Ladakh’s Rising Flame:

ADVANCING THE APRICOT INDUSTRY
MESSAGE

Ladakh’s geographic and climatic characteristics has enabled it to produce the world’s most unique fibre, Pashmina and grow exclusive varieties of Apricot. The unique geographic and climatic conditions also play a pivotal factor in the production of the finest seabuckthorn which is packed with high medicinal value. These Trans-Himalayan organic products have unique qualities which are amiss from such products found across the world.

While much is being done to popularise the unique products of Ladakh, concerted efforts by local authorities that address poor integration with the national and international market, support technological advancement and promote Brand Ladakh through the right policy interventions and incentives can catapult these sectors to the forefront of international markets. Exporting these products is also a strategic priority for Ladakh with tremendous potential to transform the economy of the union territory.

Kargil, the second largest town in UT Ladakh and the twin capital of the UT, produces the one of the finest quality of Apricots - Halman along with a host of the varieties. It has been under production in a completely organic manner in the interiors of Kargil district for centuries. It has huge potential for export in domestic as well as international markets however, this golden fruit has not been able to realise its full potential due to its confinement within the boundaries of District Kargil. I am hopeful that the current initiative of the Industries & Commerce Department in collaboration with the Invest India would prove to be a stepping stone for us to help the fruit reach more and more people.

Aiming to showcase the potential of Ladakh’s flagship products, I would like to congratulate to Invest India and officials of Industries & Commerce Department, Ladakh for bringing out this engaging report series on Pashmina, Apricots and Seabuckthorn. I trust that investors will find these publications exceptional resources in their exploration of India and the union territory of Ladakh. I hope to soon welcome you to the rooftop of the world and to participate in the advancement of its flagship products.

(Feroz Ahmed Khan)
ADV. TASHI GYALSON
Chairman/Chief Executive
Councilor, LAHDC, Leh

FOREWORD

Nestled in the laps of the majestic Himalayas, ‘Ladakh’ is one of the highest regions in the world and one of the most unique geographies to visit. It was recently given the status of a Union Territory (UT). Since then, there has been a concerted effort by the people and governments at the local and national levels to leverage Ladakh’s specialty products such as Pashmina, Apricots and Sea Buckthorns and popularize them world over. Putting Ladakh on the global export map, in its specialty products, by creating the necessary market linkages, addressing existing issues and providing policy support and incentives to the local communities to adopt global best practices to make Ladakh a major hub for its niche products is one of the foremost agenda items of the new administration.

Leh, the most accessible town of Ladakh, is an important trade centre and one of the most preferred places for tourism as well. It’s bustling with many young entrepreneurs and the region now stands a chance to make the right advancements in technology, gain investor confidence and construct value chains for boosting its economy. At this point of time, the youth of Ladakh need to find vigor for entrepreneurship, scaling up businesses and capturing the untapped potential to complement the government’s concentrated efforts.

I congratulate Invest India for handling three detailed research projects and highlighting the potential of local industries in Ladakh and especially Leh. I am certain that the potential investors, embassies and companies will find these publications useful in their exploration of India and the Union Territory of Ladakh. I hope to soon welcome you to Himalayan district of Leh to participate in the region’s socio-economic transformation.

(Adv. Tashi Gyalson)
Chairman/Chief Executive Councilor, LAHDC, Leh
Administration of UT of Ladakh

Department of Industries & Commerce

Saugat Biswas, IAS
Secretary

18th November, 2021

Foreword

Ladakh was carved out as a separate Union Territory on 31st October, 2019. Since then the Union territory has focused on a journey of development taking all sector into consideration. The vision of the Hon'ble Prime Minister of India, steered into reality by the Hon'ble Lieutenant Governor Shri. Radha Krishna Mathur has catapulted the populace of Ladakh, bringing them face to face with a new level of prosperity and well being, that is sustainable and focused to the residents of Ladakh.

In the last 2 years Ladakh has seen development in the fields of health, education, social sector, infrastructure, road connectivity, telecommunications, civil aviation, empowerment of grass root democracy and the industrial sector.

Ladakh has embarked on the journey of industrial development by lifting up the indigenous sector, the produce and products of Ladakh. The focus has been on creating entrepreneurs and industrialists from among the people of Ladakh by leveraging the resources available in the Union Territory.

In this journey the Industry & Commerce department of Ladakh has joined hands with various institutions and agencies such as NIFT, NID, KVIC, NIFTEM, INVEST INDIA among others to contribute in their own unique way in this path of development.

INVEST INDIA has been instrumental in conceptualizing Ladakh’s first Incubation centre, supporting in various domain specific areas for supporting the startup ecosystem in Ladakh and are on the way to assist us in the food processing and textile sector. I am glad that the INVEST INDIA is bringing out the preliminary reports on Seabuckthorn, Apricot and Pashmina in consultation with the I&C Department of Ladakh. I trust that the reports will be fruitful in introducing the sectors, theirs use and economic potential to the various potential buyers, processors, financial agencies and entrepreneurs. I congratulate the officials of I&C Department, Ladakh and INVEST INDIA for the effort.
MESSAGE

An amalgamation of some of India’s most unique landscapes and warmest people, Ladakh crowns India’s diversity—both demographic and geographic. Despite its harsh topography and a highly variable cold desert climate, Ladakhi agriculturists have leveraged Ladakh’s environment to cultivate some of India’s most exotic agricultural products.

