



POLICY NOTE

DEVELOPING KHYBER PAKHTUNKHWA'S AGRO-BUSINESS VALUE CHAINS







FOREWORD

Khyber Pakhtunkhwa is the third largest province of Pakistan, with a population of over 35 million. The agriculture sector must ensure that the province is economically self-sufficient to feed its millions. It is also responsible for providing employment to a large share of the population; currently, it employs above 40% of the labour force and contributes more than 20% to provincial GDP. Climate change and growing population, however, are endangering KP's food and economic security. Moreover, compared to other provinces such as Punjab, KP's agricultural productivity is already low, and there is significant wastage.

It is high time that we study the issues in KP's agriculture sector more deeply and broaden our horizons beyond the simple production of crops, emphasizing the development of the entire agri value chain, from access to seeds, to pricing, and access to distribution channels. Some of the most significant hindrances to high productivity and economic output of the agriculture sector stem from issues in various steps of the agri value chain other than production, such as supply chain development, high wastage due to poor storage facilities and lack of processing technologies. Another critical gap is the lack of quality checks and certification—for instance, our products' inability to meet the basic Codex Alimentarius Commission (CAC) standards set globally for food trade—which especially affects the capacity to export processed goods. Addressing such gaps in a timely manner will also allow KP to tap into the global market, as there is massive potential for these value-added products.

The role of the Agriculture Department is to ensure food security, poverty alleviation, and the generation of employment opportunities. The department is striving to meet the challenges of the 21st century, by promoting value addition and focusing on agro-processing. If we can strengthen the development of our agri-value chain, there will be fewer wastages, and the quality-controlled, well-preserved products will be sold in international markets by businesses which will have developed strong market linkages and will have the capacity to employ a greater number of workers.

We welcome this policy brief presented by the FCDO-funded Sustainable Energy & Economic Development (SEED) Programme, in collaboration with the Sarhad Chamber of Commerce & Industry (SCCI) and other key local stakeholders. It is a vital first step in the journey to achieve the vision of the Agriculture Department and the provincial government of a prosperous Khyber Pakhtunkhwa.

We look forward to developing closer partnerships with all those involved in this process to take practical steps in materializing these goals.

DR. MUHAMMAD ISRAR
SECRETARY AGRICULTURE
KHYBER PAKHTUNKHWA



FOREWORD

Pakistan is an agrarian economy, and Khyber Pakhtunkhwa also relies heavily on the agriculture sector. A significant chunk of our private sector stakeholders and the business community is associated with this sector, which also happens to be the single biggest employer in the province. In recent years, however, due to dwindling supply, low productivity, and rising unemployment, a need has been sensed by all parties involved to diversify and expand our efforts to cover the entire spectrum of the agri value chain, focusing on each step along the way, i.e., provision of inputs and expanding production, storage and processing of the produce, and strengthening market access for its distribution and sale.

Building on the research and recommendations highlighted in this report, based on the expertise of the local stakeholders, the government must take steps to develop a competitive advantage for KP in different products. For many products of KP, such as dates and plums, there is no dissemination of knowledge regarding the right variety suited to the local climate and the importance of cold storage facilities, and quality control. The poor-quality produce with high wastage rates, consequently, cannot compete in domestic and international markets, which hurts KP-based producers.

Given the promising potential of the agro-processing industry, it is of paramount importance for the public and private sector stakeholders to work together on the most productive avenues of growth for agricultural producers and agro-processing businesses based in KP.

In this regard, the Sarhad Chamber of Commerce & Industry role has become crucial to bridging the gap between the government and the business community. We hope that the efforts put into this report by the team of our partner, the Sustainable Energy & Economic Development (SEED) Programme, and SCCI's stakeholders will bear fruit and go a long way in the holistic advancement of agriculture sector in KP.

HASNAIN KHURSHID

PRESIDENT, SARHAD CHAMBER OF
COMMERCE & INDUSTRY
(SCCI)



FOREWORD

Khyber Pakhtunkhwa witnesses the growth of a diverse range of agricultural commodities each year, owing to its fertile terrains, easy access to water resources, and suitable weather conditions, among other factors. The produce is used locally, sold domestically, and exported globally, boosting the economy of the province, yet the overall productivity and contribution to the economy remains low compared to the potential. The province has massive potential to build on its natural gifts, but the efforts to strengthen the agriculture sector of KP so far have been focused on conventional methods, employed to increase the yield of produce—production, however, is only one step in the agri value chain, and the agro-processing industry in KP is still nascent.

The need of the hour is to focus the policy measures and investments into the sector towards the development of the entire agri value chain, ranging from pre-harvest activities such as seed development, building irrigation facilities and providing sowing and harvest tools to post-harvest activities such as storage and warehousing, grading and standardization, product/by-product value addition, and distribution and branding. By developing agro-processing value chains, KP can be enabled to capitalize on its agriculture potential fully, compete in global export markets for processed and value-added goods, and create better jobs in the manufacturing processes throughout the value chain.

This document puts forth important recommendations, based on consultations with key private sector stakeholders and technical experts in the sector. Some major areas of action for the government to consider that come up in our findings include access to certified seeds, access to credit for farmers to reduce dependence on exploitative middlemen, stronger market linkages, quality control, and investment into storage and processing facilities to reduce wastage and increase value addition.

This policy brief is the result of the collaboration between the Sustainable Energy & Economic Development (SEED) Programme and the Sarhad Chamber of Commerce & Industry (SCCI). This initiative aims to bring together public and private sector stakeholders to develop the best possible solutions to problems that plague both sectors and ensure inclusive economic development in the province that brings prosperity for all.

I congratulate the SEED and SCCI teams on putting together this insightful report and hope that all stakeholders can work together on taking up its recommendations in the agriculture sector.

DR. OMAR MUKHTAR KHAN
TEAM LEADER, SUSTAINABLE ENERGY &
ECONOMIC DEVELOPMENT (SEED)
PROGRAMME

DEVELOPING KHYBER PAKHTUNKHWA'S AGRO-BUSINESS VALUE CHAINS

ABSTRACT AND KEY RECOMMENDATIONS

Khyber Pakhtunkhwa offers tremendous opportunities for growth and productivity of the agriculture sector in Pakistan, given its terrain, variety of soil conditions, access to some of the most fertile land, conducive weather conditions, and easily accessible water resources. But the existing agro-value chains in KP are weak and deficient. There is little value addition in the agro-commodities that are grown, and limited efforts have been made to develop post-harvest value chains where grading, storage, processing, packaging, marketing, and brand development could be done. Whereas production levels have improved, post-harvest losses, from farm to table, are as high as 40%, while the net value obtained by farmers remains insufficient.

This policy brief illustrates the current deficiencies that have marred the development of agro-processing value chains in Khyber Pakhtunkhwa. The brief takes into account discussions from the consultative session conducted on December 28, 2021, which highlighted the key gaps and challenges faced at each end of the supply chain. Notably, the brief identifies domestic and export opportunities—given the potential in various agro-based products—where investments and government interventions can play a catalytic role. The final section recommends several measures that the Government of Khyber Pukhtunkhwa can work on to improve value addition in the sector. These include support measures to:

- Improve access to certified seeds,
- Improve access to credit through;
 - + Subsidizing standard banking products,
 - + The development of a Warehouse Receipt System that allows the use of crops stored in licensed warehouses as loan security,
 - + Community lending through Farm Service Centers.
- Address information and knowledge gaps for better crop husbandry, adoption of agricultural technology, and direct market access to reduce dependency on middlemen.
- Address core infrastructural challenges in storage and warehousing facilities, processing plants, grading/sorting/packing facilities and collection centers. These can be undertaken in PPP mode under Special Economic Zones.
- Target large national and international food processing companies for investments, particularly in the Special Economic Zones, by offering an attractive package of support for labour training and improvement of domestic quality standards.
 - + The planned Food Processing Zone at Daraban is an ideal opportunity to pilot this. There are already plans for tax holidays and custom duty exemptions on imported machinery and equipment. The tax holidays can be made more effective by conditioning them on investments made in building supply chains and farmer capacity, labour training, and local employment.
 - + Interventions can also be piloted on a single product first, for example, peach, where most of the required elements are already in place and investment from food processing companies is now required to upgrade value addition.



- Map export demand in countries where Khyber Pukhtunkhwa has a comparative advantage relative to the rest of the country (i.e. Afghanistan, Central Asia and China) and undertake tariff and non-tariff barrier analysis to prepare for exports. For example, under Phase 2 of the China Pakistan FTA, tariff barriers will become progressively competitive, lowering to 0% by 2034. Planning to utilize these tariff concessions should start immediately by ensuring that:
 - + Non-tariff barriers are negotiated down,
 - + SPSS and other quality standards are in place to meet export market demand,
 - + Marketing and branding measures are undertaken for the target products.
- Explore contract farming, with a hybrid pricing model that aligns better to market prices and through farmer organizations, to ensure contracts are respected.



TABLE OF CONTENTS

1. SITUATION ANALYSIS	01
PEACH	04
UNDERSTANDING THE COMMODITY MARKET	05
APPLES	07
DATES	09
PLUMS	11
UNLEASHING THE POTENTIAL IN OLIVE VALUE CHAIN	12
2. VALUE CHAIN GAP AND OPPORTUNITY ANALYSIS IN KP	14
ACCESS TO QUALITY AND AFFORDABLE SEEDS	14
MIDDLEMEN EXPLOITATION, PRICING AND ACCESS TO CREDIT	14
EDUCATION, AWARENESS AND KNOWLEDGE GAPS	15
LACK OF INVESTMENT IN CRITICAL PROCESSING FACILITIES AND INFRASTRUCTURE CHALLENGES	15
AGRO-BASED EXPORTS AND POTENTIAL IN CHINA	16
GAINING MARKET ACCESS INTO CHINA	19
CAN KP TAP INTO THE EXPANDING POTATO PROCESSING DEMAND?	20
EXPLORING CONTRACT FARMING MODELS	23
3. RECOMMENDATIONS	24
FACILITATING ACCESS TO INPUTS	24
ENSURING ACCESS TO CREDIT ACROSS THE VALUE CHAIN	24
REMOVING INFORMATION ASYMMETRIES BETWEEN FARMERS AND MARKETS AND BUILDING FARM TO MARKET LINKAGES	25
ADDRESSING CORE INFRASTRUCTURE CHALLENGES IN THE PROCESSING INDUSTRY	25
EXPORT DEMAND MAPPING	26
EXPLORING CONTRACT FARMING	26
FIGURE 1: UNDERSTANDING AGRI VALUE CHAIN AND VC PARTICIPANTS	01
FIGURE 2: PEACH PRODUCTION AND YIELD IN KP	04
FIGURE 3: APPLE PRODUCTION AND YIELD IN KP	07
FIGURE 4: DATE PRODUCTION AND YIELD IN KP	09
FIGURE 5: PLUM PRODUCTION AND YIELD IN KP	11
FIGURE 6: PAKISTAN'S AGRO-BASED EXPORTS	16
FIGURE 7: SHARE OF PROCESSED GOOD EXPORTS	17
FIGURE 8: PROCESSED AGRICULTURAL EXPORTS BY PRODUCT	17
FIGURE 9: EXPORT DESTINATIONS FOR MAJORITY OF PAKISTAN'S PROCESSED AGRICULTURE GOODS	18
FIGURE 10: PAKISTAN'S WORLD MARKET SHARE IN AGRI-PRODUCTS VS GROWTH IN INTERNATIONAL DEMAND ..	19
FIGURE 11: PAKISTAN'S INDICATIVE POTENTIAL EXPORTS TO CHINA IN AGRO-BASED GOODS	19

SITUATION ANALYSIS

Every year, a wide range of agricultural commodities are grown in KP, benefiting from and enabled by the region's diverse terrain, fertile land, the existence of a variety of soil conditions, conducive weather conditions, and easily accessible water resources. Fruits and vegetables are grown across various KP regions, ranging from apple, peach, guava, dates, plums, walnut, citrus, pine nut, apricot, tomato, onion and potato to a large variety of local specialities. These goods are sold domestically within the province and exported to other countries and overseas, particularly to the Middle East. A large share of the KP population depends on the agriculture sector for sustenance, income and employment.

