	0	0	112,455	937,125	1,049,580

	Individual Time Periods						Total for
CASH OUTFLOWS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	All Periods
Land preparation&maintanance	30,000						30,000
Apple sapling	375,000						375,000
Manure&fertilizer	43,333	23,000	46,000	46,000	46,000	46,000	250,333
Chemicals		36,000	48,000	60,000	60,000	68,000	272,000
Drip irrigation cost	250,000						250,000
Mechanical operation	33,250	17,150	17,150	17,150	17,150	17,150	119,000
Water		15,000	15,000	15,000	15,000	15,000	75,000
Labor cost	250,000	120,000	120,000	120,000	150,000	170,000	930,000
Total Cash Outflows	981,583	211,150	246,150	258,150	288,150	316,150	2,301,333

	Individual Time Periods						Total for
SUMMARY	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	All Periods
Net Cash Flow	-981,583	-211,150	-246,150	-258,150	-175,695	620,975	-1,251,753
Beginning cash balance	0						0
Cumulative Net Cash Flow	-981,583	-1,192,733	-1,438,883	-1,697,033	-1,872,728	-1,251,753	-2,503,506

Notes: New orchard planting in year 1. Attains full productivity in year 6 after which costs remain same during life of orchard (19 more years).
Year 6 column serves as basis for comaprison with ferigation case presented in Table 2.

Source: AAC Project Calculations

TABLE C-2: 12-MONTH CASH FLOW; TRADITIONAL ORCHARD WITH FERTIGATION

Name:	Total Time Period:		
100% Productivity TRADITION APPLE	Jan.- Dec.	Plot: 1 ha, 833 trees	Irrigation: Fertigation

CASH INFLOWS	Individual Time Periods												Total for
	January	February	March	April	May	June	July	August	September	October	November	December	All Periods
Sales 40ton x 45lek											1,800,000.00		1,800,000
other income													0
Total Cash Inflows	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,800,000**	**0**	**1,800,000**

CASH OUTFLOWS	Individual Time Periods												Total for
	January	February	March	April	May	June	July	August	September	October	November	December	All Periods
Direct variable costs													
Land preparation	4,000	4,000											8,000
Fertilizer (complex)			25,000	25,000	25,000								75,000
Agri-Chemicals (Strobi, Pirus, Kaptan, Salto, Cooper oxyode)			102,000	102,000	102,000	102,000	102,000	102,000					612,000
Fertigation system installed cost													0
Direct Production labor													
Labor for irrigation						5,000	5,000	5,000	5,000	5,000			25,000
Labor for spraying			2,000	2,000	2,000	2,000	2,000	2,000					12,000
Labor for fertilization			3,500	3,500	3,500								10,500
Labor for pruning	25,000	25,000											50,000
Labor for thining						50,000							50,000
Labor for harvesting&postharv.										65,000			65,000
Irrigation labor cost 20days													0
Indirect variable costs													
Plastic boxes 2000pcs.													0
Fuel for irrigation						5,000	5,000	5,000	5,000	5,000			25,000
Transportation										15,000			15,000
other													0
Overhead costs													
Property tax	2,000												2,000
Repairs									5,000				5,000
Electricity													0
other													0
Total Cash Outflows	**31,000**	**29,000**	**132,500**	**132,500**	**132,500**	**164,000**	**114,000**	**114,000**	**15,000**	**90,000**	**0**	**0**	**954,500**

SUMMARY	Individual Time Periods												Total for
	January	February	March	April	May	June	July	August	September	October	November	December	All Periods
Net Cash Flow	**-31,000**	**-29,000**	**-132,500**	**-132,500**	**-132,500**	**-164,000**	**-114,000**	**-114,000**	**-15,000**	**-90,000**	**1,800,000**	**0**	**845,500**
Beginning cash balance	0												0
Cumulative Net Cash Flow	**-31,000**	**-60,000**	**-192,500**	**-325,000**	**-457,500**	**-621,500**	**-735,500**	**-849,500**	**-864,500**	**-954,500**	**845,500**	**845,500**	**845,500**

