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Project WP3 output report

Overview of the Baltic Sea region NTFP potential for the market entry into China

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Work Package 3 **Activity 3.1** **Output: OP3.1**

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Foreword

Current report gives a general overview of China's market pre-pandemic and focuses on providing information to Baltic region SMEs, who are looking to start up export activities in China or Asian region. First part of the report is dedicated to description of China's economy and sociology, which provides an insight into the vastness of the Chinese market. Further chapters are dedicated to the illustration of the most viable industries for potential NTFP exporters, such as, wellness, health and foods. Afterwards, the main focus shifts from the Asian region and jumps to the Baltics: export, import and main product trade overview is given for Latvia, Lithuania and Estonia. In order to highlight, what type of goods are trending in the EU's export categories to Asia, we have provided the data of exports from the Baltic countries to China. The second part of this report is allocated for more in-depth information about the most popular NTFP sector – various berries cultivated in the Baltics. This part reviews not only economic aspects of growth and production, but also touches upon the main known health benefits of berry consumption, as well as some historic and legislative aspects. All in all, current report is aimed to provide and outlook for the potential of NTFPs as a promising export category in the Asian markets.

Readers can use this report to get acquainted with the China's trade situation pre-pandemic and then be able to compare it to the new reality of 2021. This can help small Baltic region SMEs with little experience in the export to really weigh their expectations and set previous market knowledge against the latest trends one can only accurately acquire in the latest news. Since 2019, the economic situation of the World has entered a dynamic change phase which still continues up to date.

We should always be circumspect about Chinese data - with the usual caveat that the trajectory of the data rather than the figures themselves are a useful guide to how China's economy is growing. Worries over a resurgence of the virus are also clouding current China's growth outlook. Many market analysts are predicting China's growth to accelerate by the end of 2021, but the China Bureau of Statistics has warned of a "grave and complex environment both at home and abroad", with the pandemic having a "huge impact".

For the readers of this report we'd like to point out that in the China's market situation in 2021 caution is advised for newcomer SMEs – you can expect to make significant strategic shifts in order to keep pace with the breakneck speed of digital innovation overseas and the still ever-changing pandemic situation.

Population & Demographics of People's Republic of China

China's 2019 population was 1.42 billion, based on United Nations projections. China, officially the People's Republic of China, is the largest (by population) country in the world today[1]. In January 2013, the Chinese Government released data confirming that the population of China was an impressive 1,354,040,000, although this does not include Taiwan, Hong Kong and Macau.

Unfortunately, there is some confusion around the question of how many people live in China. That's because it is a country of several different parts, not all of which are governed by Beijing.

To understand China's population and demographics, it helps to understand its government a bit. The People's Republic of China (PRC) is governed by the Communist Party with its seat of government in Beijing, which exercises jurisdiction over 5 autonomous regions, 22 provinces, 4 direct-controlled municipalities and 2 primarily self-governing special administrative regions (Macau and Hong Kong). The PRC also claims Taiwan, which is controlled by a separate political entity called the Republic of China (ROC) as its 23rd province. This makes the population figures a bit confusing.

Sourced by World Population Review[2]

China Population Clock

The population of China (as of 5/23/2019):	1,419,530,764
Last UN Estimate (July 1, 2019):	1,420,062,022
Births Per Day:	43,915
Deaths Per Day:	29,404
Net Migrations Per Day:	-889
Net Change Per Day:	13,622

China Population by Year (Historical)

Year	*Population*	*% Male*	*% Female*	*Density (km²)*	*Growth Rate*
2019	1,420,062,022	51.53%	48.47%	146.29	0.35%
2018	1,415,045,928	51.53%	48.47%	145.78	0.39%
2017	1,409,517,397	51.53%	48.47%	145.21	0.43%
2016	1,403,500,365	51.53%	48.47%	144.59	0.46%
2015	1,397,028,553	51.52%	48.48%	143.92	0.54%

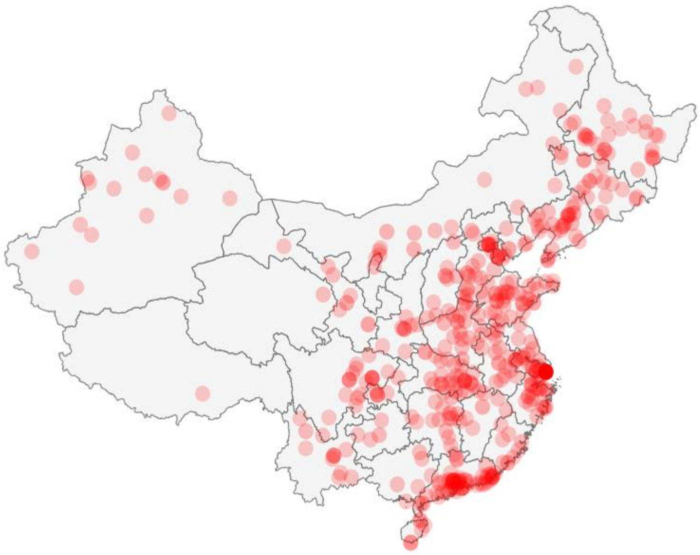
China Population by Year (Projections)

Year	*Population*	*% Male*	*% Female*	*Density (km²)*	*Growth Rate*
2020	1,424,548,266	51.53%	48.47%	146.76	0.00%
2025	1,438,835,697	51.51%	48.49%	148.23	0.20%
2030	1,441,181,813	51.48%	48.52%	148.47	0.03%
2035	1,433,508,888	51.44%	48.56%	147.68	-0.11%
2040	1,417,472,814	51.42%	48.58%	146.03	-0.22%

[1] *Country Profile | China - UNdata*
http://data.un.org/CountryProfile.aspx/_Images/CountryProfile.aspx?crName=China
[2] *China Population 2020*
http://worldpopulationreview.com/countries/china-population/

China Population Density

As a whole, China has an estimated population density of 145 people per square kilometer, or 375 people per square mile. This ranks 81st, despite the country itself being one of the largest in terms of size and the largest in terms of population.



The density figures change dramatically when you look at the largest urban areas, however. Shanghai, the largest city in the country and the world, has a population density of 3,800 people per square kilometer, or 9,900 people per square mile.

Hong Kong is the 8th most densely populated city in the world, with 68,400 people per square mile. Macau follows behind as the 9th most densely populated, with a density of 65,400 people per square mile. Macau tops the list of sovereign states and dependent territories in terms of population density.

China's Largest Cities (Top 20 Cities by Population)

A few of China's cities make the list of the top 30 most densely populated cities in the world, although most on the list are in India, the Philippines, France and other countries. Hong Kong is the 8th most densely populated city in the world, with 68,400 people per square mile. Macau follows behind as the 9th most densely populated, with a density of 65,400 people per square mile. Macau tops the list of sovereign states and dependent territories in terms of population density. Despite this tightly packed area, it still has the second highest life expectancy in the world and remains one of the few areas in Asia to receive a "very high Human Development Index" ranking.