Leh, the largest district of this union territory, stands out for its spectacular scenic settings and emerging commercial potential. With a population of a mere 1.33 lakh, Leh has carved itself as a buzzing city with emerging entrepreneurs and businesses that are boosting regional indigenous industries and creating many new ones. Leh’s growing and self-reliant rural economy is also a testament to Prime Minister Narendra Modi’s vision for an Amanirbhār Bharat.

Ladakh’s relative seclusion in the Great Himalayas, its picturesque locations and cultural diversity make it favourable for both domestic and international tourism. Ladakh displays a strong and promising potential for upward growth. Not only is the region blessed with an abundance of natural resources like solar and wind power, but it is also a hub for skilled and highly specialised artisans. It produces the world’s finest quality of plush pashmina, apricots and sea buckthorn that thrive in such climatic conditions. The considerable market advantage these products hold over the international competitors is, however, still untapped. The significant and bold steps taken by Prime Minister Modi in the Ladakh region will bring investments into the UT and boost trade and commerce and enable the emergence of an export-oriented economy.

The emerging market for these products has pushed Ladakh at the precipice of rapid economic growth, generating sustained employment and bringing in long term investments from several budding entrepreneurs. Despite gaps in their supply chains, pashmina, apricots and sea buckthorn markets can be enhanced through policy interventions, technological advancements and promotion of global best practices. This will enable these products to maximise their potential and scale newer heights in international value chains.

I congratulate Invest India for publishing three detailed reports that demonstrate Ladakh’s commercial development and local industry potential. I am confident that investors will find these publications to be an invaluable resource as they explore India and the union territory of Ladakh. I am eager to witness the growth of these industries and extensive international support in helping realise it.

(Shrikan Balasaheb Suse) IAS
Foreword

Set amidst the most northern reaches of the Himalayas, India’s recently created union territory on 31st October 2019, Ladakh, is home to among the world’s most unique geographies. The relative seclusion of the region has also allowed for the emergence of a vibrant culture that adds colour to the cold brown desert in which it has flourished. The region is abuzz with new entrepreneurs and industries who are fuelling regional indigenous industries that are a mine of untapped potential.

Products like pashmina, apricots and sea buckthorn are among such sectors that have, over the centuries, come to define Ladakh. Representing both the uniqueness of Ladakhi ecology and its skilled artisans, these products are integral part of the local culture and economy. They are now only just arriving at the national and international stage. Their potential not only promises to generate jobs for hundreds of Ladakh’s youth in the coming years but can also produce significant monetary gains for entrepreneurs whose visions are rapidly changing Ladakh. The emerging market for these products has pushed Ladakh at the precipice of economic growth and prosperity.

I would like to extend my congratulations to Invest India and officials of Industries & Commerce Department, Ladakh for undertaking these three projects and producing three detailed reports that highlight Ladakh’s business transformation course and the potential of its local industries.

(Santosh Sukhadeve) IAS,
Situated in the lap of the vast Himalayas, the pristine region of Ladakh, attracts people from all over the world with its inexplicable beauty and warm hospitality. Among the many main stays of life in the Himalayas are lesser known yet wonderful products such as sea buckthorn, apricots and Pashmina, all a vital source of both, survival and pride for the Ladakhi people. Besides providing much-needed nutrition and warmth in our cold and arid territory, such products also host immense environmental and economic benefits and will play an ever-growing role in the UT’s sustainable development. While the local people have been using them for centuries now, it is in the recent years, that their popularity has increased globally due to their high-quality, organic nature, and ethical trade practices. For instance, the Ladakhi pashmina is the world’s finest wool while our sea buckthorn berry is fully organic by default and the best quality grown in the Himalayan region. Similarly, our unique apricot variety, the Raktsay Karpo, and the Halman are among the sweetest apricot types in the world. Besides their high quality, these products support the livelihood of the local people engaged in their production and also provide a template to promote fair trade practices in these products in the future.

With Ladakh becoming a union territory two years ago, there is a concerted effort by the people and governments to leverage Ladakh’s unique, specialty products and popularize them. The government’s One District, One Product (ODOP) is a landmark initiative in this regard by helping to realize the huge potential of these products through better marketing, branding and export linkages. The Industries Department is also actively involved in promoting these very special products through targeted exports, higher production, value addition and better remuneration for our artisans, farmers and entrepreneurs dependent on them. Once our initiatives to promote and market apricot, sea buckthorn and Pashmina begin to show results, the Department will expand its initiatives and include other Ladakhi products like buckwheat, Goji berry and many other medicinal plants as well.

I complement the Invest India team and my colleagues at the Industries Department in bringing out this series of engaging and insightful reports on some of Ladakh’s flagship products. I am certain this timely effort will provide much needed information to potential investors, embassies and companies to explore, invest and participate in Ladakh’s new journey towards economic and social transformation.

(Moses Kunzang)
Message

Ladakh, renowned as the “Land of Passes” is situated in the most northern region of the majestic Himalayas. The union territory is an amalgamation of cultural and demographic diversity, with immense market potential for sea buckthorn, apricots and the Ladakhi pashmina – a critical part of the heritage of the region. These unique products have been identified under the One District One Product (ODOP) initiative, which under the aegis of ‘Districts as Export Hubs’ is aimed at manifesting the vision of Hon’ble Prime Minister of India to foster balanced regional development across all districts of the country.