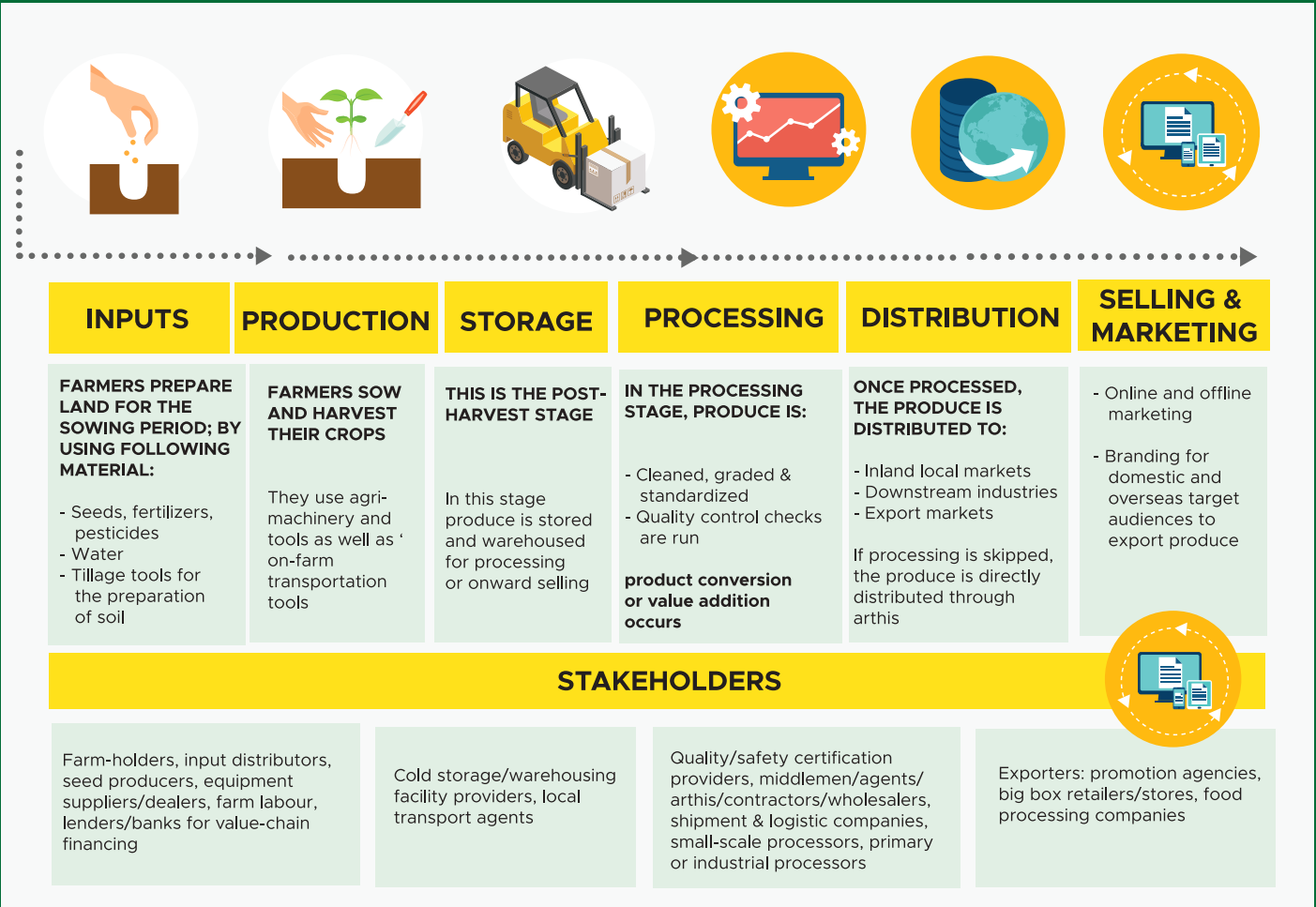


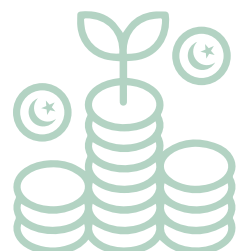
FIGURE 1: UNDERSTANDING AGRI VALUE CHAIN AND VC PARTICIPANTS

Federal and provincial policy interventions thus far have focused on expanding production of existing crops, supplying inputs to farmers especially in the form of mechanization and providing specific cultivation guidance. However, the agriculture sector has witnessed slower growth in KP compared to the rest of the country, and has been characterised by low productivity and high wastage. While a significant amount of work is needed to expand yields and productivity, an equal and important emphasis has to be given (in the form of policy measures and investment) to develop the entire agriculture value chain. This extends to pre-harvest activities such as seed development, building irrigation facilities and providing sowing and harvest tools, but also post-harvest activities such as storage and warehousing; processing of agri commodities that comprises grading, packaging, standardization, quality control, and product/by-product value addition; opening up distribution channels and creating market access for growers through promotion, marketing and branding.

This lack of value chain development has limited the opportunities for the sector to generate greater value for farmers and in general, for the agriculture economy in KP to grow competitively. The key deficiencies in agro-processing value chains include:

- i)** Infrastructure limitations such as inadequate cold storage capacity, lack of efficient and specialized transportation network, dearth of packing, grading and sorting facilities, lack of sourcing, storage and quality certification services
- ii)** Insufficient trained manpower for pre and post-harvest management and lack of training opportunities
- iii)** Limited value addition
- iv)** Financial and credit constraints from formal sources. This makes farmers rely heavily on informal credit from middlemen/arthis/commission agents which in turn also takes away the farmer's bargaining power in terms of price
- v)** Weak direct farmer to market linkages. Most small farmers are bound by arthis to only sell to them which restricts farmers' direct access to market, thereby giving control of their cash flow to the arthis that extended them credit
- vi)** Low private sector investment in value-added facilities and models
- vii)** Knowledge gaps across the value chain as well as regulatory, legal and policy constraints.

In order to contextualize some of these gaps and constraints, this brief has highlighted a select number of agro-commodities produced in KP that hold prominent significance in terms of potential but also face a variety of challenges that hamper growth in particular in terms of value chain development.



PEACH



PEACH

Khyber Pakhtunkhwa is a major peach producer in Pakistan, yielding 78% of national production¹. Over the past few years, peach production, area under cultivation and yield has grown in KP. However, the value chain is fraught with high levels of wastage due to the fruit's high perishability which, coupled with transportation inadequacy (bumpy roads and improper vehicles), puts significant pressure on post-harvest activities. Crop management is also weak and trained laborers are hard to come by which also results in post-harvest losses.

While peach farms exist across KP, the biggest cluster is located in Swat where nearly 80% of KP's peaches are grown. Most of the peach produced in KP is sold to markets/*mandis* through middlemen/*arthis*. A small share of it is sold to pulp producers. Farmers suffer from an inherent instability in prices which are also historically low, limiting farmers' ability to expand and improve their production processes. The system of bargaining is weak where small farmers who are not selling directly to the market become price takers paying commission to the agent for selling their product to the market. Meanwhile, prices in the input supply market also fluctuate significantly which curbs profitability. Farmers who do not interact directly with the market have weaker linkages with the value chain. They have fewer opportunities to interact with purchasing agents of processing facilities and experience a lack of symmetry in market information. Formally, there is no system for market asymmetries to be reconciled.

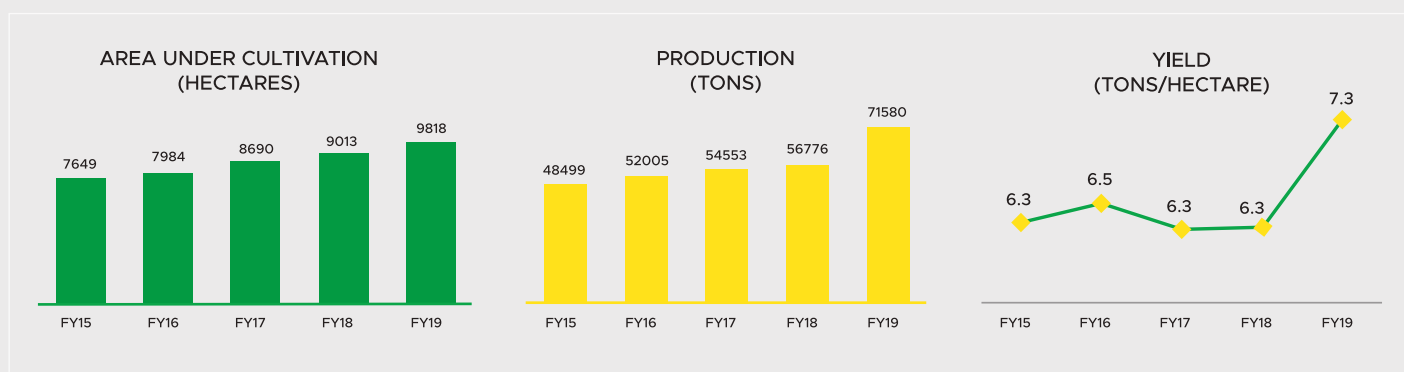


FIGURE 2: PEACH PRODUCTION AND YIELD IN KP

The region also does not have any proper grading and processing facilities. The only food processing unit produces less than 300 tons of pulp per year, but this too does not have disease-free and aseptic processing, and hence does not meet standards set by branded juice companies. Private sector involvement is critical for investment in packaging, processing and marketing facilities.

Several farmers active in local Farmer Service Centers (FSCs) have also shown interest in extending their role into grading, marketing and branding areas in partnership with parties who have prior experience in these areas. The local agriculture department staff is also willing to work with commercial enterprises to help develop the value chain. Hence most of the elements needed to create an end-to-end value chain are in place. What is now required is the involvement of juice and other food processors from Punjab and Sindh (where these units are currently based) to bring their understanding of market needs, future product trends and related quality requirements to the local growers. It would also involve repositioning of the roles of Farmer Service Centers (FSCs) with a public-private orientation and developing local agri support workers for peach farming. The development of farmer business groups within FSCs to take on marketing, packaging, and processing of their crops would also be a key component of this initiative. It is also important to realize that with the Swat expressway and the new Special Economic Zone (SEZ) at Rashakai that has a clear agri-business focus, some of the processing facilities like manufacturing of juices, jams and other products could be based in this SEZ.

¹ Fruits and Condiments Statistics of Pakistan, 2018-19



UNDERSTANDING THE COMMODITY MARKET

Farmers with small landholdings are often cash constrained and do not have access to formal credit. A major player in the agriculture supply chain is the arthi. A *kacha arthi* offers funds to the farmers to buy agriculture inputs and binds the farmer to only sell to the arthi himself. Thus, for many farmers, their interactions with the market ends here. This not only limits their opportunity to market their own produce but also curbs any participation in price negotiation, restricting them from getting competitive prices and making reasonable profits. The *kacha arthi*, as an intermediary, connects with market participants including *pakka arthis* (or wholesale agents), input suppliers and dealers through auction/sale in the commodity markets. The *pakka arthis* purchase from the *kacha arthis* in bulk to supply to mills, factories, exporters, traders and purchasing agents of processing industries with whom they maintain contracts. They may also be exporters themselves with international agreements. Often there is another intermediary which is the *beopari* (village agent) that also purchases certain produce from the farmer to sell to a processor or to the *pakka arthi* through sale to the *kacha arthi*. The *beopari* may also require credit from the arthi. In both cases, the farmer and *beopari* have to forfeit the choice to sell to the market in exchange for interest free credit from the *kacha arthi*. Between *pakka arthi* and buyers (including exporters or mills/factories, processing firms), there is a broker that acts as the agent responsible for making the sale happen. He may be brokering the deal on behalf of a processing mill and charges commission for his services. While commission rates for agents are determined under government rules, arthis typically charge higher rates than legislated, variable across type of crops and sellers.