Shanghai	22,315,474	Nanchong	7,150,000
Beijing	11,716,620	Xi'an	6,501,190
Tianjin	11,090,314	Shenyang	6,255,921
Guangzhou	11,071,424	Hangzhou	6,241,971
Shenzhen	10,358,381	Harbin	5,878,939
Wuhan	9,785,388	Tai'an	5,499,000
Dongguan	8,000,000	Suzhou	5,345,961
Chongqing	7,457,600	Shantou	5,329,024
Chengdu	7,415,590	Jinan	4,335,989
Nanjing	7,165,292	Zhengzhou	4,253,913

China's Quality of Life and Demographics

The World Bank classifies China as an upper middle-income country, and its rapid growth over the decades has pulled hundreds of millions of its citizens out of poverty. About 10% of the population in the country lives on $1 USD a day, compared to 64% just 35 years ago. Although 56 different ethnic groups are officially recognized in China, 91.51% of Chinese are Han Chinese. Only one other group – Zhuang – has a larger than 1% share of the population. Other ethnic groups are growing at a higher rate than Han Chinese.

China is officially an atheist state, and doesn't survey its people on their religion. A survey taken in China showed that 85% of Chinese residents have some religious beliefs, while just 15% consider themselves to be atheists. Chinese culture and civilization has been influenced by many religious movements over the past 1,000 years, and Taoism, Buddhism and Confucianism are considered the country's "Three Teachings" based on their cultural and historical impact.

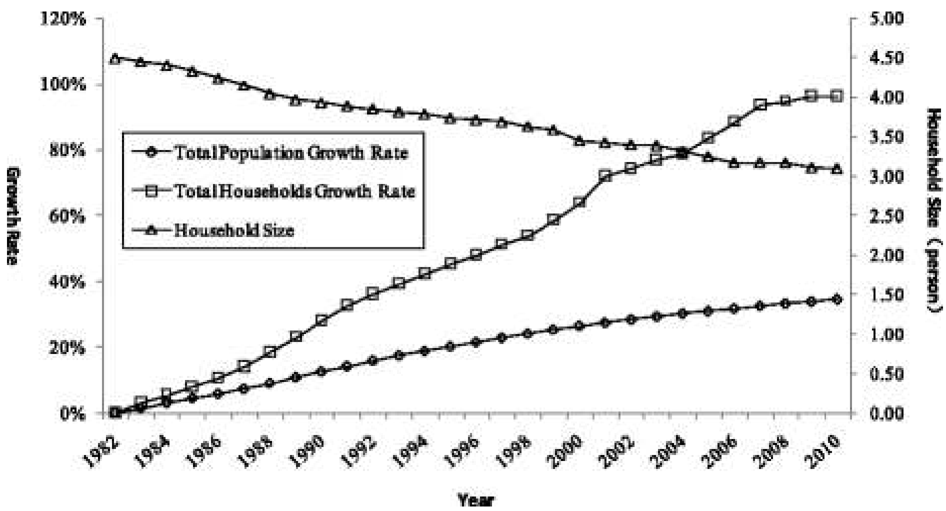
About 3% of the population is Islamic, with a Christian population estimated to be about 5%. According to some sources, Christianity could represent as much as 20% of China's population by 2025. Buddhism is practiced by 10 to 18% of Chinese residents, while over 30% practice local folk religions.

Household Profiles

Country	*Figure*	*Date*	*Source*	*Notes*
China	401,520,000	2011	National Bureau of Statistics of the People's Republic of China	6th National Population Census
China	401,517,000	2010	National Bureau of Statistics of China Population Census	-

Sourced by World Cities Culture Forum

Household Size and Rates



Sourced by the Journal of Chinese Sociology[3]

[3] *Household changes in contemporary China: an analysis based on the four recent censuses* https://journalofchinesesociology.springeropen.com/articles/10.1186/s40711-015-0011-0

Households increase faster than population growth

Data from the sixth census shows that by 2010, China's household population totaled 1.245 billion, accounting for 93% of the total population. There were 0.402 billion households, which represents 96.2 % of China's total households (the remaining 3.8% are collective households). There were 61.44 million more households in 2010. The number of households grew by 18.1 %, with an average annual growth rate of 1.7 %, a far greater rate than that of population growth. Given this trend, Chinese households will continue to grow and are estimated to reach 0.5 billion by 2035–2040. After reaching the peak in 2043–2048, it will then decrease slightly.

China is experiencing a double transformation in demography and family patterns. The rapid and drastic change in demography has intensified the changes in households. With regard to the demographic system itself, the main factors for its transformation is the stability of the extremely low birth rate, the rapidly aging population, the dramatic population flow, and the improvement in housing conditions.

The changes of household quantity, size, structure, and residence model all occurred under an environment in which families have only few children or one child. At the same time, the aging of the population is normalizing. Moreover, although the geographic separation of family members resulting from the population flow has not weakened economic interactions between family members, their support for each other in daily life has definitely been restricted.

Sourced by the Journal of Chinese Sociology

Types of family patterns	*Sum (%)*				*Urban/rural division (2010)*	
	1982	*1990*	*2000*	*2010*	*Urban*	*Rural*
Single-person households	8.00	6.27	8.30	13.66	17.03	11.79
Only-couple-households (1-generation nuclear)	4.69	6.42	12.70	18.49	21.17	16.63
Other 1-generation households	1.23	0.80	1.28	1.20	2.04	0.72
Sum of 1-generation households	13.92	13.52	22.28	33.25	40.24	29.14
Parents and unmarried children (standard nuclear)	48.20	54.40	46.33	33.38	35.57	31.11
Single parent and unmarried children (impaired nuclear)	4.55	3.58	2.92	2.70	2.25	3.16
Separated parent and unmarried children (impaired nuclear)	6.96	4.02	3.15	3.27	2.71	3.41

Source the Journal of Chinese Sociology

China: Interesting Facts Regarding Population Projections

China's has slowed significantly since the implementation of the one-child policy, and that slowing is projected to continue. The population is predicted to grow at increasingly slower rates until 2030, at which point the population should actually begin to decrease.

1. Components of Population Change:

   One birth every 2 seconds;
   One death every 3 seconds;
   One net migrant every 1 minutes.

2. There are 1.367 billion people living in China. 5.1% of them — or 69.74 million — identify as Christian.

   Sourced by Central Intelligence Agency[4]

3. China goes through 80 billion disposable chopsticks per year, which results in 20 million young trees being chopped down annually, according to 2013 data.

   Sourced by South China Morning Post[5]

4. China is one of the biggest consumers of tobacco in the world. 8,937,000 children (and more than 275,900,000 adults) used tobacco daily. In fact, Chinese men smoke one-third of the world's cigarettes.

   Sourced by the Tobacco Atlas[6]

5. China surpassed the US as the world's number one ice cream consumer in 2014, consuming 5.86 billion liters of the frozen desert. An Olympic-sized swimming is about 2.5 million liters.

   Sourced by the Telegraph[7]

6. Pork is a huge food staple the Chinese diet: an average person eats 86 lbs. (39 kg) of pork per year. In fact, the Chinese eat so much pork that a spike in pork prices in 2011 was deemed the major contributor to the sharp inflationary pressures.

   Sourced by the Economist[8]

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[4] *Sourced by Central Intelligence Agency / China*
https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html

[5] *Sourced by South China Morning Post / China's 80 billion disposable chopsticks a 'burden' on forests*
https://www.scmp.com/news/china/article/1188299/chinas-80-billion-disposable-chopsticks-burden-forests

[6] *Sourced by the Tobacco Atlas / Country China*
https://tobaccoatlas.org/country/china/

[7] *Sourced by The Telegraph / China is now the world's biggest ice cream market*
https://www.telegraph.co.uk/finance/newsbysector/retailandconsumer/11744608/Heres-the-scoop-China-is-now-the-worlds-biggest-ice-cream-market.html

[8] *Sourced by the Economist / Why pigs are so important to China*
https://www.economist.com/the-economist-explains/2015/01/08/why-pigs-are-so-important-to-china

The Health & Wellness Industry in China[9]

The clean eating trend - organic foods

According to the Global Wellness Institute, the global health and wellness industry is now worth $4.2 trillion. The industry has been growing with 12.8% between 2015 and 2017 and represents 5.3% of global economic output.