Notes: Assumes fully productive orchard with fertigation system already installed (no installation costs included)
Source: AAC Project calculations

TABLE C-3: ANNUAL CASH FLOW FOR INVESMENT IN INTENSIVE ORCHARD

Name:	Total Time Period:	
New Plantation Intensive apple orchard	Year 1 to Year 6	Plot: 1 ha, 2090 trees

CASH INFLOWS	Individual Time Periods						Total for All Periods
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Sales 14ton x 45lek			630,000.00				630,000
Sales 32ton x 45lek				1,440,000.00			1,440,000
Sales 50ton x 45lek					2,250,000.00	2,250,000.00	4,500,000
other income							0
Total Cash Inflows	0	0	630,000	1,440,000	2,250,000	2,250,000	6,570,000

CASH OUTFLOWS	Individual Time Periods						Total for All Periods
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Hand Labor	186,410	43,000	53,500	87,400	130,500	130,500	631,310
Mechanical expense	490,500	23,000	65,000	65,000	65,000	65,000	773,500
Input expenses	1,537,500	160,200	1,156,100	599,100	269,600	269,600	3,992,100
Total Cash Outflows	2,214,410	226,200	1,274,600	751,500	465,100	465,100	5,396,910

SUMMARY	Individual Time Periods						Total for All Periods
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Net Cash Flow	-2,214,410	-226,200	-644,600	688,500	1,784,900	1,784,900	
Beginning cash balance	0						
Cumulative Net Cash Flow	-2,214,410	-2,440,610	-3,085,210	-2,396,710	-611,810	1,173,090	1,173,090

Note: Full production assumed in year 5. Full production comparison with Table 2 (Fertigation) is taken from year 5 column
Source: AAC Project Calculations

TABLE C-4: ESTIMATE OF COST OF APPLE STORAGE, 500T COLD STORAGE FACILITY

A. GENERAL DESCRIPTION				
Crop: Apply cold storage	**Rajoni:**	Cangonj/Korce	**Cold store capacity: 500T**	
B. MAIN ASSUMPTION	**USD 1.00 =**	**80.00**	**Apple cold storage cost, 2008**	
			Storage apple/ kg:	**500,000**
			Cash price (Lek/kg):	**80**
C. VARIABLE & FIX COSTS		**Price**	**Qty**	**Lek**
Purchasing apple 500Ton (farmgate price, first 1-st quality)		50	500,000.00	25,000,000
Transportation costs		80	1,200.00	96,000
Electric expenses for cold store impiant (2months)		9.6	60,840.00	584,064
Marketing costs				50,000
Packing cost			0.00	-
Apple storage lost	%		5%	399,998
Labour requirements in cold store				
Hired labour		1000	480.00	480,000
Labor cost for postharvesting,loading-unloading etc		1,000	120	120,000
Family labour		1000	480.00	480,000
Tax obligation				100,000
Loan interest (overdraft)		209,880.00	6.00	1,259,280
Equipment maintanance				100,000
Miscellaneous				-
Annual invesement				
Farm machinery and equipment			1	2,259,038
E. FINANCIAL INDICATORS (sell all)			**USD**	**ALL**
1. Gross revenue (qty*cash price)		**lek/kg**	**500,000**	**40,000,000**
2. Apple cold store costs				
Total variable cost			**340,126**	**27,210,062**
Total fix cost			**18,241**	**1,459,280**
Annual deprecation on fixed investments			28,238	2,259,038
Total costs (total variable&fix costs + deprecation)			**386,605**	**30,928,380**
Total cost per kg of fresh fruit in cold store		**lek/kg**	**0.77**	**61.9**
Total cost per Ton of fresh fruits		lek/ton	773	61,857
3. Consolidator Profits (sell all)				
Gross profit (gross revenue - total variable&fix costs)		lek/ton	**141,633**	**11,330,658**
Net profit (gross profit - annual deprecation + occasional revenue)		lek/ton	**113,395**	**9,071,620**
4. Rates of Return (sell all)				
Return to variable costs (gross revenue/total variable costs)		lek/ha	**0.42**	0.42
Return to total costs (net profit/total production costs)		lek/ha	**0.29**	0.29