In terms of regulation, the Government of KP enacted the Agriculture and Livestock Produce Markets Act in 2007 replacing the Agriculture Produce Markets Act, 1839. Currently, the province has only 2 government notified and designated wholesale markets in Peshawar and Dera Ismail Khan. The rest of the markets are privately-run wholesale markets free from regulation.² The new law was meant to bring more transparency to transactions and ensure better income for farmers but has failed, thus far to do so. Farmers in KP are still behind in maintaining linkages directly to the market and in turn respond to market demand through value addition, or creating opportunities for themselves to export.

Arthis are the lynchpin in the marketplace. They are licensed by the government but new licenses are not issued as frequently as arthis need substantial liquidity, have strong linkages with the market and have significant political and social capital. They operate a very high risk-reward business. Often, they may use their influence within the Marketing Committee³ to restrict the entry of new arthis.

In Pakistan, arthis can be perceived as exploitative lenders who have hindered farmers and growers from profitability and growth or important service providers fulfilling credit needs of farmers where there are no former channels available. Development agencies and researchers have long advocated to levy controls over this system to minimize the exploitative nature of these transactions. Policy-makers have made efforts to enable farmers to get formal credit through microfinance lenders or commercial banks but a very small share of credit demand is met through these means. The most productive solution now seems to be creating new models for formal credit whilst partnering with arthis and extracting learnings from them.

SOURCES:

“Assessment of Value Chain System for Horticulture in Khyber Pakhtunkhwa including Newly Merged Districts (Former FATA)”, PACE Assessment Study, Sep 2021

“Policy and Institutional Reforms to Improve Horticultural Markets in Pakistan”. Commissions and

² “Assessment of Value Chain System for Horticulture in Khyber Pakhtunkhwa including Newly Merged Districts (Former FATA)”, PACE Assessment Study, September 2021.

³ These are formed by the government in each agriculture market to ensure fair trading, they also perform other functions such as: creation of new markets, issuance of licenses to agents, disseminate price information, develop market infrastructure etc.



APPLE



APPLE

Balochistan and KP are the two main apple producing regions with the latter contributing 12% to national production⁴. Alarming, the apple yield in KP has been declining over the past several years with production falling significantly. This coincides with 30-40% post-harvest losses⁵. On the production side, water scarcity and low yields mar productivity while lack of marketing, value chain development and limited infrastructure availability in terms of storage and warehousing make KP apples regionally uncompetitive. On the other hand, apple production has been growing in Balochistan. There is a marked difference between apples grown in Balochistan and KP.

Apples grown in KP are typically green and small in size. Color and size are important attributes and are affected by high temperatures which result in discoloration and inferior quality fruit production. In the market, consumers demand red apples that are much bigger in size. As a result, KP apples do not fetch optimum prices in the wholesale and retail markets. This, however, creates an opportunity for KP apple to position itself for the processing industry.

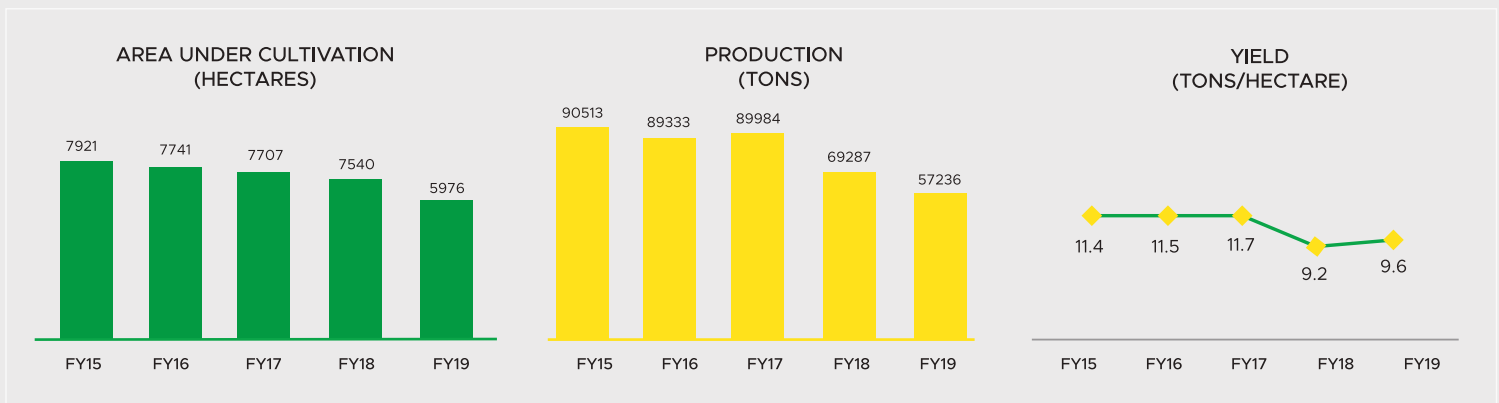


FIGURE 3: APPLE PRODUCTION AND YIELD IN KP

Lack of awareness and lack of capital are perennial issues within the value chain. Apple production also suffers from missing technical expertise. Quality apples require optimum chilling which farmers are not aware of. Meanwhile, sanitary and phytosanitary (SPS) certification is not available which makes the apple difficult to export despite opportunities presented by CPEC routes and growing demand of apples in international markets.



⁴ ibid

⁵ "Apple Cluster Feasibility and Transformation Plan". Cluster Development Based Agriculture Transformation Plan. Planning Commission of Pakistan, Ministry of Planning, Development and Special Initiatives. Feb 2020. Web. https://www.pc.gov.pk/uploads/report/Apple_Cluster_Report.pdf

DATES



DATES

Dates can be a promising export market for Pakistan with potential exports knocking upwards of Rs. 200 million. Dates are mainly produced in Balochistan and Sindh with KP contributing to only 2% of national production⁶, though both production and yield are growing. Within KP, there are established date clusters in D. I. Khan and the nearby district of Bannu. The date variety being grown is called Dhaki which is high in demand due to its flavour and size. There is ample demand but supply is limited and farm to market processing facilities require investment.

The harvesting period is very short but no local cold storage facilities exist which affects farmers' ability to charge a reasonable price for the dates. For instance, most processing facilities are in the informal sector and consist of making dried dates which are exported. Quality control is a major concern as picking and extraction leads to fruit losses. The fruit has high susceptibility to pests as well which results in pre- and post-harvest losses as high as high as 30-35%.⁷ Farmers are not aware of modern farm techniques and practices at production and handling stages. Local knowledge of date processing such as how changes in weather conditions can cause fluctuations in quality and quantity of produce is missing. Current processing facilities are primarily in the informal sector and comprise the making of Chuarra (dried date) that is also exported. But complex export procedures, lack of competitiveness, minimum to no value addition in date and date by-products (such as date tree trunks) hinder exports.

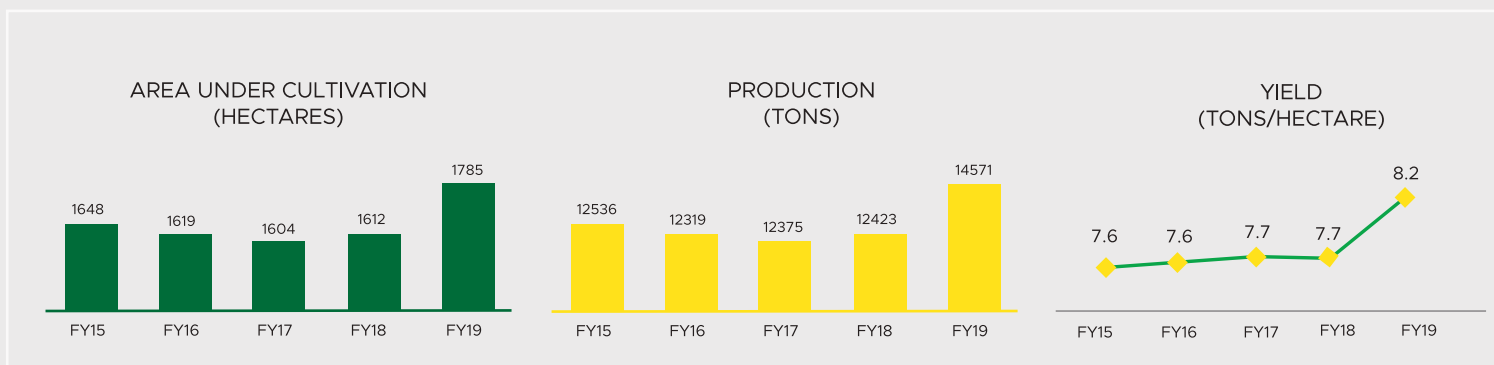


FIGURE 4: DATE PRODUCTION AND YIELD IN KP

⁶ Fruits and Condiments Statistics of Pakistan, 2018-19

⁷ "Dates Cluster Feasibility and Transformation Plan". Cluster Development Based Agriculture Transformation Plan. Planning Commission of Pakistan, Ministry of Planning, Development and Special Initiatives. Feb 2020. Web. https://www.pc.gov.pk/uploads/report/Dates_Cluster_Report.pdf



PLUMS



PLUMS

Plum production in Pakistan has been falling, declining by 2.5% every year. Global plum production however has only been growing with rising demand in the international market for good quality plums. Pakistan contributes very little to the plum export market even though its farm gate prices are much lower than international prices.⁸ However, this does not mean that competitiveness cannot be achieved.

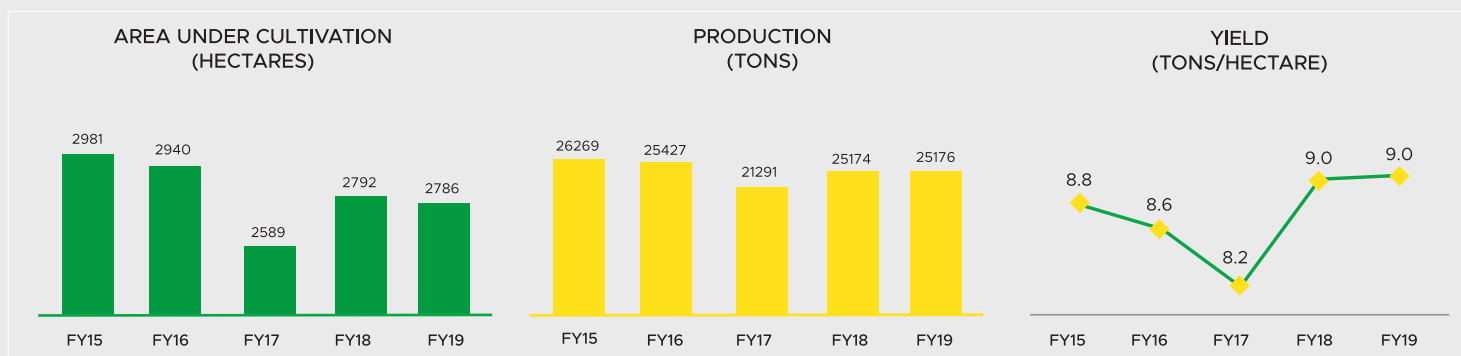


FIGURE 5: PLUM PRODUCTION AND YIELD IN KP

Plum is produced mainly in Balochistan and KP with the latter occupying about 54% market share. Among dominant challenges; water scarcity, low yield potential plum trees, low-plant density and outdated garden management practices, improper harvesting and poor fruit handling and lack of updated information on markets available to farmers, high perishability coupled with no mechanism for processing, preservation, cooling, cold-chain and cold storage facilities. All these mar the fruit's productivity. Post-harvest losses in plum production go up to 50% according to estimates. Losses are high due to lack of awareness among farmers. For instance, the wrong selection of plum variety for the wrong altitude can result in poor quality production, or inferior colour, size and aroma of the fruit. Meanwhile, handling by unskilled labour or improper management during transportation also deteriorates crop quality and results in losses.