The Health and Wellness industry encompasses all activities which promote physical and mental wellbeing: from yoga to healthy eating, personal care and beauty, nutrition and weight-loss, meditation, spa retreats, workplace wellness and wellness tourism.

Consumers are increasingly focused on living longer and healthier. Healthy living starts with healthy eating. The consumer's preferences have shifted towards eating more natural, free from additives or preservatives, organic food. Today eating clean means eating a diet made of gluten-free, dairy-free, non-refined carbs, sugar-free food.

Millions of people worldwide are suffering from the celiac disease[10] which drives the demand for gluten-free/wheat-free food market. The global gluten-free retail market is estimated to grow to $12.5billion by 2024 at a rate of 9.5% from 2017. According to Statista[11], Italy is the leading gluten-free and probiotics market in Europe.

Sourced by Global Market Insights[12]

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[9] *The Health and Wellness industry*
https://www.betterhealthworx.com/the-wellness-industry.html;
[10] Celiac disease is a serious autoimmune disease that occurs in genetically predisposed people where the ingestion of gluten leads to damage in the small intestine. It is estimated to affect 1 in 100 people worldwide.
https://celiac.org/about-celiac-disease/what-is-celiac-disease/;
[11] *Global No.1 Business Data Platform*
https://www.statista.com/;
[12]*Global Market Insights*
Gminsights.com.

Wellness tourism in China

The wellness travel market is worth $639 billion and has been growing at a rate of 6.5% from 2015–2017. The growth rate for tourism overall is 3.2% so wellness travelling is growing twice as faster.

Wellness trips account for 17% of total tourism expenditures. Wellness seekers travel to Asia-Pacific, Latin America-Caribbean, Middle East-North Africa, and Sub-Saharan Africa to get in shape and return home relaxed and ready to go. Over the past five years, Asia is the #1 destination of wellness travelers, attracting both trips and revenues.

In the last two years, trips to Asia grew by 33% to 258 million annually. China and India rank #1 and #2 for growth worldwide, adding over 12 million and 17 million wellness

Who is Driving the Wellness Boom

The Middle Class: many of these changes are driven by the explosive growth in China's emerging middle class, which is on track to expand from the current 430 million to 780 million by 2025. Among them, the generation born after the 90s (comprising 16 percent of China's population today) is considered the new engine of consumption. Powered by their extraordinary levels of wealth, exposure to western culture and digital fluency, they are expected to account for over 20 percent of total consumption growth in China by 2030. Sophisticated and well-educated with a global mindset, China's middle class places a healthy lifestyle as a high priority and sees this as the definition of a good life. Over 70 percent exercise regularly, purchase organic food, and strive to achieve a daily work-life balance. This market segment also dominates global consumption for a variety of products, from American almonds to Korean beauty products, and their penchant for online shopping drives more than half of all global e-commerce.

Female Consumers: although males outnumber females by 34 million, the "*she-conomy*" in China is growing, driven by an increase in income level, broader exposure, and changing roles and values. Eager to travel abroad and engage in healthy lifestyles, women are leading the wellness consumption trends in China. Aside from fueling the fitness craze and contributing to the double-digit growth in health supplements, women are overtaking men when it comes to independent travel. In 2019, 59 percent of outbound tourists are expected to be female (an increase of 18 percent), with 14 percent more in spending compared to their male counterparts. Whether girlfriend getaways, health travel or multigenerational holidays, Chinese women are driving the travel experience and will influence how tourism destinations, wellness and hospitality brands develop their offerings.

Government: China is facing a looming health crisis—an unsupported aging population as a result of the one-child policy, record-high pollution levels, growing obesity rates, heightened level of progressive and serious illnesses (for example, diabetes has an overall prevalence of 11 percent, while another 36 percent of the population has a pre-diagnosis), exploding cancer rates (three million new cancer diagnoses and 2.2 million cancer deaths each year, compared to 1.6 million and 600,000, respectively, in the US), and an ailing healthcare system. In response to the growing pressure, the State Council has launched the ambitious "Healthy China 2030" initiative to showcase its commitment to preventing disease and improving public health and fitness. The comprehensive 29-chapter document outlines a range of policies, from public healthcare infrastructure and environment management to medical industry reform and food and drug safety. The initiative has ambitious targets, from having 530 million people take part in physical exercise on a regular basis to extending China's average life expectancy to 79 by 2030. These targets will drive an unprecedented surge in the healthcare and wellness economy.

Sourced by Global Wellness Summit[13]

Outbound Travel

China's outbound travel will have the biggest impact on global wellness. Wanderlust among Chinese consumers will dominate and reshape global tourism with its explosive growth and unique consumption habits.

In 2017, China Outbound Tourism Research Institute (COTRI) recorded 145 million international trips taken by the country's 7 percent passport-holding population. Chinese travelers also took the lead as the world's biggest spenders with an expenditure of $258 billion, followed by the United States at $135 billion. On average, each Chinese traveler spends more per trip than tourists from any other country. As the number of passport holders continues to rise, this number is expected to balloon to 200 million in less than two years. This represents an astounding 20-fold growth since 2000 while spending is predicted

[13] *China – Uncovering the Wealth In Wellness* https://www.globalwellnesssummit.com/2019-global-wellness-trends/china-uncovering-wealth-in-wellness/#_ednref1

to increase to $429 billion. Adding to these phenomenal figures, the number of Chinese outbound tourists is expected to reach 400 million by 2030, representing 29 percent of the global travel market.

Of particular interest to tourism boards is the changing motivation for travel. Increasingly, Chinese tourists are eschewing the long-established shopping and sightseeing tours and are now more focused on authentic experiences. According to a 2017 survey from *Qyer*, one of China's leading travel powerhouses, over 70 percent of travelers are seeking local experiences or wellness-related activities, such as culinary exploration, outdoor recreation, gallery and museum visits, nature/ecological tours, beauty and spa treatments (women still prefer facials while men favor body massages), and hot springs. China has jumped from the 11th to the third position in wellness tourism, with 70.2 million wellness trips made in 2017, driving a global revenue of $31.7 billion.

Sourced by Global Wellness Summit[14]

The Health & Wellness Industry Market in China: interesting Facts

1. Among the 802 million mobile users in China, over 104 million have at least one fitness app on their phones (interestingly with higher penetration of around 20 percent in second-tier cities);
2. Sportswear sales saw 11 percent growth in 2017 with China valued as a $27 billion market;
3. Over 15 million Chinese consumers have gym memberships while the country counts 10 million yoga practitioners;
4. Sales of health supplements saw an annual online growth of 27 percent in 2017;
5. Avocado prices hit a 19-year high in response to a 250 percent increase in demand for imports while the total value of foreign food imports amounted to $77 billion in 2018;
6. Cosmetic surgery has experienced a 42 percent year-on-year growth, and China accounted for 41 percent of the global total in 2017;
7. In a culture where meat eating is considered a sign of prosperity, China is home to 50 million vegetarians. This figure marks a 17 percent growth in recent years;
8. Traditional Chinese medicine has reached 183 countries and regions around the world, expecting an estimated $50 billion global market; traditional Chinese medicine is also set to be implemented by the member states of the World Health Organization in 2022;
9. The healthcare sector is expected to reach $1 trillion; and according to SpaChina, the beauty and wellness market in 2017 was worth $14.5 billion.