Under this initiative, the government is committed to facilitating investments into these products to bolster trade and commerce and enable the transition to an export-oriented economy. ODOP is a transformational step in realizing the true potential of a district – it fuels economic growth, generates employment and regional entrepreneurship. There is a critical need for efficient utilization of Ladakh’s very high potential in terms of labor, land and natural resources which are the basic inputs in the production process. Export promotion will ensure the maximization of these products’ potential and position them in international value chains.

The Strategic Investment Research Unit (SIRU) at Invest India is publishing three extensive reports, that showcase Ladakh’s commercial development and local industry potential. I hope you find these reports informative in your exploration of the very interesting economic opportunities in Ladakh.

Sincerely yours,

Deepak Bagla

DEEPAK BAGLA
Managing Director and CEO, Invest India
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LADAKH: THE ROOF OF THE WORLD

The union territory of Ladakh is a one-of-a-kind combination of nature, spirituality, and adventure. Comprising two districts, Leh and Kargil, Ladakh is India’s highest plateau at a height of over 3,000 metres (9,800 feet). Ladakh is bordered by the Karakoram and Himalayan mountain ranges to the north and south, the Tibet Autonomous Region to the east, and the union territory of Jammu and Kashmir to the west. Ladakh stretches across 45,000 square miles and shares international borders with Pakistan, China and Afghanistan.

Popularly known as the “land of passes,” Ladakh has a chilly and dry climate with an average annual precipitation of about 3 inches (80 mm) and a fragile ecosystem characterised by low plant density, high winds and high-UV exposed atmosphere. It experiences severe winters and houses some of the highest places of the world including its capital and largest town Leh, which is located at an altitude of 11,400 feet. Although Ladakh hosts large and rugged hills hostile to vegetation, it is home to among the warmest people. The region is renowned for its remote mountain beauty and its Buddhist culture and is sometime called “Little Tibet” due to the strong influences of Tibetan culture among its people.

Key Sectors: Tourism and Wellness, Renewable Energy, Textiles, Agriculture and Food Processing.
The benefits and applications of apricot (*Prunus armeniaca L.*) are as diverse as the number of climates in which the fruit thrives. A temperate fruit first domesticated in Central Asia over 5,000 years ago, apricots today are a premium fruit grown on every continent other than Antarctica. Apricot varieties are extensive and dependent on where they are cultivated – from the harsh cold of Siberia to the sunny Mediterranean.

Apricots are prized for their aromatic flavour that can range from sweet to tart and for their extensive use. They are used widely both as fresh ripe fruit, dried candies or in processed food items. Rich in natural sugars, apricots are a carbohydrate-rich commodity that have high contents of fibres, minerals, and vitamins A and C, amino acids and potassium. The fruit is also a source of antioxidants and has tremendous anti-inflammatory properties. Dried apricots are a good natural source of iron and healthy for our blood. In addition, apricot kernels are an excellent source of quality oil and used in cooking and cosmetic products.

**INTRODUCING THE APRICOT**

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**LADAKHII APRICOT**

India produced over 16,145 tonnes of fresh apricot in 2019. This accounted for 0.35 per cent of the total global apricot production. The fruit is grown commercially in limited parts of the country, namely Ladakh, Jammu and Kashmir, Himachal Pradesh, Uttarakhand, and a few North-eastern states. At 62 per cent of the total production of apricots, Ladakh is India’s largest apricot producer. The union territory produces 15,789 tonnes of apricots across more than 2,000 hectares in areas like the Sham belt, Nubra Valley and Kargil, the main apricot growing regions in Ladakh. The estimated annual production of fresh apricot in Kargil district is 10,656 metric tonnes while 250 tonnes of apricot oil and 150 tonnes of apricot pulp are also produced in the district. Ladakhi apricots are famed for their uniqueness and premium quality. However, high wastage of almost 40-50 per cent of the total harvest has severely and adversely impacted the potential of the industry to take on a greater role in global supply chains.

Ladakhi apricots have a unique soothing taste and texture with high sugar contents and total soluble solids. The local Ladakhi apricot, known as *Chuli* has been classified into two distinct groups based on kernel taste. *Khante* has a bitter kernel whereas the *Ngorno* contains a sweet kernel. *Ngorno* is further categorized into two groups on the bases of stone colour. Apricots with white coloured stones are locally called *Raktsey Karpo*, while those with brown coloured stones are known as *Nyarmo*. The *Raktsey Karpo* and *Halman* varieties are unique to Ladakh and preferred by consumers for fresh consumption and for drying, respectively.

With a TSS (Total Soluble Solids) of 37.9° Brix, Rahtsey Karpo is among the sweetest reported apricots in the world. Halman, has a lower moisture content and retains an attractive colour post-dehumidification. Altogether, there are over 80 varieties of apricots grown in Ladakh.

Apricots are an essential element of Ladakhi culture and society, and a crucial source of livelihood for its residents. Ladakh apricots mature later (mid-July and early September) as compared to apricots from other parts of the world that are harvested between late June to early July and August. Apricots of Ladakh, therefore, have a competitive advantage as their season does not coincide with the main apricot season in the market.