⁸ "Plum Cluster Feasibility and Transformation Plan". Cluster Development Based Agriculture Transformation Plan. Planning Commission of Pakistan, Ministry of Planning, Development and Special Initiatives. Feb 2020. Web. https://www.pc.gov.pk/uploads/report/Plum_Cluster_Report.pdf

⁹ ibid





UNLEASHING THE POTENTIAL IN OLIVE VALUE CHAIN

Though Pakistan is not traditionally an olive producing country, there are sub-species of olives in different parts of the country that make for viable olive oil production. Olive is a hardy plant and can be grown in diverse terrains and it requires less irrigation.

According to the Ministry of National Food Security, Pakistan has about 15.44 million-acre land suitable for olive plantation, double the cultivated land in Spain which is the largest olive oil producer in the world. Currently, Pakistan has 3.6 million olive plants over an area of 31,000 acres of land. While current olive oil production in the country is only about 1400 tons, by 2027, the Pakistani government wants to take olive oil production to 20,000 tons to replace its imports. Pakistan is a major edible oil consumer in the world with demand at 4-5 million tons which is met through palm oil and seed imports. Domestic olive oil production can not only substitute imports but also offers opportunities to supply olive oil to international markets which can attract premium prices.

In terms of fruit production and oil recovery, currently Balochistan leads among regions, followed by KP, Punjab and FATA. In Balochistan, soil and weather conditions support olive production significantly and farmers are getting promising results. Meanwhile, with government support, the Potohar region in Punjab which borders the southern part of KP is being developed as the “olive valley” due to its favourable topography and appropriate weather. The project, initiated by the Punjab government and executed by the Barani Agriculture Research Institute (BARI), spreads over 9,000 acres of land spanning the Mianwali and Khushab districts.

In 2019, Pakistan also commenced a massive drive to plant olive trees from 550,000 high-quality olive saplings imported from Spain. On a national level, the government of Pakistan was awarded funding through a debt-swap agreement with Italy to increase local production of edible oils by cultivating olive and utilize existing cultivable land in Punjab, KP and Balochistan. The Pakistan Agriculture Research Council (PARC) is responsible for coordinating efforts in provinces toward olive oil cultivation and development.

PRIVATE SECTOR DYNAMICS



Izhar Farms is one of the small but growing olive oil producing companies. Izhar has an olive orchard spanning 350 acres which is slowly expanding. The farm requires at least 400-500 acres of production to break even but currently production is low. In Pakistan, 90% of the olive market is catering to doctors or pharmaceuticals that require olive for medicinal purposes. Local olive oil producers are unable to tap the local market due to low volumes. Sufficient volumes are required to invest in bottling and marketing. Because of the lack of volumes, olive oil producers such as Izhar have also not been investing in their own oil extraction machines. In fact, most farmers take their produce to locations where the government has installed machines to extract oil from produce. Currently, the government has installed 3 olive oil extraction machines in Bari Chakwal, KP, Islamabad and Balochistan. There are plans to install multiple small machines in government research centres. Production volumes are expected to rise as the olive plants mature, which should make the olive processing value chain viable for the private sector.

ROLE OF THE GOVERNMENT



The government’s role here is pivotal. The first set of olive growers have just now started to achieve dividends from the crop, the success of which is encouraging more farmers. An olive plant takes 5 years to reach its first cycle of fruition which is longer than other orchards. During this time the farmer needs to be adequately supported by the government.

In Chakwal, the government has established the Centre of Excellence for Olive Research and Training (CEFORT) to promote research. To facilitate olive growers, the government is providing subsidized plants and drip irrigation systems to encourage farmers to plant more olive trees and plants. But a lot more needs to be done. Farmers do not have access to pre- and post-harvest

technologies related to sowing, trimming, cutting etc. The government can provide tools and small machines on rent to facilitate small farmers. In addition, training and capacity building of farmers is incredibly important. Growers in the country should be taught strategies to market their produce and access more markets. Farmers right now prefer to attain credit from arthis who dominate the supply chain. Market development therefore would also require farmers attaining access to credit from formal lenders which would improve their cash cycle and allow them to generate the required volumes.

Pakistan has recently become a full member of the International Olive Council which is the only international intergovernmental organisation for olive oil and table olives. The membership will strengthen international cooperation, bring the Pakistani olive oil sector closer to the council and promote the application of IOC standards in global markets. The country's olive development program is expected to receive grants from the council which currently finances many such programs in member countries. The council will also help Pakistan to secure certifications.

But exports face several hurdles at the moment. There aren't sufficient volumes, for one. Meanwhile, packaging, processing and marketing potential is limited. The olive oil industry globally is highly competitive, so government intervention would have to include building farmers' competitiveness.

KP'S POTENTIAL IN OLIVE



While the potential exists, KP is behind in olive production. At present, olive plants in KP are limited by lack of government support in terms of plant subsidy or pre/post-harvest, though 10-20% of fertile land in KP is suitable for olive production. A major hurdle is lack of farmer education and existing knowledge gaps. The KP government should step in to provide adequate support to existing and new farmers. At the same time, the federal and provincial governments need to support the private sector to enter the value chain by providing both fiscal and technical support. Currently, about a billion rupees (FY21 allocation is Rs100 million) are being put aside under the KP Annual Development Plan (ADP) for the promotion of olive in the province. But a long-term strategy is required by the KP government. Such a strategy would:

- 🌿 Facilitate growers by providing them the infrastructure and access to affordable inputs/tools. This entails, pre- and post-harvest machinery, and drip irrigation systems
- 🌿 Develop new orchards and help in the adoption of grafting techniques on local trees to improve cultivation
- 🌿 Provide farmers with training, certification and access to market information
- 🌿 Facilitate direct formal credit to farmers across the value chain
- 🌿 Set up more extraction units

SOURCES:

KP Annual Development Plan 2020-21

“Market Analysis for Value Chain and Olive Oil consumption in Pakistan”. M Avais Tahir et al., Punjab Economic Research Institute. <https://peri.punjab.gov.pk/system/files/Olive%20Small%20Size%20File.pdf>

Interview with Izhar Farms



VALUE CHAIN GAP AND OPPORTUNITY ANALYSIS IN KP

The following obstacles were highlighted by various stakeholders across the value chain during the consultative session held in December 2021, organized by Sustainable Energy and Economic Development (SEED) Programme.

ACCESS TO QUALITY AND AFFORDABLE SEEDS

Lack of access to certified seeds is a dominant reason for low crop yields. This is a perennial infrastructure issue in the agriculture sector across Pakistan, and especially in KP hindering the development of agribusinesses in the province. If farmers don't have access to the required quality seed, their crops suffer. Crop seeds in KP are short in supply and do not meet the required standards. This in turn affects the cost of production per hectare of cultivated land which reduces farmers' margins. The supply of certified seeds is mostly in the hands of the private sector which is costly—about 12% is provided by the public-sector while 6% is imported. Meanwhile sub-standard seeds sold by dealers affect the quality of produce, making it uncompetitive both domestically and abroad.

Under its Annual Development Plan, the KP government has allocated Rs. 288 million to improve government seed production units. The KP government has also created Farm Service Centres (FSCs) in all districts of KP which currently supply seeds and fertilizers to farmers at subsidized rates. However, this is considered insufficient as the KP government needs to focus on seed cultivation, multiplication, certification and registration while also setting up seed tissue culture to produce new varieties of seeds for better yield. Spending on R&D to explore new food and non-food crops, and seed preservation is equally important.

MIDDLEMEN EXPLOITATION, PRICING AND ACCESS TO CREDIT

Given their small land holdings and limited financial resources, farmers in KP depend heavily on arthis and middlemen who provide them with interest-based cash, inputs (seeds and fertilizers), machinery and tools. This dependence more often than not extends to farmers only selling to markets via these agents that takes pricing power away from them. Often, against loans, farmers have to buy inputs from the arthis that sell these inputs at much higher prices without insufficient control over quality. In essence, farmers end up incurring hefty costs of production while also earning revenue which is lower than market prices. Such a cycle ensures farmers are perennially cash-strapped with limited profitability and therein, reduced ability to invest in better quality crops and/or expand.

Given farmers' limited asset base, formal institutions are reluctant to lend to these small farmers. Though there is space for micro-finance creditors who understand the market, the cost of formal borrowing for farmers in micro-loans is too high. Meanwhile, banks do not have the risk appetite for agri lending given high processing costs for small loans, information asymmetries and banks' inability to assess credit worthiness.

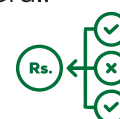
In order to improve profitability, and reduce dependence on middlemen and agents that exploit small farmers, access to formal and affordable credit is crucial. Loan products should also come with tailored solutions such as weather index-based crop insurance to protect farmers. This is important because climate change—and erratic weather conditions—pose major threats to farmers and their yields. Banks in Pakistan have been developing digital value chain financing models where they provide tailored solutions to the end-to-end supply chain, though there is no evidence of these products being made available for KP growers.



An emerging model is Warehouse Receipt (WHR) financing, which many agricultural economies have employed. WHR financing is a form of institutional credit extended by banks to farmers and traders against physical commodities stored in licensed warehouses. It enables farmers to hold on to distress sales after harvesting in anticipation of better prices later on while it provides a secure collateral that meets the needs of banks to lend to farmers. Legislatively, Pakistan has made headways in terms of developing a framework for the WHR financing mechanism, while the Securities and Exchange Commission (SECP) formulated the Collateral Management and Warehousing Regulations 2017. A second set of legislation which entails transfers of warehouse receipts and establishing transactional and operational procedures of the WHRs is underway.¹⁰ The KP government can conduct a feasibility study to develop a well-meaning WHR system.¹¹

The SBP has multiple programs which could be availed, though farmers would face challenges. For instance, there is a credit guarantee for small and marginalized farmers where funding comes from the government of Pakistan for a 50 percent risk sharing with banks.¹² This scheme requires documents such as borrower cash flow, valid CNICs, e-CIB records, verification of cultivations etc. Such level of documentation would require capacity building of farmers which could be done through Farm Service Centers (FSCs.) The SBP's current crop insurance program only extends to grains. Last year, the government of Pakistan announced an agri loan facility at 10% mark-up to be carried out through Zarai Taraqati Bank Limited but these loans require land as collateral.

EDUCATION, AWARENESS AND KNOWLEDGE GAPS



Effective pre- and post-harvest processes require farmers and laborers to be trained in crop/harvest management and produce handling. Quality assurance, ability to evaluate fertility and soil or understanding crop management such as knowing which variety of seeds are required, at what temperatures and altitudes to produce the optimum quality produce or awareness in grading and sorting of produce, knowledge of standardized packing procedures are all knowledge gaps that need to be filled. A similar kind of awareness and training is required for small processors to add value to the produce and work on product development. Most knowledge base available to KP farmers is simply their life experience. Small farmer training programs are very critical to enable educated and informed farming.

Farmer to domestic market linkages are almost non-existent in KP; let alone linkages to export markets. Since farmers sell to arthis and middlemen, they do not have awareness of market and demand dynamics and production requirements. As a consequence, KP farmers do not have bargaining power to determine prices. There is a huge gap between the prices at which they sell to arthis and the final product price charged to consumers—the bulk of the revenue is usurped by middlemen.

LACK OF INVESTMENT IN CRITICAL PROCESSING FACILITIES AND INFRASTRUCTURE CHALLENGES



There are core infrastructure gaps in KP such as cultivation and harvesting issues, grading and cold storages and/or controlled temperature storage technology,¹³ inadequacy of the road and transportation system, lack of processing units, and absence of market development and branding. A lot of post-harvest activities such as pulping in KP is done manually while preservation of fruit pulp or vegetables such as tomatoes is also missing as farmers neither have the knowledge nor the tools to preserve excess crops and increase shelf life. Without preservation,¹⁴ the glut of many products (such as tomatoes) causes prices to plunge and minimize profits. With lack of post-harvest mechanization, unskilled labor handling the produce, few to no processing units, absence of tech-based storage facilities and lack of preservation, post-harvest losses cannot be curtailed.