Sourced by Global Wellness Summit

[14] China – Uncovering the Wealth In Wellness https://www.globalwellnesssummit.com/2019-global-wellness-trends/china-uncovering-wealth-in-wellness/#_ednref1

Summary of Beauty and Wellness Industry in China

Amazon[15]— the consumers' preferred channel for nutritional supplements and skincare:

The 2018 Beauty, Health & Wellness Survey conducted by LEK[16] highlights the latest trends and offers insights into consumer interest in nutritional supplements and skincare. Here are the survey's findings:

- Average consumer spends more than $100 per month — totalling $1,300 a year on nutritional supplements such as vitamins, minerals, herbal and sports nutrition products, and skincare products such as creams, lotions and sunscreens;

- Gen Xers[17] and boomers[18] spend on nutritional supplements, while millennials spend on skincare;
- Personalization is trending also with nutritional supplements and skincare, 39% of Millennials[19] and 36% of Gen Xers are highly interested in receiving personalized programs; these programs consist of selecting nutritional supplements tailored to their individual health needs or a custom skincare program augmented by a beauty box delivery each month.

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[15] Amazon has established itself as the №1 preferred channel for nutritional supplements and №2 preferred channel for skincare.
https://medium.com/manager-mint/the-health-wellness-industry-is-now-worth-4-2-trillion-866bf4703b3c

[16] At L.E.K. Consulting, we are passionate about helping our clients achieve practical results with real impact. The company was founded in 1983 and named after three partners: James Lawrence, Iain Evans and Richard Koch — hence the name L.E.K.

Today, L.E.K. is a global strategy consulting firm with clients and presence in the Americas, Europe and Asia-Pacific. Iain Evans acts as the firm's Global Chairman and Stuart Jackson as Global Managing Partner. We are in the business of advising clients — many of which are facing unprecedented change and disruption in their industries, and need a fresh perspective — on their most pressing business challenges.
https://www.lek.com/

[17] Generation X, which is sometimes shortened to Gen X, is the name given to the generation of Americans born between the mid-1960s and the early-1980s. The exact years that comprise Gen X varies by who you ask, as researchers, like demographers William Straus and Neil Howe, place the exact birth years at 1961 to 1981, whereas Gallup places the birth years between 1965 and 1979.
https://www.investopedia.com/terms/g/generation-x-genx.asp

[18] Baby boomer is a term used to describe a person who was born between 1946 and 1964. The baby boomer generation makes up a substantial portion of the world's population, especially in developed nations. It represents nearly 20% of the American public.

As the largest generational group in U.S. history (until the millennial generation slightly surpassed them), baby boomers have had—and continue to have—a significant impact on the economy. As a result, they are often the focus of marketing campaigns and business plans.
https://www.investopedia.com/terms/b/baby_boomer.asp

[19] Millennials (millennial generation, Generation Y) is the phrase used to generally describe a person who reached adulthood in the early 21st century and covers the generation of people born between 1980 and 2000.

Often, researchers and various authors and publications use the phrase to describe those with 1970s to early 90s as birth years. Others use up to 2004 as the ending birth year. In the early use of the phrase, it was used to describe only those who would graduate high school in the year 2000.
https://www.webopedia.com/TERM/M/millennials.html

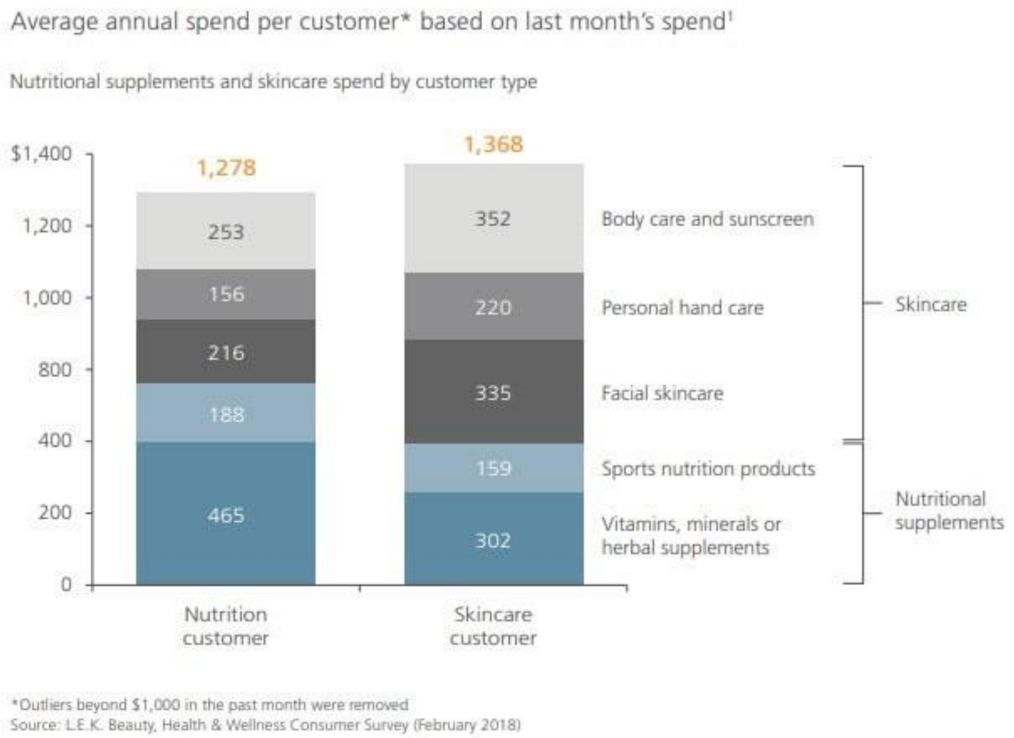


Image sourced by L.E.K. Consulting

The Fitness Industry in China[20]

The Health & Fitness industry is growing at a rate of 10% CAGR and is estimated to reach $100 billion in 2019. According to the Global Health and Fitness Club Market report, the global health & fitness market revenue reached a total amount of $87.2 billion in 2017 and is projected to grow at a rate of 10.6% between 2018 and 2023.

Here are the main findings of this report:

1. Consumers are willing to spend more on health and fitness clubs;
2. The number of health clubs and gyms with personal training and the latest fitness equipment has increased;
3. Yoga, aerobic dance, and swimming have grown in popularity among health and fitness enthusiasts;
4. Awareness about the benefits of physical fitness has increased;
5. One of the driving factors leading the growth of the industry is the rising cases of obesity especially in developed countries;

[20] The Health & Fitness Industry Is Estimated To Reach $100 Billion In 2019: https://brandminds.ro/the-health-fitness-industry-is-estimated-to-reach-100-billion-in-2019/

6. The millennial and baby boomers are joining fitness clubs in raising numbers;
7. Corporate wellness activities have seen a growth in demand.