However, a deeply fragmented value chain prevents the apricot industry in Ladakh from realising its potential. An all organic and natural product like the Ladakhi apricot has a natural demand in a rapidly changing global consumer market. Bridging this gap between consumers and suppliers demands a targeted approach to formalising the value chain and assessments of market demand, creation of extensive routes and marketing the product among potential audiences in the local and national markets. This report aims to highlight how investors can become part of this transformational journey. Apricots, as crucial elements of the Ladakhi society and economy, promise not only to transform the lives of those involved with it, but also to bring prosperity to the union territory of Ladakh and all its people.

**Major Apricot Growing Regions in Ladakh**

**Kargil, Batalik, Chiktan**
- Town, Baroo, Minji, Hardas, Karkitchoo, Badgam, Chhanigund, Kaksaar, Kakashilkchay, Darchiks, Batalik, Chiktan
- Garkhon, Shakar, Gargar, Chulichan, Shartsey, Dargo, Hundarman, Shiltis, Sotth and Tislo

**Nubra Valley**
- Turtuk, Bokdang and Thang, Tyakshi, Chulungkha

**Sham Valley**
- Nimmoo, Basgo, Sas pul, Nurla, Khatse, Domkhar, Tamachik, Achinathang, Lehdo, Dha, Biama.

**Drass, Bhimbat**
- Kharboo, Thasgam, Shimsha, Goshan, Thasgam, Chokyaal, Takbun

**TGS, Sankoo, Barsoo, Taisuru**
- Salskat, Tambis, Kanooor, Sankoo, Thasgam, Lanketshay, Barsoo, Takat, Khandi, Salsikut, Trespon, Hamburg, Faroon
Despite its benefits and uses, global production of apricots remains relatively small, as compared to other fruits of the same family such as peaches, plums, and cherries. Estimates suggest that between 2016 and 2018, global apricot production was 4.5 million tonnes. The largest producers are Turkey and Uzbekistan, corresponding to 17.3 and 17.2 per cent of global production, respectively. They are followed by Iran, Algeria, Italy, Pakistan, Spain, France, Egypt, and Japan. However, Spain was the top exporter of fresh apricots in 2019, with an export value of USD 139 Mn. It was followed by Uzbekistan, Italy, Turkey, France and Greece. On the other hand, Germany was the largest importer of apricots in 2019, with a total import value of USD 108 Mn.

The international market for apricots is divided in two broad categories: fresh and dried apricot. The market for fresh apricots is estimated to increase at a compound annual growth rate (CAGR) of 11 per cent between the years 2019 and 2024. The forecast, at CAGR of 5.6 per cent, is higher for dried apricot.

In fact, the dried apricot market is projected to reach USD 836 Mn by the year 2026, from USD 538 million in 2018. In addition, an increment of 5 per cent CAGR has also been predicted for apricot oil for the period 2021-28.

3. https://www.mordorintelligence.com/industry-reports/fresh-apricots-market
Largest Global Importers and Exporters of Apricot (2019)

Source: https://oec.world/en/profile/hsg2/apricots-fresh
Ladakh’s Competitive Edge

A thriving market for apricots already exists across Europe and Asia. The unique taste and sweetness of Ladakhi apricots can find ready consumers in these markets, if posited well against its competitors in the global market. Ladakh’s apricot industry is set apart because of the large variety of apricot derived products that are manufactured locally in Ladakh, and which retain the organic and all natural properties of the fresh fruit. In addition, the region is also home to a large produce of dried apricots, the international market for which is growing steadily. Already renowned for its nutritional benefits and applications, Ladakh’s fresh apricots and apricot products can, with the right market interventions detailed here, be primed for global exports.
Ladakh is home to the sweetest apricots in the world. High altitude creates environmental conditions that give the fruit its sweetness.

Ladakh is the largest producer of apricots in India.

Rich source of vitamins A and C.

Rich in amino acids, carbohydrates, and minerals.

Higher sorbitol content than other fruits.

Ladakh is home to 80+ varieties of apricots.

Entirely organic fruits, cultivated without the use of fertilisers and pesticides.
A limited season and short shelf life of fresh apricots has prompted the use of this widely grown local fruit in other ways. Dried apricots, for which Halman is most preferred and known as Phating in the local language, is perhaps the most common and popular means of apricot consumption. In addition, apricots are used towards various processed products that include both food and beauty items. Interestingly, no part of the apricot fruit or the tree is wasted. While the fruit itself has multiple uses, its seed is cold pressed into apricot oil, a widely used and prized product for its anti-inflammatory properties and high vitamin E content. Finally, fallen apricot tree leaves are used towards composting ends. Some of the products manufactured using apricots are:

- Jams
- Juices
- Oil
- Pulp
- Facewash
- Body cream

Until a few years ago, only a few businesses were involved in the processed apricot industry in Ladakh. In recent years, however, a host of young new entrepreneurs have entered the market, bringing youth and a new flavour to an otherwise limited supply side.