¹⁰ "The Viability of Warehouse Receipt Financing in Pakistan". Hussam Razi. Karandaaz Pakistan. Jan 2018.

¹¹ More details in recommendations

¹² Web. <https://www.sbp.org.pk/acd/2016/C1-Annex-1.pdf>

¹³ These have the ability to maintain the quality of the produce for longer periods compared to simple cold storages

¹⁴ For instance, farmers don't the mechanism for dehydration of fruits which results in produce going to waste



Grading and sorting of produce is important not only for consumers, industrial users and importers but also farmers that could optimize the prices they fetch by selling properly graded commodities.

Another major issue is water. Water is a major resource but groundwater exploitation and years of drought in KP has caused desertification. As a result, KP farmers are forced to adopt alternative cropping arrangements and patterns. Some farmers use industrial waste/sewerage and household waste to irrigate their crops which is extremely hazardous to health. The river Swat is loaded with waste and water dumps from hotels and houses nearby which is then used by many farmers for irrigation. The KP government has taken loans from the World Bank and is seeking more to expand its irrigation system to increase agri production, but there is no focus on irrigation system development of current fertile land.

Additionally, road infrastructure in KP is dilapidated and the transportation system is poor where most vehicles are poorly maintained and not suitable for last mile delivery. Without proper road infrastructure, farmers often fail to get produce to the markets in time which is a problem simply exacerbated by lack of local storage facilities. This results in an added layer of post-harvest losses. Without the introduction of globally acceptable handling, storage, sorting and packing techniques and facilities, agri-businesses cannot achieve sustainability. Meanwhile, investment from the private sector in processing facilities can come in if profit margins are high enough. This will only happen if prices are stable, and demanded quality and quantity are known factors.

AGRO-BASED EXPORTS AND POTENTIAL IN CHINA

Pakistan's agro-based exports (for the purpose of this study, we have evaluated performances for only HS 07, 08 and 20¹⁵ since this study focuses on fruits, vegetables and agro-processing industries) have grown from Rs177 million in 2003 to Rs740 million, a CAGR growth of 8%, though this trend has flattened out after 2011. (See figure 6). These three agro-based commodity types (HS 07, 08 and 20) constitute only about 3% of share in total exports from Pakistan. This share has remained flat since 2013 and used to be lower between 1 and 2% prior to that. Specifically, HS-20 that includes processed agriculture goods has the smallest share in total agro-based exports—having grown from 3% of total agro-based exports in 2003 to 7-8% in recent years (see figure 7 and 8).

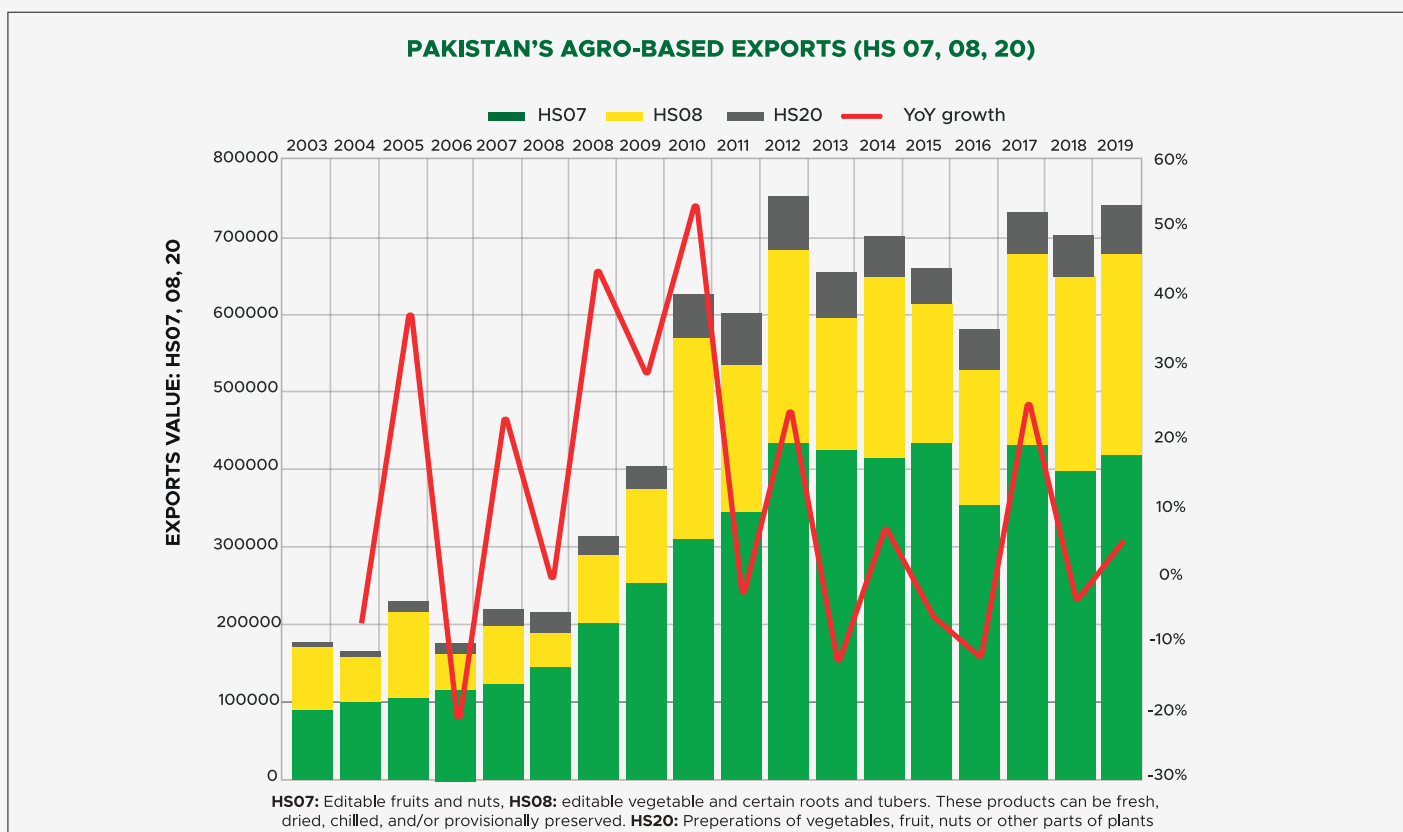


FIGURE 6: PAKISTAN'S AGRO-BASED EXPORTS

¹⁵ HS07: Edible fruits and nuts, HS 08: edible vegetables and certain roots and tubers. These products can be fresh, dried, chilled, and/or provisionally preserved. HS20: Preparations of vegetables, fruits, nuts and other parts of plants including prepared and preserved products

SHARE OF AGRO-PROCESSED GOODS (HS-20) IN TOTAL AGRO-BASED EXPORTS (HS 07, 08, 20)

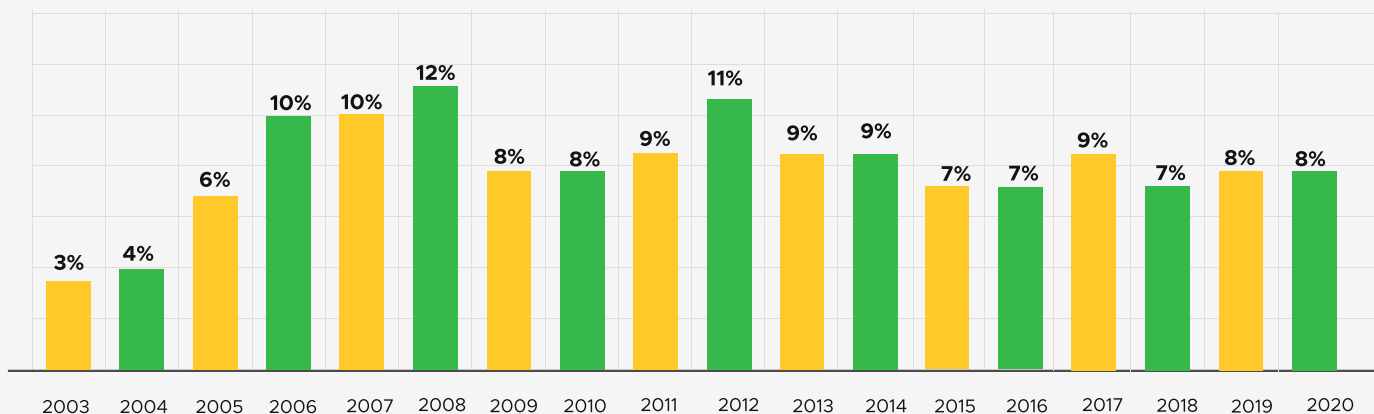


FIGURE 7: SHARE OF PROCESSED GOOD EXPORTS

HS07: EDIBLE FRUITS AND NUTS, **HS 08:** EDIBLE VEGETABLES AND CERTAIN ROOTS AND TUBERS. THESE PRODUCTS CAN BE FRESH, DRIED, CHILLED, AND/OR PROVISIONALLY PRESERVED. **HS20:** PREPARATIONS OF VEGETABLES, FRUITS, NUTS AND OTHER PARTS OF PLANTS INCLUDING PREPARED AND PRESERVED PRODUCTS

PROCESSED AGRO GOODS EXPORTS

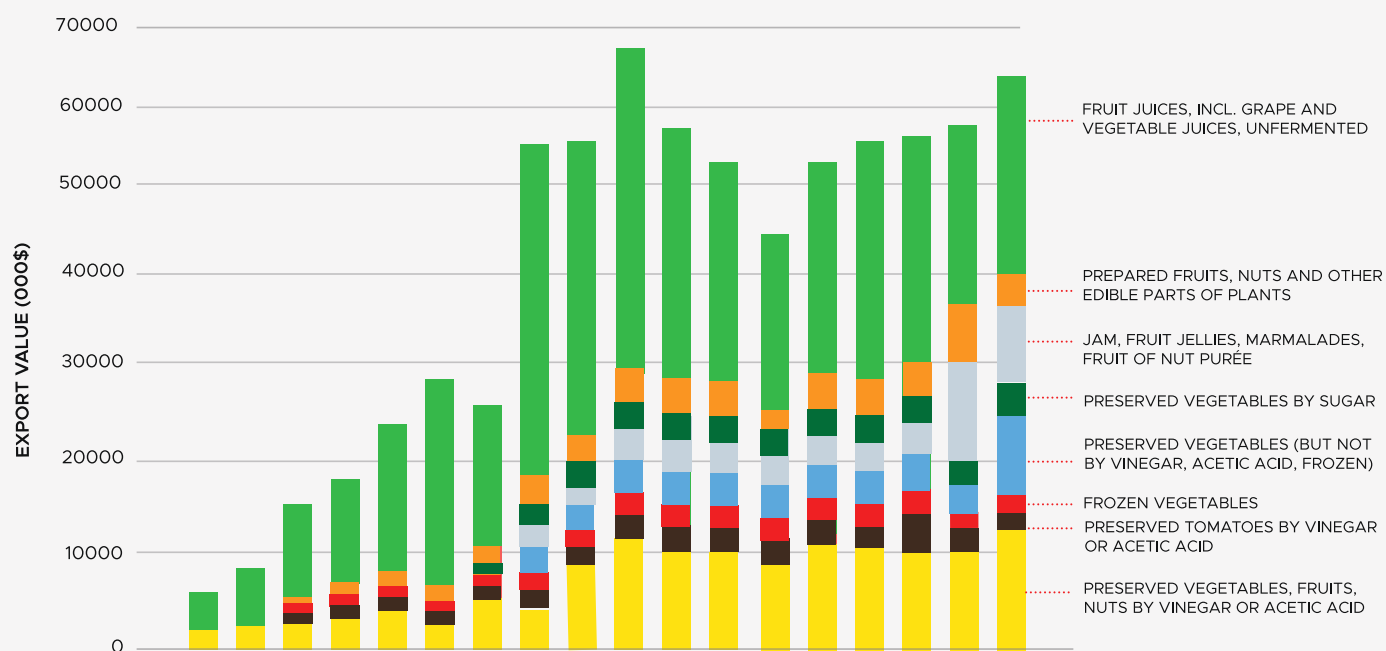


FIGURE 8: PROCESSED AGRICULTURE EXPORTS BY PRODUCT

Among processed goods: fruit juices, jam, jellies, and vegetables preserved by vinegar are the prominent exported goods (figure 8).