The following 5 factors contribute to the health & fitness industry's growth according to industry analysts:

- Lowering of the health insurance costs: healthy people drive insurance costs down and are less of a risk to insurance companies and employers. Many employers incentivize their employees towards adopting a healthier lifestyle by covering the costs of a health club membership.
- Increased demand for healthy foods: one of the most common memories we all have of our childhood is our mother telling us Eat your vegetables! As children, we refused to eat any of the green stuff on the plate, but as adults, we are purposefully looking to eat more healthy foods. In recent years consumer behavior has seen a shift in demand: consumers are buying less industrial-scale processed food and more natural or bio foods.
- Wearables support our decision for a healthier lifestyle: wearable devices such as Fitbit, Apple Watch and many of the smartphones currently on the market are all helping us achieve our health objectives. They play the role of personal digital assistants who promptly deliver personalized biometric health statistics. They help us keep track of our progress and steer us towards success.
- Newfound freedom by streaming exercises classes: people have busy lives. Women often juggle many activities every day while being mothers, wives, elderly caretakers and employees – all at the same time. Being free to choose their preferred time to exercise instead of building their schedule around it is key to maintaining a healthy lifestyle. People are streaming fitness exercises classes to save time.
- Attending outdoor obstacle races and competitions: competing in outdoor obstacle races beats the ordinary running on a treadmill at the gym. It's much more exciting and the competitors feel the adrenaline rush closing on the finish line. Through mud and water, on sand or grass, these races have been growing in popularity in recent years. The catch is – you need to train for them. That explains the growing demand for wearables and fitness classes.

Top 3 Countries by Revenue according to IHRSA (the International Health, Racquet & Sportsclub Association):

USA – $30 billion
Germany – $5.6 billion
United Kingdom – $5.5 billion

Top 3 Countries by Membership:

USA – 60.9 million
Germany – 10.6 million
United Kingdom – 9.9 million

Health & Fitness Industry Global Statistics:

1. Number of health & fitness clubs members: 174 million;
2. Number of health clubs: 201.000; the US has the most health clubs at over 38.000 followed by Brazil with over 34.000;
3. The region with the most opportunities for growth: the Asia-Pacific; there are 14 markets in the Asia-Pacific region which attract 22.5 million members at more than 25,000 health clubs.

China's Health Food Market

Did you know that 73% of Chinese consumers are willing to pay more for healthier foods? In fact, Chinese consumers are some of the world's most health conscious, and attention to personal wellbeing and illness prevention means that China's health and wellness market is expected to see strong growth in the years ahead.

While some consumers are returning to their roots by reintegrating traditional Chinese medicine and ingredients into their diets, others are looking for more modern solutions to tackle health concerns with a preference for natural and organic ingredients, particularly those with health, purity and safety claims. Many Chinese consumers are returning to their roots after two decades of intense western influence in the nation's food and drink culture, while others are looking to modern solutions for modern health issues. What trends are emerging in China's health and natural ingredients market?

Due to growing disposable incomes and increased urbanization, many Chinese consumers have become increasingly health conscious, and are looking for healthier packaged foods and beverages. There is a strong cultural element to wellness in China, with a greater focus on illness prevention and wellness maintenance than in the West, founded on the principles of traditional Chinese medicine. The health of the Chinese people is overseen by the National Health and Family Planning Commission, and public health policy has emphasized a preventative approach since the early 1950s.

However, there is much more to the Chinese health and wellness market than traditional Chinese medicine. Some consumers have become more skeptical about Chinese medicine in recent years and are looking for more modern products and ingredients. The government is actively encouraging such foods; the Chinese State Council has put forward a plan called Healthy China 2030, which specifically makes the development of health food and nutrient-fortified food one of its priorities.

Safe and natural

Health scares have damaged consumer trust in their food supply, and many food and drink providers aim to emphasize their natural and organic origins as a result. Chinese consumers are looking for purity above all, a promise that their foods are free of any kind of contaminant. Despite ongoing efforts to improve standards and consumer trust in domestic food manufacturing, often foreign foods benefit from the perception that they are cleaner and healthier.

Food and drink brands have been incorporating well-known healthy ingredients, such as green tea or ginseng, for the past couple of decades – and ingredients that have traditional connotations of wellness continue to spark consumer interest, particularly on e-commerce platforms. In online food stores, he says some categories using the ingredient have seen 100% sales growth in just a few months, particularly drinks and soups, with products like red date and ginger tea.

Sourced by hi-korean.net

Shaping the Food Industry for Optimal Health Through Science and Innovation

China's efforts to position Traditional Chinese Medicine (TCM) as a contender to take a significant share of the $50 billion global medicine market are about to see a major payoff, reports the South China Morning Post. The Hong Kong-based news outlet reports that the World Health Organisation will include a chapter on TCM in the 2019 (11th) edition of the International Statistical Classification of Diseases and Related Health Problems (ICD) – the first ever official endorsement of TCM by the WHO.

Last year China passed a new law that placed Traditional Chinese Medicine (TCM) on an equal footing in the country with western medicine. Multinationals jump on natural cosmetics bandwagon, but will consumers will shun them? For example, L'Oreal's recent launch of Seed Phytonutrients is the latest foray of multinationals in the natural and organic cosmetics market. Unilever has also launched the Love, Beauty and Planet brand in the last 12 months. Both brands are looking to capitalize on consumer demand for 'clean beauty' products. Retail sales of such products have grown from almost nothing to USD 10.2 billion between 2002 and 2017.

As ethical consumerism becomes mainstream and natural and organic products continue to make inroads in conventional channels, the multinationals know they cannot ignore this important trend. Large companies like L'Oreal and Unilever will continue to hedge their bets between developing green products and outright acquisitions, suggests Ecovia Intelligence, while market winners will be those who can successfully align brand values to consumer expectations. Others, the company predicts, are likely to underperform as they find the green road is littered with obstacles.

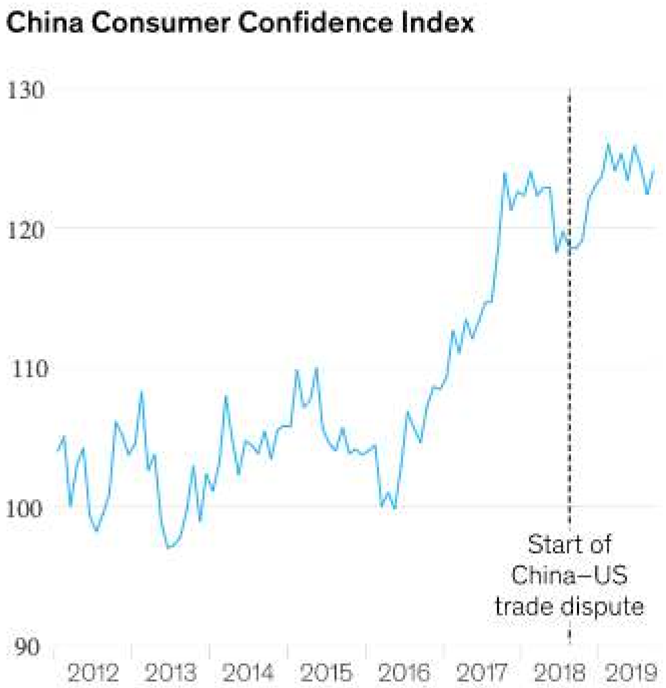
Pharmacy stores remain the major channel for local consumers to buy health foods, although the specialist health foods channel is growing (see next story). The 89% of the consumers get information on the category online or on TV. Product effectiveness is the main motivation to buy (23%), followed by quality (22%) and brand reputation (18%). While online retailers offer the widest choice, 30% of the consumers surveyed said they would buy health food from pharmacy stores, and 29% said they would buy online.