Note: Based on large projected costs for large farmer operated facility.
Source: AAC Calculations

TABLE C-5: 12-MONTH CASH FLOW; TRADTIONAL ORCHARD WITH FERTIGATION INVESTMENT AND FINANCING

Name:	Total Time Period:		
100% Productivity TRADITION APPLE	Jan.- Dec.	Plot: 1 ha, 833 trees	Irrigation: Fertigation

	Individual Time Periods												Total for
CASH INFLOWS	January	February	March	April	May	June	July	August	September	October	November	December	All Periods
Sales 40ton x 45lek											1,800,000.00		1,800,000
other income													0
Total Cash Inflows	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,800,000**	**0**	**1,800,000**

	Individual Time Periods												Total for
CASH OUTFLOWS	January	February	March	April	May	June	July	August	September	October	November	December	All Periods
Direct variable costs													
Land preparation	4,000	4,000											8,000
Fertilizer (complex)			25,000	25,000	25,000								75,000
Agri-Chemicals (Strobi, Pirus, Kaptan, Salto, Cooper oxyode)			102,000	102,000	102,000	102,000	102,000	102,000					612,000
Fertigation system installed cost					350,000								350,000
Direct Production labor													
Labor for irrigation						5,000	5,000	5,000	5,000	5,000			25,000
Labor for spraying			2,000	2,000	2,000	2,000	2,000	2,000					12,000
Labor for fertilization			3,500	3,500	3,500								10,500
Labor for pruning	25,000	25,000											50,000
Labor for thining						50,000							50,000
Labor for harvesting&postharv.										65,000			65,000
Irrigation labor cost 20days													0
Indirect variable costs													
Fuel for irrigation						5,000	5,000	5,000	5,000	5,000			25,000
Transportation										15,000			15,000
other													0
Overhead costs													
Property tax	2,000												2,000
Repairs									5,000				5,000
Electricity													0
other													0
Total Cash Outflows	**31,000**	**29,000**	**132,500**	**132,500**	**482,500**	**164,000**	**114,000**	**114,000**	**15,000**	**90,000**	**0**	**0**	**1,304,500**

	Individual Time Periods with Finaincing												Net Change
SUMMARY	January	February	March	April	May	June	July	August	September	October	November	December	Cash Balance
Net Cash Flow	**-31,000**	**-29,000**	**-132,500**	**-132,500**	**-482,500**	**-164,000**	**-114,000**	**-114,000**	**-15,000**	**-90,000**	**1,800,000**	**0**	
Beginning cash balance	310,000												
Loan Transactions				1,000,000								-1,156,431	
Cumulative Net Cash Flow	**279,000**	**250,000**	**117,500**	**985,000**	**502,500**	**338,500**	**224,500**	**110,500**	**95,500**	**5,500**	**1,805,500**	**649,069**	**339,069**

Note: Assumes a 22% effective loan rate for an 8-month loan of 1 million Lek with no grace period

TABLE C-6: INVESTMENT IN INTENSIVE ORCHARD WITH FINANCING

Name:	Total Time Period:	
New Plantation	Year 1 to Year 6	Plot: 1 ha, 2090 trees
Intensive apple orchard		

	Individual Time Periods						Total for
CASH INFLOWS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**All Periods**
Sales 14ton x 45lek			630,000.00				630,000
Sales 32ton x 45lek				1,440,000.00			1,440,000
Sales 50ton x 45lek					2,250,000.00	2,250,000.00	4,500,000
other income							0
Total Cash Inflows	**0**	**0**	**630,000**	**1,440,000**	**2,250,000**	**2,250,000**	**6,570,000**