Major markets for Pakistani processed agricultural goods are the United States, United Kingdom and Afghanistan among other countries with smaller shares such as UAE, Canada, Qatar and Saudi Arabia. Afghanistan used to be the primary market for Pakistani processed agro-based goods dominating with 30-40% share until 2012. This share dwindled down to 8% by 2020. Instead of Afghanistan, exports to countries such as US, UK, Canada and Australia grew, primarily of fruit juices, jams, vinegar preserved vegetables. The shares of these countries have been slowly climbing each year indicating Pakistan's potential to gain access into these rich markets in processed agro-based commodities. The other set of countries where export share has increased are middle eastern economies such as UAE, Qatar and Saudi Arabia with the highest number of exports going to Qatar. Shorter distance in terms of travel times and cost of transportation may have presented greater opportunities for exports in these markets once Afghanistan left a vacuum. A major underutilized market is China where the country's share in Pakistan's processed agro-based exports is less than 0.5%, remaining more or less stagnant over the past decade or so.¹⁶ Pakistan's main exports to China are in cereals, such as rice, wheat, muslin, maize or corn, barley, rye and oats.

IMPORTING MARKETS FOR 80% OF PAKISTAN'S PROCESSED AGRICULTURE EXPORTS

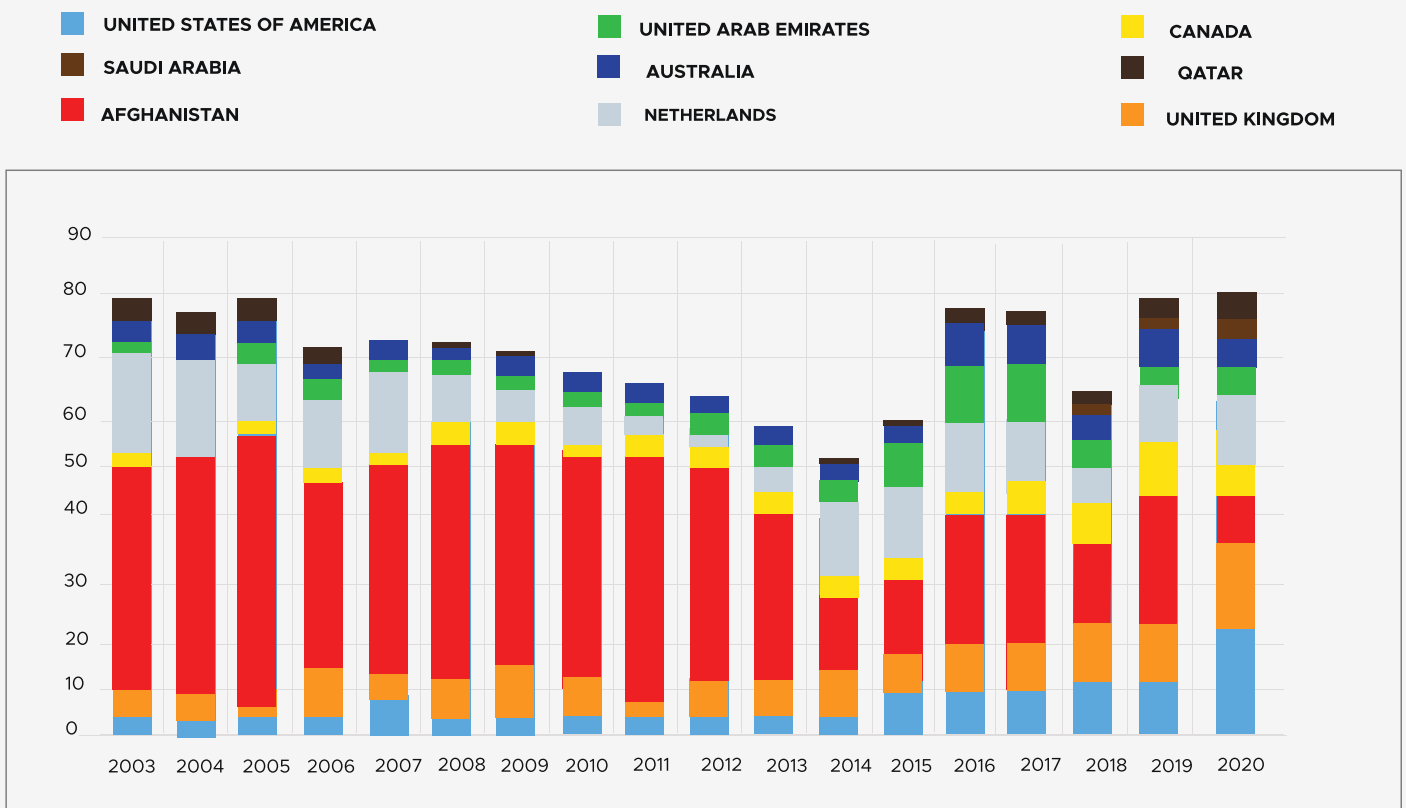


FIGURE 9: EXPORT DESTINATIONS FOR MAJORITY OF PAKISTAN'S PROCESSED AGRICULTURE GOODS

Promisingly, Pakistan has gained market share in processed goods that have also witnessed growth in world imports (Figure 10) where preserved vegetables (using preservation means other than vinegar), vegetables preserved by sugar and preserved fruits have performed the best while jams, fruit jellies and marmalades are also in the winners' quadrant. These are the areas where Pakistani businesses and KP businesses must channel investments. Vinegar preserved vegetables, fruits and nuts have a growing international market where Pakistan has lost market share.



¹⁶ International Trade Centre database

GROWTH OF NATIONAL SUPPLY AND INTERNATIONAL DEMAND FOR PRODUCTS UNDER HS-20 (AGRO-PROCESSED GOODS) EXPORTED BY PAKISTAN IN 2020

(SIZE OF THE BUBBLE IS PROPORTIONAL TO EXPORT VALUE IN \$000)

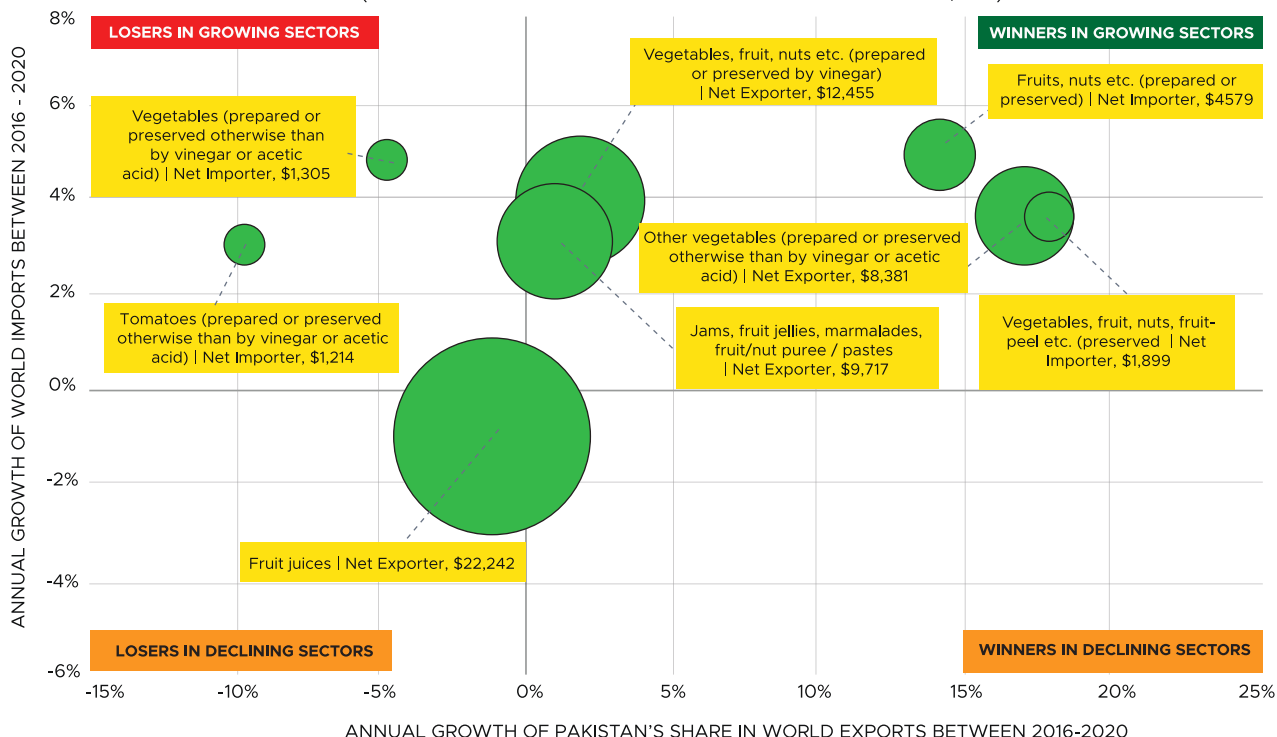


FIGURE 10: PAKISTAN'S WORLD MARKET SHARE IN AGRI-PRODUCTS VS GROWTH IN INTERNATIONAL DEMAND

GAINING MARKET ACCESS INTO CHINA

Border proximity, trade routes through CPEC, new investment in SEZs and existing FTA Phase-II should open massive doors for Pakistan to increase its agro-based exports to China. Figure 11 shows indicative potential exports to China of nearly \$732 million in agro-based products (HS07,08,20), current exports to China in these products however, is merely \$8 million.

PAKISTAN'S INDICATIVE POTENTIAL EXPORTS TO CHINA (- HS 07, 08, 20)				
PRODUCT GROUP (000\$)	PAKISTAN'S EXPORTS TO CHINA (2020)	CHINA'S IMPORTS FROM WORLD (2020)	PAK'S EXPORTS TO WORLD	INDICATIVE POTENTIAL EXPORTS
Edible fruit and nuts; peel of citrus fruit or melons	7,323	12,016,014	418,597	411,274
Edible vegetables and certain roots and tubers	303	1,956,593	259,874	259,571
Preparations of vegetables, fruit, nuts or other parts of plants	295	1,343,851	61,803	61,508

FIGURE 11: PAKISTAN'S INDICATIVE POTENTIAL EXPORTS TO CHINA IN AGRO-BASED GOODS

While Pakistan faces considerably lower tariffs in frozen vegetables and fruits as well as dried fruits in China, seed access, development, and certification inhibit yield.

In Phase-II of the FTA, Pakistan has gained parity in tariffs for processed fruits and vegetables (such as frozen or dried) with ASEAN countries. This provides competitiveness to Pakistani goods compared to major exporters. Investment in processing facilities along the CPEC route (such as storage, warehousing, packaging, dehydrating etc.) could give Pakistan the much-needed edge. KP grows a variety of vegetables and fruits including carrots, turnips, and potatoes with improving production. If KP devotes resources toward seed multiplication and diversification and also provides legal cover to them, this is an area for considerable growth.

Current tariffs for Pakistan in fruits juices, pulps, purees and jams are higher compared to China's other top exporting partners.

Current tariffs for fruits juices are 20% which are to be lowered to 0% gradually by 2034 under phase-2. However, till 2028, tariffs will remain 10% as compared to the zero-rate offered to ASEAN countries.