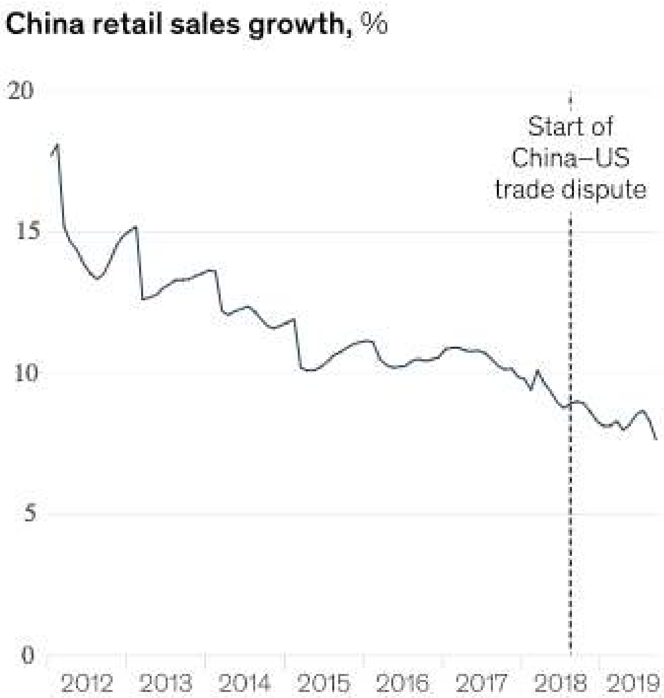
Sourced by baijiahao.baidu.com

Consumers in China

Consumers in China are proving to be remarkably resilient and remain a powerful, transformative force not just in China but also across the globe. Although it's likely the growth rate for consumer spending will be slightly lower in 2019 than in 2018, consumers continue to increase their spending by a considerable margin and are eager to pay for items with a strong value proposition. This year's Singles Day (also referred to as Double 11), for instance, was record shattering. Total sales on all platforms were up 31 percent over last year and reached 410 billion renminbi ($58 billion), far more than Cyber Monday's and Black Friday's online sales combined.

Although traditional drivers of China's economy—investment, exports, and manufacturing—are struggling, the country's consumers remain confident. After dipping in the second half of 2018, the Consumer Confidence Index hit a ten-year high earlier this year.

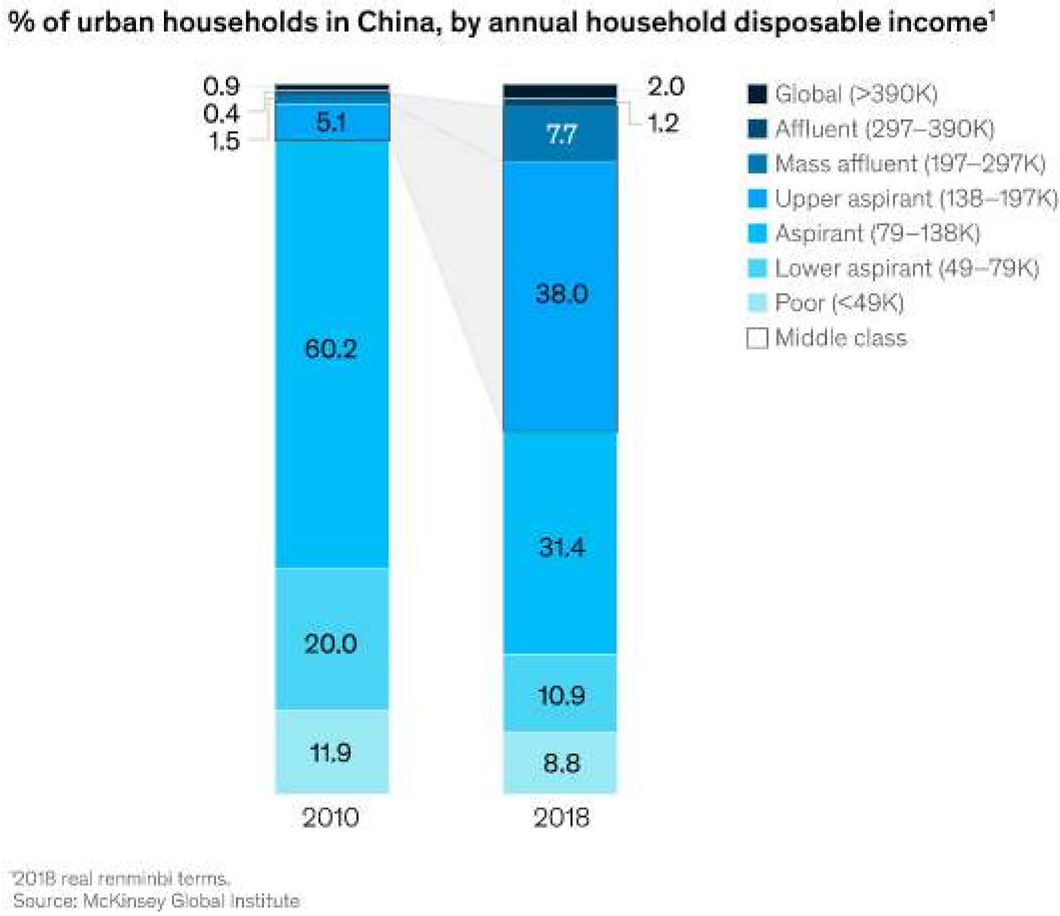




Most rural Chinese, on the other hand, remain relatively poorer; nearly all the growth has come from cities. These urban consumers are now the main driver of the Chinese economy, with their spending accounting for more than 60 percent of GDP growth, and across the globe, Chinese consumer spending represented 31 percent of household consumption growth from 2010 to 2017.

Now, ten years into this expansion, consumer behavior is shifting, and we see a bifurcation among Chinese consumers. On one hand, a segment of consumers in lower-tier cities continues spending money freely without any worry about cost or saving for the future. Other consumers, though, mostly in large, expensive cities such as Beijing, Guangzhou, and Shanghai are responding to the dip in China's economic growth and the increased cost of urban living by adjusting their attitudes and, in some cases, their spending.