On a visit to Leh, Invest India was able to interact with some of these entrepreneurs to understand their business and Ladakh’s apricot industry in general. These include:

**Sindhu Fruit Processing, Leh**

Owned by Tundup Tsering, Sindhu Food Processing is among the oldest Ladakhi apricot business. Mr Tsering began the company in 2002 after 19 years of voluntary experience at the Ladakh Ecological Development Group (LEDGe) where he worked closely with apricots. Sindhu Food Processing currently manufactures apricot jams, juices, and pulp.
Ladags Apricot Store, Leh
Owned by another experienced local entrepreneur, Skarma Tokdan, who spent years at LEDeG becoming acquainted with Ladakhi’s agricultural and horticultural potential. The Ladags Store manufactures and retails various apricot food and beauty products including scrub, lip balms and oils.

Jimpo, C/O Singhey Enterprise, Phyang, Leh
An emerging new startup established in 2018, Jimpo is owned by Thinles Singhey Rinchen under the parent company Singhey Enterprise. They operate out of the Industrial Estate in Phyang and manufacture over 50,000 bottles of a variety of seabuckthorn and apricot products like jams, juices, pulp and squash every month.

Other apricot businesses in Ladakh include:
• Baseej-e-Zaraat & Baghbani, Kargil
• Kargil Gold - The Kargil Fruit Growers Co-operative Society
• Krishak Agritech - Naveen Gahtlawat
• Halman Apricots - Zakir Hussain Zaidi
• New Kargil Food Processing - Hamza Ali
• Kargil Dry Fruit - Mohd. Abdullah
• Ladakh Fine Foods, Changspa Road, Leh
• Lampa Fruit Preservation & Canning Centre, Lampa, Nurla, Leh
• Organix Products Ladakh: Manufacturers of apricot oil, cream, lip balm, lipstick, kajal, soap, and scrub.
Advancing the Apricot Industry
It is not uncommon in Leh to find vendors of dried apricots (khumani) populate local markets and apricot derived beauty products line store shelves. Ladakhi apricots (both the Halman and Raktsey Karpo variety constitute 62 per cent of India’s total apricot harvest. Yet, the popularity of the fruit rarely seems to extend beyond the borders of the northern desert which it calls home. Worse yet, even within Ladakh, the apricot fruit remains vastly underutilised. Apricot processing businesses suggest that the fruit’s applications are not widely known. Limited production and the lack of an organised market combined with a crushing ban on the export of apricots outside Ladakh due to the incidence of codling moths (Cydia pomonella), has served to seriously cripple a promising indigenous industry.

The twin challenges of lack of consumer demand and unfavourable policies has created a yawning gap between the industry’s potential and its current standing. Furthermore, Ladakhs’ geographically difficult and climatically harsh realities has afflicted the apricot business with a host of complex yet solvable challenges.

Absence of Complete Supply Chain

There are only a handful of businesses involved in the processing of apricot and manufacturing of products like jams, juices, pulp and squash. It is not for lack of trying or availability of raw materials. Processing units are forced to limit their capacities based on assumptions of market demand. This ad-hoc market structure precludes the possibility of the emergence of a formalised apricot industry in Ladakh.

A central problem is the short shelf life of apricot fruits that flower in June and are harvested by September. Apricots are the most perishable fruit after strawberries, and this impacts their market in three ways: First, businesses get no more than two weeks between harvest and manufacturing the processed product lest the fruit rots. Second, it prevents the emergence of a national market even though the potential for a sizeable demand exists. Third, and most important, close to 50 per cent of the apricot harvest is wasted annually because of the lapses within an unorganised supply chain that delay transport from harvesters to processors. Establishing a cold chain could, therefore, significantly increase the life of apricots and help businesses sustain a revenue model within this sector through the year.

Furthermore, there is an acute lack of integration with local and national markets. Transport within and outside Ladakh is often dependent on weather and road conditions, and it is not atypical for consignments to take weeks to arrive at their destination. Raw apricots are highly perishable, and this prevents sizeable exports of the fruit beyond already established markets. Additionally, the absence of large national demand, primarily due to lack of awareness, has prevented the growth of Ladakhi apricot and apricot products beyond the union territory. There are few, if any, wholesalers of dried apricots and processed apricot products in India. This deep disintegration with Indian markets has limited the scope of Ladakhi apricots and stunted the growth of the industry.
Another significant challenge for apricot businesses is the absence of support industries within Ladakh. Manufacturers must rely on importing machinery from Delhi. Not only is the transport expensive, but also takes weeks before reaching Ladakh. Furthermore, in the event that a machine part fails, owners must rely on importing the part from Delhi or inviting technicians to evaluate the problem. This severely stunts their production capacity since the entire process can render the machine unusable for a week or two.

A significant cost to businesses is bottling of products. Most units use glass bottles for jams and juices while plastic bottles are preferred for pulp and squash. Neither the plastic bottles nor glass bottles are manufactured locally in Ladakh. Businesses shared with Invest India that while starting out in this sector, they used recycled beer bottles to package juices. However, this made for unappealing packaging and was not received positively by consumers. This had two repercussions: now businesses must rely on importing bottles from hubs like Delhi. This is expensive and unfeasible since difficult roads can often break many bottles enroute. This also prevents exports of products to other parts of the country. The second result was that companies bought machines to manufacture glass bottles at their unit. Since they are not trained in bottle manufacturing, this, too, has proven to be unfeasible and led to immense wastage.