KP is producing and has the potential to expand production in apricots, peaches, apples, plums, tomatoes. Fruit juices, particularly, apple juice and tomato juices could be exported to China if tariff competitiveness is achieved. Tariffs are to be lowered across a horizon of 10-12 years. Domestically, while fruit pulp and leather are effective ways to reduce fruit wastage as lower grade fruit can be used for pulping, there is a lack of investment in pulping plants. If Pakistan seeks parity in tariffs from China in these products, it will have to build capacity and improve competitiveness. As discussed earlier, specific to KP, the segment is marred with inadequate processing facilities as well as infrastructural and systematic supply chain gaps.

China has strict non-tariff compliance measures such as SPS requirements which are stricter than international requirements, invasive inspections, and/or favorable arrangements (such as licenses) with ASEAN countries.

Fruit juice exporters in Pakistan find it difficult to access the complete information on SPS requirements. Meanwhile, export of pulp requires compliance with maximum pesticide residue level regulation. KP farmers already suffer from significant gaps in their knowledge base and are typically not aware of the quality and quantity of pesticides allowed for exports. Preparedness and education of farmers is critically needed. In addition, KP farmers do not have access to technology and processing facilities. Post-harvest activities in KP are manual, time-consuming and inefficient leading to higher wastage. At the same time, the lack of cold storage spoils the fruit before it is sent for processing.

Marketing, branding and consumer awareness mars market access.

KP produces a large variety of (fresh and mature) apricots, peaches and plums with a diversity of flavors and quality. But they are not marketed to key exporting markets, including China.

CAN KP TAP INTO THE EXPANDING POTATO PROCESSING DEMAND?

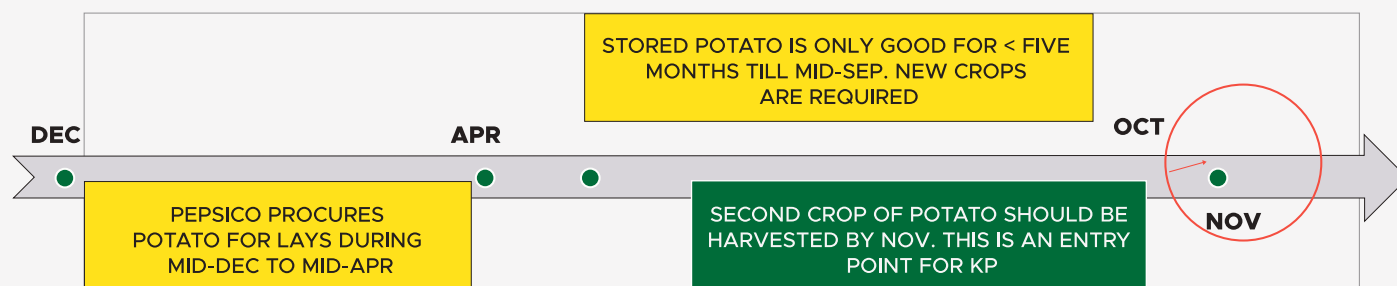


Though production of potatoes in KP has grown over the past years with improving yield, KP's production constitutes only 3% of total potato production in Pakistan. Overall, Pakistan produces 3.8 million tons of potatoes with an average yield of 22.5 tons per ha,¹⁷ higher than the global average, but lower than countries like Egypt, Iran and Turkey where yield is around 30 tons per ha. In Punjab, potato production has grown substantially on the back of improved harvest processes and better irrigation facilities. Punjab now constitutes 94% of all potato production which is supplied across the country for consumers, processing industries and exports. Pakistan's exports about 10% of its potato production abroad, mainly to UAE, Malaysia, Afghanistan, Sri Lanka, Indonesia, and gulf countries, though due to low productivity and inefficiencies in the value chain, the prices fetched by Pakistani potatoes in international markets are 62% lower than global average export prices.

¹⁷ Tons per hectare is calculated

Markets in the Middle East and China remain untapped and could be accessed if investment comes into potato processing and value chain development. The processing areas include frozen potatoes, flakes/powder, potato chips and other processed products such as dehydrated chips, potato flour, or potato starch etc. Currently for processing, potato chips dominate the domestic demand constituting 85% of the snack business in the country. The utilization of raw potato by the processing industries has grown from 1% to 6.3% between 2014 and 2017, majority of which (70%) is used by PepsiCo Pakistan¹⁸. The rest is supplied to several new local brands. The snack market has grown 25% over the last five years and is estimated to grow at 20% over the next five. This offers tremendous opportunities for potato growers; and not just those in Punjab.

PEPSICO'S POTATO PROCUREMENT



PepsiCo currently depends largely on Central Punjab including Okara, Sahiwal, Gojra, Kasur, Faisalabad etc. for the procurement of its agri commodities. Recently, for potatoes, PepsiCo is developing new fields around Multan. For Lays chips, PepsiCo procures potato from mid-December to mid-April and stores the inventory for the remaining time period till next harvesting. Since the potato crop cannot be stored for more than five months as its quality deteriorates over the stored period, PepsiCo plans to establish a second crop of potato in Kalar Kahar, Dir, Swabi, Charsada, Kalam, Manshera. The second crop of potato will be harvested any time before December, in mid-November or the first week of November.

HOW CAN KP POSITION ITSELF AS A CONTENDER IN THE POTATO PROCESSING INDUSTRY GAME?

While KP's production of potato has grown, its yield of 14% is lower than the national average. A dominant factor for low productivity is the non-availability of quality seeds. Most seeds have to be imported which is costly, especially for farmers in KP who have small landholdings and limited access to liquidity and finance. Ultimately, farmers rely on poor quality seed which affects the productivity of their crop as well as its quality for further processing. Because of the small size of their farms, farmers often cannot commit to long-term contracts which takes processing and snack industries away from KP.

A long-term contract is desirable for processing firms where they can pre-determine prices and ensure better control over quality and characteristics of the produce. The ideal model for Pepsi would be contract farming. In India, Pepsi has adopted a long-running partnership model with Indian farmers using modern contract farming practices. This, according to Pepsi, has helped Indian farmers—mostly small—to increase productivity, introduce high yielding potato varieties to their farms, adopt sustainable farming methods, and practice collaborative farming. Pepsi has facilitated these farmers in gaining access to finance and insurance services and reducing their liquidity concerns and risks.

¹⁸ "Potato Cluster Feasibility and Transformation Study". Cluster Developed Based Agriculture Transformation Plan Vision 2025. Planning Commission of Pakistan, Ministry of Planning, Development and Special Initiatives, Feb 2020. Web. https://www.pc.gov.pk/uploads/report/Potato_Cluster_Report.pdf

For Pepsi and other snack makers, it has been fairly easy to procure from Punjab. Farmers own big parcels of land with better access to credit and finance from formal lenders. Most of the farms in Punjab are mechanized, and have access to better quality seeds which are certified. Processing facilities such as cold storage and warehousing are available and large growers have adequate knowledge of crop management. In 2020, the Planning Commission identified three main potato clusters in Pakistan to further develop and boost. Interventions targeted two major potato clusters in Punjab (Potato Punjab 'A' Cluster with Okara as its centre point and Potato Punjab 'B' Cluster with Chiniot as its centre point), and one cluster in GB (Potato GB Cluster with Hunza as its centre point). Interventions range from establishment of tissue culture labs with seed multiplication facilities to encourage local production of certified, disease-free and true-to-type seeds, training of farmers for on-farm production of improved seed which would reduce seed imports, providing quality infrastructure to farmers, strengthening international potato links, and encouraging the potato-based processing as a cottage industry in potato-growing areas. This upgradation plan that would be fiscally supported by the federal government is expected to increase potato production by 75,000 tons, provide 36,000 tons of potato for processing and reduce import of certified seed by 45%.¹⁹

KP is not on the radar of federal government intervention. But PepsiCo believes that there are regions in KP such as Mansehra, Dir etc. that have the potential to provide fresh potatoes during the off-season (mainly October, new potatoes from Punjab start arriving in mid-Dec) or to fill the supply gap during times of shortfall for the growing snack industry. Among the many varieties of potatoes in KP, only one has been a success for processing. But there are challenges that need to be addressed:

- KP farmers don't have liquidity; banks do not provide them access to finance and most growers are not accustomed to long-term contracts
- There is no proper agriculture business environment. Even where there is potential, farmers don't have the required cash to invest in better crop management
- KP farmers depend on middleman/arthi for inputs, credit and procurement. In essence, arthi controls the supply chain, and determines the price at which potatoes are sold to the market. They are also able to manipulate the market. Meanwhile, big snack players like PepsiCo prefer to sign contracts with stipulated price before growing, and do not like to work with middlemen
- Contract enforcement in KP is weak

In order for companies like PepsiCo to procure from KP, the KP government must step in and create a viable growth plan for the KP potato clusters. Through public-private ventures, interventions can include: investment in the value chains and processing facilities, providing farmers with pre- and post-harvest education, helping growers attain reliable credit, and set-up labs for certified and quality seeds. The KP government put aside funds to the tune of Rs176 million in FY 21 (Rs509 million in total for the project) for the production of virus free seed potato using tissue culture technology is a good step in the right direction.

SOURCES:

"Potato Cluster Feasibility and Transformation Study". Cluster Developed Based Agriculture Transformation Plan Vision 2025. Planning Commission of Pakistan, Ministry of Planning, Development and Special Initiatives, Feb 2020. Web. https://www.pc.gov.pk/uploads/report/Potato_Cluster_Report.pdf

"Improving potato value chain in district Swat for sustainable Livelihood of farming communities". Ali, H. F., Dr. 2020.

Interview with PepsiCo.

¹⁹ ibid

EXPLORING CONTRACT FARMING MODELS

Small farmers face a host of critical issues that hamper growth. They lack information about modern production methods (that would optimize profits) and are often not connected to the market deeply enough to explore new market opportunities or identify demand. They also have experience in limited crops that they have traditionally grown and may not have the knowledge or the experience of venturing into high-value commodities. Even with perfect information and linkages with the market, small farmers are financially constrained with and do not have adequate means to finance expansion into modern tools, expensive inputs and new crops. Contract farming has been gaining popularity in developing economies where farmers enter into direct sale agreements for a specific good or crop with pre-determined specifications such as price, quality, standards and volumes. The buyers' commitment to the farmer often extends to providing technical assistance, quality seeds, fertilizers and inputs on credit and a guaranteed price for output. Contract farming can be seen as a solution for a wide array of problems faced by farmers in terms of bridging information gaps, facilitating liquidity and reducing market risks.

In KP, as in Pakistan, small farm holders sell through commission agents and depend on them for credit. The agents auction out the produce to a host of clients including processing industries and charges a commission fee to the farmer. The price is determined on the spot at the market given real-time demand-supply dynamics. In this way, though the transaction cost for the farmer is low—as he does not have to deal directly with the market—he also loses any power on price-setting. He also has imperfect information about the market and has relinquished the opportunity to create direct linkages with buyers. Buyers—processors, integrators, firms and others—incur transaction costs in the form of having to inspect the quality and quantity of the produce they bought at the market. This cost would be higher for large processors that require a steady supply of raw material at a certain standard throughout the lifecycle of their value-added product. It makes sense for such processors to enter into long-term contracts with buyers where they can assure volume, timeliness as well as quality and characteristic of the commodity (size, colour, variety, moisture content etc.). But contract farming itself can be tedious for buyers where they often have to do on-ground research to find the right farmers, convince them to come on board, educate them about the terms of contracts, monitor compliance with the contract, and develop a strategy for enforcing the contract.²⁰

There is however, a degree of formality in contract farming schemes that farmers may not be open to. Small farm holders may fear either not being able to meet demand under contract or not get the right price for it. There have been cases—observed in India and Bangladesh—where farmers took out large loans under a contractual agreement and were unable to meet the loan payback obligations because of crop failure or climate changes. The price mechanism is also tricky. If prices are fixed prior to the transaction and the market prices deviate substantially, it can lead to side-selling by farmers violating the terms of the contract (in case price is above the fixed price), or side buying by the contracting firm to purchase from non-contracted farmers (in case the price falls below the fixed price).