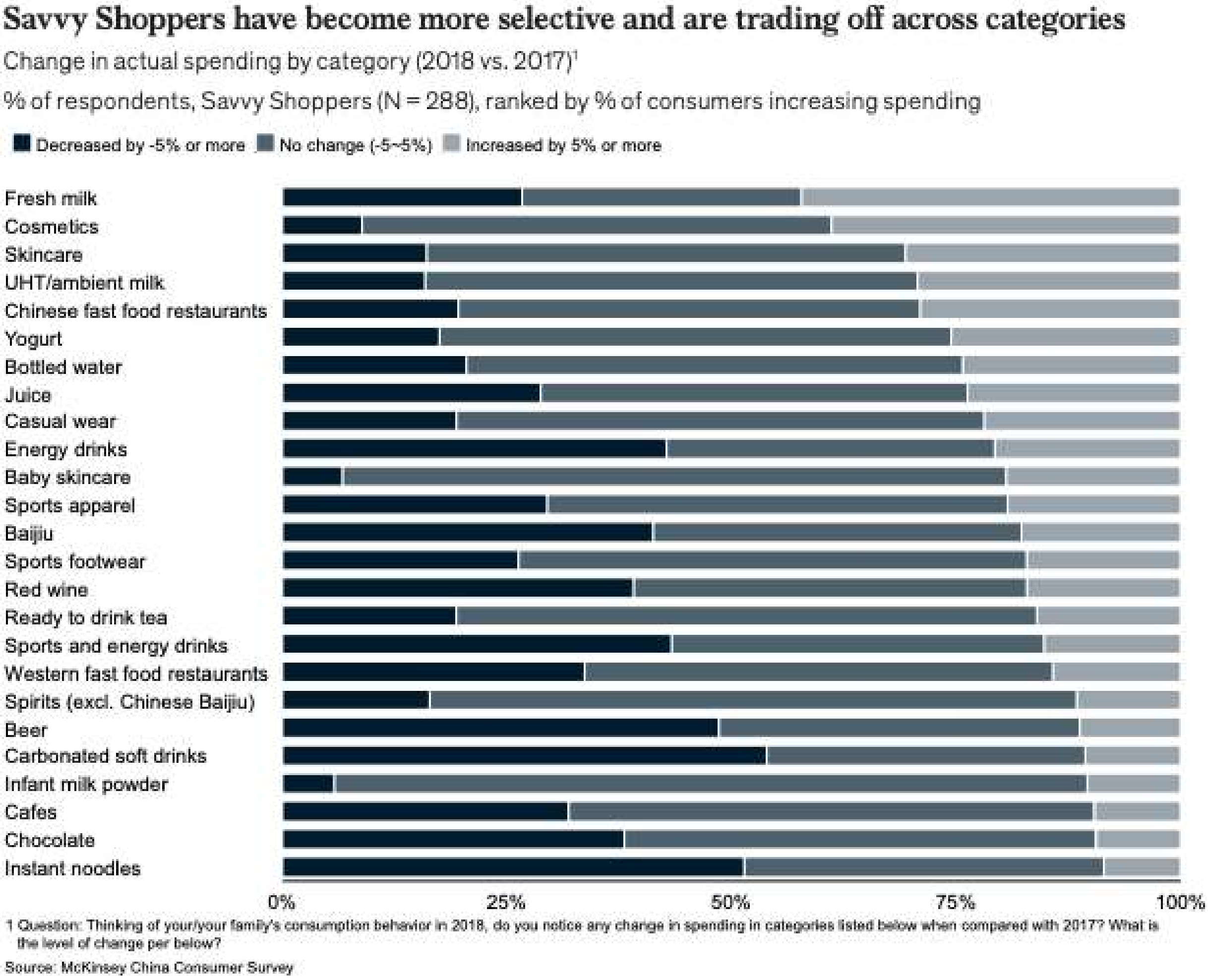
The overall pace at which Chinese consumption has grown is almost hard to imagine: just a decade ago, most urban Chinese had enough money to cover basic needs like food, clothes, and housing (92 percent had annual household disposable incomes of 140,000 renminbi or less). Today, half are living in relatively well-to-do households (annual disposable incomes of 140,000 renminbi to 300,000 renminbi) where they have ample funds for perks like regular meals out, beauty products, flat-screen TVs, and holiday travel.



Sourced by McKinsey Global Institute[21]

Savvy Shoppers also care about better quality products but, with slightly lower incomes than Discerning Consumers and Young Free Spenders, they aren't always willing to pay more for them. In fact, they traded down to less expensive products in more categories than they traded up. At a stable place in their lives, financially and personally, Savvy Shoppers have both the time and inclination to do the careful product evaluations needed to find better, longer lasting products without paying more. These consumers are more likely to be married, middle aged, female, and living in expensive tier 1 cities. They account for just 6 percent of the year's spending growth.

[21] China consumer report 2020: The many faces of the Chinese consumer https://www.mckinsey.com/featured-insights/china/china-consumer-report-2020-the-many-faces-of-the-chinese-consumer



Sourced by McKinsey Global Institute[22]

Proportion of Elderly Consumers in China

The Chinese population also has a rising proportion of elderly consumers, and products are emerging to help maintain the health and wellness of this growing demographic. The focus might be on natural energy or immunity, consumers are more open to the idea of prevention than outright health claims. 73% of Chinese consumers are willing to pay more for healthier foods, making them some of the world's most health conscious, according to research from Boston Consulting Group. Along with rising incomes among the nation's growing middle class, attention to personal wellbeing means China's health and wellness market is expected to see strong growth in the years ahead.

Shopping Habits

More than 10,000 respondents, including a large sample of the middle class, in 44 cities took part in the study, the report said. It defines "new mainstream customers" as those with an annual income above 106,000 yuan ($16,000), with markedly different spending behavior than the broader mass shoppers,

[22] China consumer report 2020
https://www.mckinsey.com/~/media/mckinsey/featured%20insights/china/china%20consumer%20report%202020%20the%20many%20faces%20of%20the%20chinese%20consumer/china-consumer-report-2020-vf.ashx

who still comprise the vast share of Chinese customers. This group mainly lives in first-tier and second-tier coastal cities, is younger and more reliant on the Internet.

The report found that if the trend of China's growth unfolds as projected, roughly maintaining a GDP growth rate at about 7 percent, the new mainstream shoppers will comprise nearly 400 million people by 2020. According to the report, the structure of Chinese shoppers will largely change. The new mainstream group is expected to occupy 51 percent of all households by 2020, up from 14 percent now. Meanwhile, the upper mass group, which makes up 54 percent now, will shrink to 25 percent in 2020.

China's annual per capita GDP is likely to top $10,000 by 2020 from last year's $5,530, Cai Zhizhou, an economics professor at Peking University, was quoted as saying in a report in the 21st Century Business Herald. According to a recent report by The Economist, there are more than 1 million Chinese people whose individual assets exceed 10 million yuan ($1.6 million).

At least 56 percent of respondents agreed that they expect their household income to significantly increase over the next five years, down from 60 percent a year ago. The percentage of optimists climbed to a peak in 2010 with 62 percent but declined over the next two years.

The report also found that the Chinese people are still fond of saving. The average respondent reported saving 22 percent of his income, a full 8 percentage points higher than his counterparts in the US and Great Britain.

However, Chinese people have to spend more because of inflation, the report said. More than 80 percent of respondents cited higher prices as the primary reason for spending more on food. At least two-thirds of shoppers reported spending more in real terms.

Sourced by ChinaDaily.com.cn

Consumers are spending more both on the very old and the very young, on leisure activities such as movies and on higher-quality products, the report concludes. Basically, they're becoming more like U.S. shoppers (okay, perhaps pre-recession U.S. shoppers), but with a distinctly Chinese twist. Here are some of the more revealing points:

1. Consumers are increasingly willing to pay for safety:

China has a dodgy record on food safety and product quality, but consumers are increasingly pushing back: There's been a surge in tweets mentioning "food safety" and "transport safety," such as this one: The only way of boosting local demand is to make sure local products are safe. Cut out the toxic milk and the swill oil retrieved from the gutters. Allow the public to consume safely, dare to consume and consume with greater confidence!"

Chinese buyers have also been increasingly purchasing car and property insurance, and a site urging people to throw toxic food "out the window" recently generated so much traffic it crashed.

2. Singles are spending more on being single:

In a holiday reminiscent of Valentine's Day, China has a "Singles' Day," complete with marketing offers, parades and the associated fanfare. Begun by Chinese college students in the 1990s, Singles' Day has evolved into one of the busiest online shopping days of the year. "This is very, very big for us," Steve Wang, vice president of the e-commerce platform Tmall.com told the AP.

There are also smartphone apps to help single people find and bond with each other. A service called WeChat, a location-based text-messaging system, was launched in January 2011, and by November the number of users topped 50 million.

3. Shopping for nostalgia:

Old-fashioned products like "Warrior shoes," which were popular in the '80s before they began to be seen as "working class," are reportedly taking off again among young Chinese people, as are eateries graced with giant portraits of Mao.