As stated here, transporting products packaged in glass bottles is difficult due to the harsh topographic conditions in Ladakh and the sheer distances between the union territory and other large urban centres. Businesses have tried to pack their products within cardboard boxes, but the absence of local paper companies makes the cost of acquiring cartons prohibitively expensive.
Lack of Technological Advancement

Attempts to create a formal apricot industry in Ladakh are still in their nascent stages. Among the business owners that Invest India interacted with, at least two had decades of experience working with the LEDeG while others had to finish an academic course in Jammu. This familiarised them with some of the technologies in fruit processing. However, technological advancements are slow to come to Ladakh and as a result, processing units are seldom able to expand their business through adoption of technology. Furthermore, the lack of access to emerging technological trends has prevented innovations too. It wasn’t until recently, for instance, that businesses learnt about apricot chocolates. However, they are still not manufactured in Ladakh.

The most glaring lack of technological advancements is in drying apricots. Immensely popular in the local market, dried apricots are essentially dehumidified apricots that are retailed through the year and can withstand variations in temperature. These are available for almost all varieties of apricots grown in Ladakh although the Halman is the most popular and may be with or without their seeds. Typically, local sun-dry apricots on the roofs of their homes. The process generally takes less than a week. However, since Ladakh is a desert, this exposes them to dust and insects. To overcome this, DIHAR has created a greenhouse-drier that attracts sunlight and dries the apricots placed within it. However, the uptake for this has not been very high and roof drying remains common. An industrial level provision for drying apricots could, therefore, be extremely beneficial for the locals apricot industry.

The Threat of a Changing Climate

Cultivators shared with Invest India that apricot yields in Ladakh bear evidence of a changing climate. Cultivating periods are changing because of shifts in established seasonal precipitation patterns. Apricots need a moderate climate to thrive in and warmer temperatures, especially during the summers, do not bode well for the harvest. A cultivator believes that apricots used to be more nutritious before but constant changes in the soil, water and environmental conditions has led to a deterioration of their quality. Furthermore, unpredictability of rains is causing unprecedented damage. Rains are believed to be good at the time of harvest and not flowering, as the region has witnessed over the last few years. Greater research into changing climactic conditions and their impact on the cultivation and harvest of apricots is, therefore, of urgent need in Ladakh.
EMERGING OPPORTUNITIES FOR LADAKH’S APRICOT INDUSTRY

Opportunities for Ladakhi apricot businesses extend from the type and size of apricot trees sown to the fine details of marketing the product, and include the broad spectrum of activities that bridge the first step and the last. For investors, this is a sector with unparalleled opportunities.
The broken value chain for apricots in Ladakh prevents quality assurance of apricot produce and innovation within the sector. Given the primacy of Halman and Rakstey Karpo among the large variety of apricots, there needs to be better research and promotion of the most premium quality of apricots. The department of horticulture can lead such a project. Post recognition, uniformity must be maintained through mass propagation on plantations that are created for commercial cultivation. Plantations apricots can replace wild apricots inferior in taste and quality and formalise a sector wherein most procurement occurs informally (highest bidder gets all). This will protect the fragile ecosystem of this high stress location.

Cultivators need to be trained in standard practices and exposed to emerging techniques in manure and fertiliser application to improve the efficiency of their orchard and overall yield. DIHAR also recommends adoption of a micro-irrigation system that reduces dependence on erratic water supplies. Farmers could also be provided with harvesting tools that increase productivity during a short and stressed season. Furthermore, a post-harvest integrated management system needs to be created such that wastage from farm to unit is reduced and the least possible.

Enhancing Cultivation Techniques

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Logistical Support to Enhance Supply

A concern that many businesses shared with Invest India was the 50-year-old government-imposed ban on sale of apricots outside of Ladakh. The ban was introduced because of the codling moth infestation that affected apricots could carry to other parts of the country, threatening the destination’s ecosystem as well. The recent export of 150 Kg of Halman apricots to the Dubai Expo 2021 has raised hopes among local businesses about the resumption of exports.

The threat of pest infestation can be addressed by adopting an Integrated Pest Management (IPM) approach that involves all levels of the supply chain: from cultivators, horticulturists, government agricultural, research institutes, village heads, local communities, and NGOs in the UT. An economical way to avoid pest problems is creating an environment that discourages pests and reduces the tree’s susceptibility to damage. Pests overwinter and survive on tree parts and debris. Therefore, sanitizing farms thoroughly between two seasons is crucial to preventing pest infestation. Farmers must gather and destroy fallen and remaining fruits and remove dead leaves from trees post mid-November. The most common organic method of control of insects is the application of Bt. (Bacillus thuringiensis), a bacterium that releases a protein called endotoxin that poisons the insect digestive system.

To showcase the primacy of Ladakhi apricots, the government of India could replace the current import of Afghan and Turkish apricots. Such a step would provide potential consumers across the country an added incentive to explore Ladakhi exports. Furthermore, this would bring increased order to the supply chain and make the industry more globally competitive.
Building an Integrated Value Chain

Apricots in Ladakh are grown and sustained within a largely informal economy. Benefits of an expanding industry must reach the locals through an integrated value chain that protects the origin of manufacturing. This would mean that instead of exports of fresh apricots from Ladakh to processing units in India, the final product is manufactured within Ladakh itself. Not only does this ensure the purity of the product, but also recognises the work of local farmers, cultivators, MSME processing units, and retailers within the local market.