A crop farming model that takes into account the potential pitfalls of a long-term contract scheme would be beneficial. The price mechanism, where formula-based pricing is adopted while considering market prices, would elevate pressures on both sides to fully meet the contract's obligations. The contract scheme could benefit from firms or buyers offering credit or facilitating credit through banks (where banks will have the guarantee of a large firm acting as an “anchor” for repayment) as well as offering technical advice. The provincial government's agriculture department and policy-makers can play a key role here by becoming a facilitator to such schemes, assisting farmers in contract knowledge and enforcement. Contracts can also be made with farmer organizations, cooperatives and collectives where there is strength in numbers which would help in negotiation as well as ensure that quantity, quality and other contractual obligations are duly met. KP's existing Farm Service Centres can play a critical role in organizing farmers and helping them develop long-term trading relationships with processing firms, in domestic markets as well as abroad.

²⁰ Nicholas Minot and Bradley Sawyer. “Contract Farming in Developing Countries: Theory, Practice, And Policy Implications”. 2014.

RECOMMENDATIONS



FACILITATING ACCESS TO INPUTS



Quality and certified seed is integral to improve yield. The KP government needs to assign resources to establish clean nurseries in prominent agri clusters, conduct R&D for local hybrids, expand seed production through technology labs and secure supply of certified seeds through Farm Service Centers (FSC) to the farmers. Under the Annual Development Program (ADP), funding is allocated for seed and nursery development and quality assurance of fertilizers and pesticides in KP. However, the shortage of certified seeds still persists. The government also needs to work on legislation for certified seeds and plants needs with strict enforcement mechanisms as compliance is weak. At the same time, farmers need to have legal recourse when suppliers do not provide the right seed or plants. There also should be regulation of agricultural inputs supplier markets to achieve price stabilization.



ENSURING ACCESS TO CREDIT ACROSS THE VALUE CHAIN

KP farmers depend heavily on middlemen for lifecycle financing (without any documentation requirements), access to inputs and market (most farmers sell to arthis) as they have no other choice. This gives the middleman unfettered control over the supply chain and ultimately farmers' profitability. Proper credit availability to farmers and growers needs to be made available along with crop insurance to facilitate access to liquidity at every stage of the growing process at affordable rates. While the KP government can provide mark-up or other forms of subsidies, the root issue is banks' hesitance in lending to small farmers due to perceived high risks.

One option is to venture into developing a Warehouse Receipt system in KP, similar to that being done in Punjab. WHR financing allows the use of crops instead of land as loan security and provides post-harvest working capital to farmers. Meanwhile, banks are able to immediately sell off a very liquid asset which is farmers' crops. The crops are stored in licensed warehouses which issue a receipt that serve as evidence of physical storage of the commodities, as well as the grade (quality of goods), quantity and value of these commodities. This becomes the basis of the financing.²¹ Because of warehousing the produce after harvest, instead of selling it off immediately, farmers are also able to attain better prices for their crops.

A WHR system rollout however would require the KP government to conduct an in-depth feasibility study and plan a facilitative role for itself—which would have regulatory and legislative components—for the private sector to step in. The system requires a licensed warehousing and storage facilities which are currently absent in KP (this would require developing a warehousing industry,²² procedures for licensing agri storage facilities, collateral management companies etc.) while also a commodity exchange where farmers can directly sell and reach diverse markets. In a pilot case, one or two crops will have to be chosen that are deemed viable, and the program can then be extended to more crops. This is certainly a long-term undertaking for the government.

More immediately, a mechanism can be created where farmers in KP could be organized in groups through Farm Service Centers (FSCs) so that loans can be organized at a large scale and banks don't have to incur high transaction costs for small ticket loans. Community lending can ensure better rates for farmers as well.

The KP government could also set up a credit guarantee program. There are enough learnings from various risk sharing programs run by SBP to create an effective program for KP farmers. The SBP has multiple programs which can be availed but there are significant challenges that would need to be surpassed (see section on Value Chain Gap Analysis). The most workable model is to start by building farmers' capacity to attain formal loans and then allocate fiscal resources to bridge the cost of borrowing gap.

²¹ "Study on the Uptake of WHR Financing in Pakistan". Karandaaz Pakistan. Web. https://ijkutb35n5703ea7yt3n9mvi-wpengine.netdna-ssl.com/wp-content/uploads/2017/11/WHR-Financing-in-Pakistan_Paper-min.pdf

²² The SBP has introduced a financing scheme for the establishment, expansion and balancing, modernization & replacement (BMR) of Steel/Metal/Concrete Silos, Warehouses & Cold Storage facilities for storing agricultural produce at a mark-up facility. Web. <https://www.sbp.org.pk/Incen-others/sme-3.asp>



REMOVING INFORMATION ASYMMETRIES BETWEEN FARMERS AND MARKETS AND BUILDING FARM TO MARKET LINKAGES



Pre and post-harvest losses in KP for major produce ranges from 30-40% which is extremely high. There are significant information and knowledge gaps in KP agriculture value chain and farmers end up losing in terms of attaining optimum production, yield and profits. Farmers (and laborers handling crops) need to be trained for better crop husbandry and agricultural practices as they access sophisticated farm technology. Private sector parties need to be engaged for training and FSCs to roll-out such a program. Literacy and entrepreneurial capacity need to be built. That is also one way to eliminate or weaken the deep control of arthis of the entire value chain—from inputs to markets. Arthis should play a supportive role rather than a primary in the value chain.

Secondly, farmers are not linked to the markets. Mechanisms need to be created to build direct linkages of farmers to the market, so they are aware of market and demand dynamics, and grow and produce accordingly while also having pricing negotiation power. Exports require an advanced level of demand awareness for farmers. Once farmers achieve volumes, their reliance on the arthis should naturally lower, but structural issues (lack of finance being a dominant one) hinder volume growth. Together with other interventions, the KP government can work on building a community to connect farmers, processors and exporters. Involvement of successful food processors from Punjab and Sindh can be done to bring their understanding of market needs, product trends and quality requirements. Farmer business groups and local agri support workers need to be mobilized to improve the value chain, remove inefficiencies in pre and post-harvest processes etc. Through public-private partnerships, a detailed program can be developed.

ADDRESSING CORE INFRASTRUCTURE CHALLENGES IN THE PROCESSING INDUSTRY



With improved road networks and special economic zones (SEZs) in various parts of KP under CPEC (such as Rashakai), will ensure the KP farmer will have more access to local and export markets. The SEZs themselves offer investment opportunities for agri-processing facilities and industries. Khyber

- Developing a legally-strong and economically viable **Public-Private Partnership mechanism** to trigger investment in storage and warehousing facilities,
- **Efficient transportation** of produce,
- **Processing plants** of different commodities, **grading/sorting/packing** facilities,
- **Collection centers** that can provide a variety of these services as **one-stop-shop** etc.,
- **Specific incentives** for potential investors, such as tax holidays (available in SEZs), subsidies on loans, and investment grants, make it an attractive proposition to invest in processing to increase value addition in agricultural commodities.

To this end, the Planning and Development Department (P&DD) of the GoKP, through assistance from the SEED Programme, is endeavoring to establish a 1000 acre Food Processing Zone in the Daraban Economic Zone with a fully integrated supply chain linked to downstream food processing and storage facilities. An additional 2,000 acres of land will be provided adjacent to the Economic Zone for corporate farming. The Economic zone includes benefits to processors such as a 10-year income tax exemption and custom duties exemptions on the import of machinery and equipment.

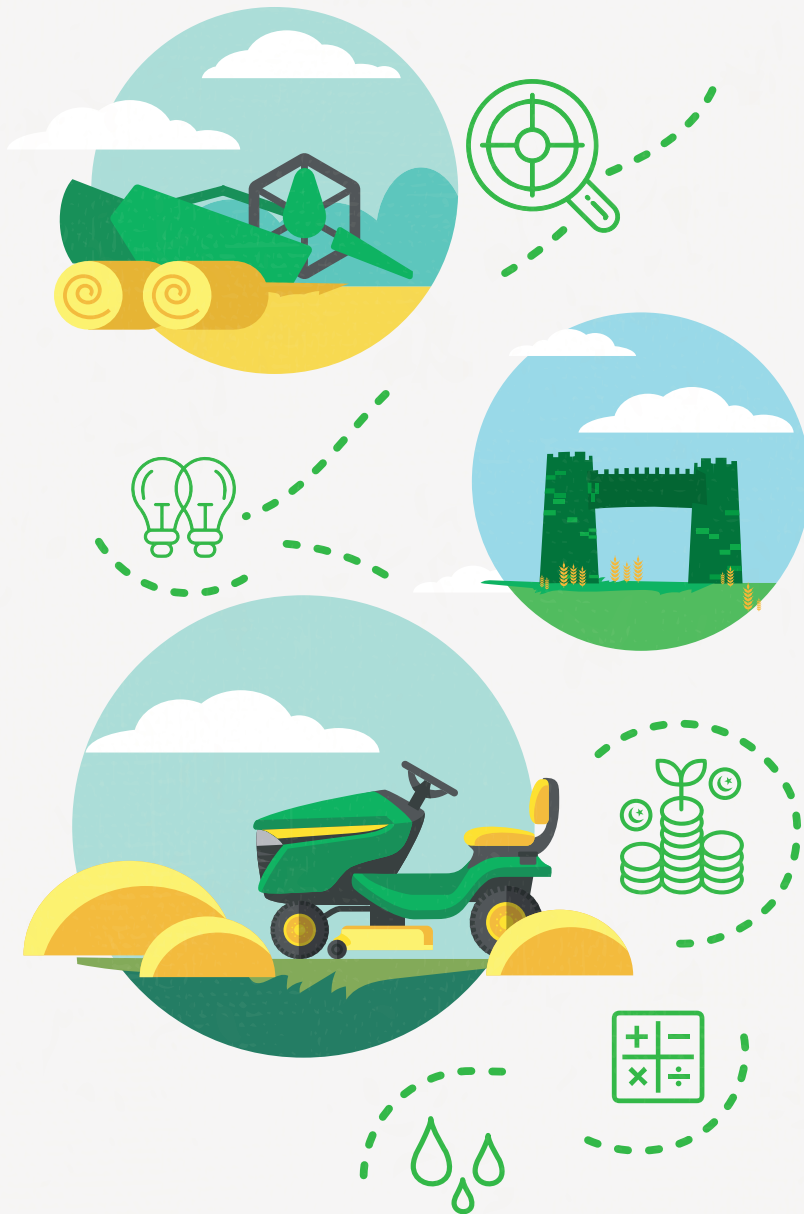
EXPORT DEMAND MAPPING

In order for KP farmers to make informed decisions, it is imperative that the province's agriculture department conduct a mapping of export demand. For instance, there remains significant potential for agro-processing exports to China but Pakistani goods may not be competitive against other countries (e.g., ASEAN). Where tariff competitiveness exists, China may have strict non-tariff measures in place that could be creating information asymmetries, adding to the compliance cost and acting as obstacles to trade.

EXPLORING CONTRACT FARMING

Contract farming has been known to work in many developing economies as it contributes to crop diversification and investment in new technologies and practices. KP's agriculture department and policymakers can play a critical role by becoming a facilitator to a contract farming scheme with a processing firm or corporate acting as the contracting body. The provincial government can assist farmers in developing contract knowledge and enforcement. Contracts can be made directly with chosen farmers or with farmer organizations, cooperatives and collectives which could help in negotiation as well as ensure that quantity, quality and other contractual obligations are duly met. KP's existing Farm Service Centres can play a key role in organizing farmers and helping them develop long-term trading relationships with processing firms in domestic markets as well as abroad.







The Policy Note is prepared by SEED - Sustainable Energy and Economic Development Programme in collaboration with Sarhad Chamber of Commerce and Industry (SCCI). SEED is funded by United Kingdom's Foreign, Commonwealth and Development Office (FCDO). The programme is implemented by Adam Smith International in close collaboration with the Government of Khyber Pakhtunkhwa.