	Individual Time Periods						Total for
CASH OUTFLOWS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**All Periods**
Hand Labor	186,410	43,000	53,500	87,400	130,500	130,500	631,310
Mechanical expense	490,500	23,000	65,000	65,000	65,000	65,000	773,500
Input expenses	1,537,500	160,200	1,156,100	599,100	269,600	269,600	3,992,100
Total Cash Outflows	**2,214,410**	**226,200**	**1,274,600**	**751,500**	**465,100**	**465,100**	**5,396,910**

	Individual Time Periods						Change In
SUMMARY	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Cash Balance**
Net Cash Flow	**-2,214,410**	**-226,200**	**-644,600**	**688,500**	**1,784,900**	**1,784,900**	
Beginning cash balance	1,260,000						
Loan Transaction	998,310	183,200	1,221,100	-1,000,000	-1,500,000	-1,499,895	
Cumulative Net Cash Flow	**43,900**	**900**	**577,400**	**265,900**	**550,800**	**835,805**	**-424,195**

Note: Assumes an overdraft facility is granted at an annual effective interest rate of 18% with repayments beginning in annual installments in year 4.

TABLE C-7: 12-MONTH CASH FLOW FOR 500 TON COLD STORAGE UNIT WITH FINANCING

Name:	Total Time Period:		
Cold Store	Oct.- Nov. 2008	Capacity: 500ton	Variety
Proger-Cangonj			

	Individual Time Periods												Total for
CASH INFLOWS	October	November	December	January	February	March	April	May	June	July	August	September	All Periods
Sales 500ton x 80lek					40,000,000								40,000,000
Retail sales													
other income													0
Total Cash Inflows	**0**	**0**	**0**	**0**	**40,000,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	40,000,000

	Individual Time Periods												Total for
CASH OUTFLOWS	October	November	December	January	February	March	April	May	June	July	August	September	All Periods
Purchasing 500 ton apple	12,500,000	12,500,000											25,000,000
Transportation costs for collecting apples	48,000	48,000											96,000
Electric expenses for cold store	194,688	194,688	194,688										584,064
Labor cost for cold store (4 workers)	96,000	96,000	96,000	96,000	96,000								480,000
Labor cost for loading and unloading (2 persons)	40,000	40,000			40,000								120,000
Managing (2 persons)	96,000	96,000	96,000	96,000	96,000								480,000
Marketing expenses		12,500	12,500	12,500	12,500								50,000
Income tax												100,000	100,000
Bank interes													0
Maintanance		25,000	25,000	25,000	25,000								100,000
Deprecation of equipment	188,253	188,253	188,253	188,253	188,253	188,253	188,253	188,253	188,253	188,253	188,253	188,253	2,259,036
Product lost 5%	33,333	33,333	33,333	33,333	33,333	33,333	33,333	33,333	33,333	33,333	33,333	33,333	399,996
other													0
Total Cash Outflows	**13,196,274**	**13,233,774**	**645,774**	**451,086**	**491,086**	**221,586**	**221,586**	**221,586**	**221,586**	**221,586**	**221,586**	**321,586**	**29,669,096**

	Individual Time Periods												Change in
SUMMARY	October	November	December	January	February	March	April	May	June	July	August	September	Cash Balance
Net Cash Flow	**-13,196,274**	**-13,233,774**	**-645,774**	**-451,086**	**39,508,914**	**-221,586**	**-221,586**	**-221,586**	**-221,586**	**-221,586**	**-221,586**	**-321,586**	
Beginning cash balance	10,050,000												
Loan transactions	17,500,000				-18,576,250								
Cumulative Net Cash Flow	**14,353,726**	**1,119,952**	**474,178**	**23,092**	**20,955,756**	**20,734,170**	**20,512,584**	**20,290,998**	**20,069,412**	**19,847,826**	**19,626,240**	**19,304,654**	**9,254,654**

Note: Loan is for 17,500,000 Lek of 25 million required for stock purchases. Interest rate is 18.5% (effective annual rate). Duration is 4 months