This is especially important for Ladakhi apricots that are grown in a traditional manner, without the use of fertilisers and pesticides. A completely local value chain would retain this special property and allow apricot products from Ladakh to acquire an organic certification from the government of India. In a changing market where more consumers are shifting towards all natural and all organic products, this could greatly enhance the marketability of apricot goods.

In addition to an organic certification, a Geographical Indication (GI) certification must also be sought for Ladakhi apricots. The Ladakh UT’s unique climate provides the fruit with the flavourful qualities and attributes that make it especially sought after. A GI tag could enhance the commercial potential of fresh Raktsey Karpo and Halman and its derived products. Thanks to the interventions of LAHDC, Kargil and various Apricot stakeholders in the district, the Halman apricot has already been identified as Kargil’s unique product under the One District One Product (ODOP) scheme of the government of India.

These interventions would serve to build ‘Brand Ladakh.’ The region is an emerging centre for cultural, ecological, and commercial exploration. Tying its most famed products with its existing image could serve to ignite wider curiosity in the region and significantly enhance its economic potential and revenue from tourism.
Marketing Apricots

A severe obstacle to the growth of apricots in Ladakh can be overcome by targeted marketing of the product within and outside Ladakh that details the nutritional benefits of the fruit and its widespread uses. There are three ways that marketing can be enhanced.

First, Ladakhi businesses and entrepreneurs face difficulties in the design and packaging of their products. Labels are designed and printed locally. Not only do these not list the ingredients of the product in their entirety but are also often unattractive and made on unsuitable paper. This prevents wider consumer adoption. To retail online or outside Ladakh, businesses must label and package their products appropriately and in line with consumer trends.

Second, a widespread media and social media campaign can be undertaken by government authorities to introduce the national audience to apricots and their products. Focus must be brought to the uniqueness of Ladakhi apricots, both in taste and manner of cultivation. Furthermore, given the small size of the supply and demand market, consumers can be attracted to the exclusivity of the product, a strategy that has previously worked well among younger audiences.

Following from this, businesses must ensure to sell smaller quantities of their product. Two reasons support this proposition. One, previous experience of a Ladakh apricot business suggests that larger packaging of apricot products is unsustainable for consumers. It takes longer to finish and may lead to wastage. Two, smaller packaging better reflects the small area under cultivation of apricots. A large demand for apricots could not be fulfilled by the current area under cultivation and increasing it rapidly would only bring tremendous ecological stress to the region.

Perhaps the greatest marketing tool is the UT administration’s proposed Ladakh Apricot Blossom festival, that prompts a comparison to the internationally popular Japanese Cherry Blossom Season. A visual delight, the Apricot Blossom festival is likely to boost UT tourism and the local apricot industry, paving the way for greater national and international recognition.
## Proposed Interventions and Implementing Agencies

<table>
<thead>
<tr>
<th>Problem</th>
<th>Proposed intervention</th>
<th>Implementing Authorities</th>
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<tbody>
<tr>
<td>Absence of integrated supply chain: poor market assessment, lack of link with national market</td>
<td>Undertaking a ground level research project to ascertain area under apricot cultivation and annual harvest. Build domestic and international market for apricot products and increase shelf life of fresh apricots by introducing a cold chain.</td>
<td>Directorate of Industries and Commerce, Ladakh; Ministry of Agriculture and Farmers’ Welfare</td>
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<td>Absence of support industries: bottling, transport, paper</td>
<td>Better integration with existing industries in nearby states, improving quality of roads to reduce travel time for machines, goods, and people.</td>
<td>Directorate of Industries and Commerce, Ladakh</td>
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<tr>
<td>Lack of technological advancement</td>
<td>Making cutting edge technologies more readily available to businesses in Ladakh. Holding regular workshops to acquaint supply chain with best practices.</td>
<td>Directorate of Industries and Commerce, Ladakh; Ministry of Commerce and Industry</td>
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<tr>
<td>Climate change</td>
<td>Greater research into the potential consequences of climate change on cultivation periods and harvest. Developing adaptation methods to offset costs.</td>
<td>DIHAR; LEDeG, Ministry of Environment, Forests and Climate Change</td>
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<tr>
<td>Pest management and ban on exports.</td>
<td>Encouraging an Integrated Pest Management (IPM) system that can effectively address the issue and allow for resumption of exports from Ladakh</td>
<td>DIHAR; Central Arid Zone Research Institute, Sher-e-Kashmir University of Agricultural Sciences &amp; Technology of Jammu University in Jammu, Jammu &amp; Kashmir (SKUAST)</td>
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<tr>
<td>Limited demand in the domestic market and weak presence in foreign markets.</td>
<td>Marketing that builds an audience by focusing on the organic cultivation, sumptuous taste and health benefits of Ladakhi apricots. Replace import of apricots from overseas in army rations. Granting of organic certification and GI (Geographical Indication) tag.</td>
<td>LAHDC; Ministry of Commerce and Industry; APEDA; Government of India.</td>
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</table>
Apricots are an essential feature across the many climatic zones of the Northern Hemisphere. Countries as climatically diverse as Turkey, Uzbekistan, Algeria and Spain are leading producers and exporters of this fruit. Growing global demand for fresh and dried apricots has brought the fruit into the limelight and highlights its tremendous potential for India’s own industry which is led by Ladakh. Lining the harsh conditions of the Ladakh desert, apricots have become an important symbol of ecological diversity in India. By leveraging the existing global demand, Ladakh’s indigenous industry can indeed become an important node in the global supply chain.

A variety of reasons have prevented the Ladakhi fruit from gaining its rightful place in the global market. A lack of awareness of apricots and their benefits has stalled growth for the fruit in the national market. Harsh weather conditions and the region’s remoteness have created logistical challenges and poor market linkages and precluded the emergence of support industries for apricot. Furthermore, limited technological advancements and pests have prevented the natural growth of the industry.

Since the region was made a union territory two years ago, there has been a renewed push in bringing Ladakh’s unique native products to the attention of the country and the world by streamlining efforts to promote these products, encouraging greater local production and creating the necessary infrastructure for these commodities to reach far and wide. Doing so is not only important for its associated economic benefits but also for minimising the impact of climate change in the region as plants like apricots provide a much-needed green cover to the cold desert of Ladakh and ensure slope stabilisation and better oxygen levels at such high altitudes. Through discussions with cultivators and processors based in Leh, this report has highlighted the existing challenges in the value chain and suggested interventions to capitalise on the opportunities within the apricot industry that can make it export-oriented and catapult it to global competitiveness.

Already, the Ladakhi apricot can differentiate itself by its sweetness and the unique white-seed variety of Raktsey Karpo. Cultivated entirely organically, the Ladakhi apricot is a pure product of nature and retains all the goodness it has to offer. The situation is changing as favourable government policies take root and young entrepreneurs innovate and expand the industry’s footprint in Ladakh and beyond. The recognition of apricot as a horticultural crop, thanks to the efforts of DIHAR and LEDeG, will also provide a much-needed boost to the industry. However, the need for a Geographical Identification (GI) tag and organic certification remains and must be expedited so that Ladakh’s apricots and their cultivators gain recognition for their uniqueness.

In a post-Covid world, as global supply chains realign themselves to changing priorities, India’s economic opportunity and market diversity will be widely recognised. Under the ‘Amanirbhar Bharat’ campaign, we will be able to strengthen our own supply chains and enhance indigenous industries in strategically important regions like Ladakh. By so doing, we will secure livelihoods and the economy of a region whose cultural diversity makes India yet more colourful and vibrant.
ANNEXURE

The following table enlists the different permits and licenses required by apricot companies and startups to export their products to the respective countries.

<table>
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<tr>
<th>Exporter</th>
<th>Exporter Compliance</th>
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<tr>
<td><strong>INDIA</strong></td>
<td></td>
<td><strong>Bangladesh</strong></td>
<td>radioactivity (CS 137) testing and certification</td>
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<td></td>
<td>1. Incorporation Certificate for the business from the Registrar of Companies</td>
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<td>Country of origin certificate</td>
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<td></td>
<td>2. Import Export Code from the Director-General of Foreign Trade</td>
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<td>Fumigation certificate</td>
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<td></td>
<td>3. Goods and Service Tax registration for tax purposes</td>
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<td>Health certificate</td>
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<td>4. MSME registration</td>
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<td>Shipping In Line Certificate</td>
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<td>5. Trademark registration to protect your brand in foreign markets</td>
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<td>Weighmaster container certificate</td>
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<td></td>
<td>6. Food Safety and Standard Authority of India registration or license</td>
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<td>Ocean bill certificate</td>
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<td>7. AEPDA certification</td>
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<td>Global GAP Certificate</td>
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<td></td>
<td>8. Phytosanitary Certificate</td>
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<td>For GMO, GMO certificate is required</td>
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<td><strong>Nepal</strong></td>
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<td><strong>Country of origin certificate</strong></td>
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<td><strong>Global GAP Certificate</strong></td>
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<td><strong>SriLanka</strong></td>
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<td><strong>Certificate of Origin/ BFSTA certificate</strong></td>
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<td><strong>Inspection Certificate</strong></td>
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<td><strong>Fumigation certificate</strong></td>
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<td><strong>GAP Certificate</strong></td>
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<td><strong>Good Agricultural Practice Certificate</strong></td>
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<td><strong>Hong Kong</strong></td>
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<td><strong>Certificate of Origin</strong></td>
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<td><strong>Free Sale Certificate</strong></td>
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<td><strong>HACCP</strong></td>
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<td><strong>Certificate of Origin</strong></td>
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<td><strong>Australia</strong></td>
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<td><strong>APHIS Phytosanitary Certificate</strong></td>
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<td><strong>Import Permit</strong></td>
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<td><strong>Manufacturer Declaration</strong></td>
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<td><strong>USA</strong></td>
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<td><strong>Certificate of Origin</strong></td>
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<td><strong>US FDA registration number, the Regurgitation certificate</strong></td>
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<td><strong>Prior Notice for Imported Food</strong></td>
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<td><strong>Labelling and Ingredient review</strong></td>
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<td><strong>FSMA regulations</strong></td>
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Ladakh’s Rising Flame: 
ADVANCING THE APRICOT INDUSTRY

Administration of Union Territory of Ladakh

Industries & Commerce, UT Ladakh

https://ladakh.nic.in/
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