In the past few years, discussions centered on the two keywords of “retro" and "nostalgia" on Sina and Tencent microblogs have seen continuous growth, and they sky-rocketed in 2012. Tweets on “retro” in particular grew from 2,784,040 to 22,588,671, a tenfold increase.

And as in the United States, upmarket consumption in China is tied to feelings of boundless upward mobility: In a different survey of thousands of consumers, the China Market Research Group found that pretty much everyone in China's middle class thought they would someday be rich.

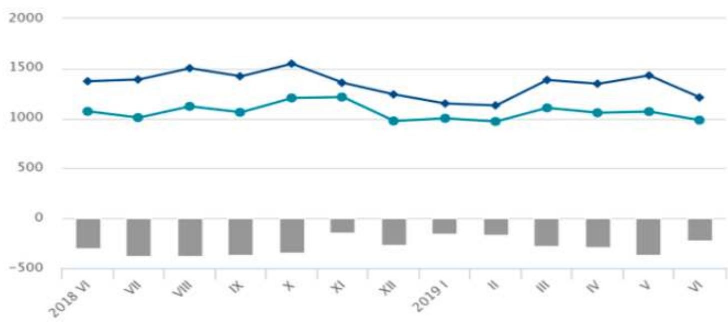
Source: The Washington Post

Latvia's foreign trade turnover

Information regarding year 2019

Turnover in 2019: in the first half of 2019, Latvia's foreign trade turnover reached 13.83 billion EUR, it means that turnover increased by 336.1 million EUR or 2.5% over the corresponding period of 2018. The value of exports in the first half of 2019 was 6.18 billion EUR (increased by 20.6 million EUR or 0.3%), at the same time import was at the rate of 7.65 billion EUR (increased by 315.5 million EUR or 4.3%).

Foreign trade of Latvia
(In million Euro)



Light blue: export *Dark blue: import*

Trade with European Union: In January - September 2019, exports of goods to the European Union countries amounted to 6 906.5 million EUR.

Trade with Commonwealth of Independent States: Exports to CIS countries amounted to 1,176.1 million EUR or 12.5%, but to other countries - 1 326.9 million EUR or 14.1%.

In January - September 2019, goods were exported from Latvia to 200 countries of the world and imported from 145 countries of the world.

The most important export industries in Latvia

1. Wood and articles of wood;

Period of January - September 2019 wood and wood products; the largest quantities of charcoal were exported to the United Kingdom - 20.5%, Sweden - 11.9%, Estonia - 11.7%, electrical and electrical equipment - to Lithuania (21.6%), Russia (10.1%), Estonia (9.4%), and machinery and mechanical appliances - to Russia (21%), Lithuania (16.7%), Estonia (12.4%).

2. Electrical and electrical equipment;
3. Machinery and mechanical appliances;
4. Land vehicles and parts;
5. Mineral products.

In January - September 2019, the share of Latvia's five largest export partners accounted for 52.1% of the total export value, while in January - September 2018 it accounted for 50.5%.

Overall Latvian food exports to China

Latvia's Economic Co-operation with China:

Latvia		2017 mln. Euro	2018 mln. Euro	Changes (%)	Share (%)	Rank
Total	Exports	152.6	179.1	15	1	22
	Imports	502.9	560.3	11	3	10
	Turnover	655.5	736.4	12	2	15
	Balance	-350.3	-381.2	-		
Goods	Exports	142.6	159.1	12	1.2	17
	Imports	439.9	490.3	11	3.1	9
Services	Exports	10	17	70	0.3	30
	Imports	63	70	11	2.4	11
Foreign direct investment	FDI in Latvia	78	59	-24	0.4	25
	Share capital of Latvian companies	4.9	10.3	213 companies		35
	Latvian FDI	1	0	-100	-	

In 2018, Latvia's total trade in goods and services with China was 736.4 million EUR, which ranks China as15th among Latvia's foreign trade partners.

Total exports of goods and services to China amounted to 176.1 million EUR, which represents 1% of Latvia's total exports, while imports of goods and services 560.3 million EUR, which is 3% of Latvian imports. Exports have increased by 15% compared to 2017, while imports have increased by 11%. In 2018, China was Latvia's 22nd most important export and 10th import partner. The trade balance with China was negative (EUR -384.2 million).

Export - import dynamics of goods

In 2018: exports of Latvian goods to China amounted to 159.1 million EUR, 12 million more than in 2017, while imports from China totaled EUR 490.3 million EUR, an increase of 11% compared to the previous year.

Numbers to compare / statistics:

- Since 2010, there has been positive growth dynamics of export to China;
- Exports have grown more than 6 times in eight years.

Exports of goods by commodity groups:

Products Groups	2014	2015	2016	2017	2018	2018 (Jan - June)	2019 (Jan - June)	Changes (%)
1. Wood and wood products:	50524	44527	50860	63973	71914	34493	46287	34
2. Mineral products:	9635	12632	16406	18936	20183	10226	11707	14
3. Metals and articles thereof:	14256	14512	13057	16742	15370	9948	3543	-64
4. Machines, mechanisms; electrical equipment:	13814	18204	19763	19339	15350	7033	5808	-17
5.Vehicles	156	403	1276	5602	10389	5592	1121	-80
6. Plant products	4813	5251	5858	4406	8156	1375	3131	128
7. Chemical industry production	3536	3564	2730	3222	5363	2023	2065	2
8. Optical devices and apparatus	1433	1789	1929	2163	3277	1261	2329	85
9. Miscellaneous manufactured goods	4609	3118	3712	3569	2761	1266	1905	50

Wood and wood products: exclusive business commodity group, which has been the main export commodity for decades. I want to note that only a small part of exporting good in this is commodities are wood products.

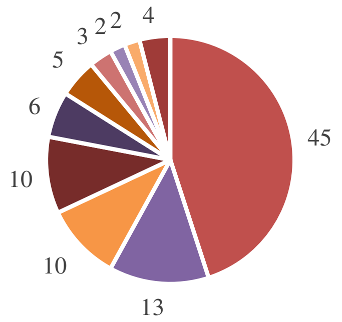
Plant products: fastest growing export group, can be characterized as historical commodity group. Farming and agriculture filed used to be, field, which employs the majority of residents of Latvia sine 1918 till 1989. As table shows exporting growth dynamics from 2014 to 2018 is close to 100%.

10. Food industry products:	1272	1795	2690	2170	2534	1036	1526	47
11. Plastic and rubber products:	925	1582	423	1022	1569	540	754	40
12. Building materials:	73	337	493	638	1195	596	656	10
13. Textiles:	325	354	599	594	565	252	193	-23
14. Animals and livestock products:	0	116	431	12	275	270	27	-90
15. Paper products:	68	273	83	217	179	67	4	-94
16. Leather goods:	0	0	0	11	7	0	3	
17. Other goods:	7	5	0	19	0	0	0	
18. Precious stones and metals:	4	0	2	3	0	0	0	
19. Footwear, headgear and other articles:	0	7	3	0	0	0	0	
Total:	107464	110484	122331	144655	161105			

In 2018, export of Latvian services to China was 736.4 million EUR, increased by 70%, imports of services 70 million EUR. EUR, an increase of 11% compared to 2017.

At the end of 2018, China accumulated direct investment in Latvia 59 million EUR. Latvia's accumulated direct investment in China was not recorded or was less than 1 million EUR.

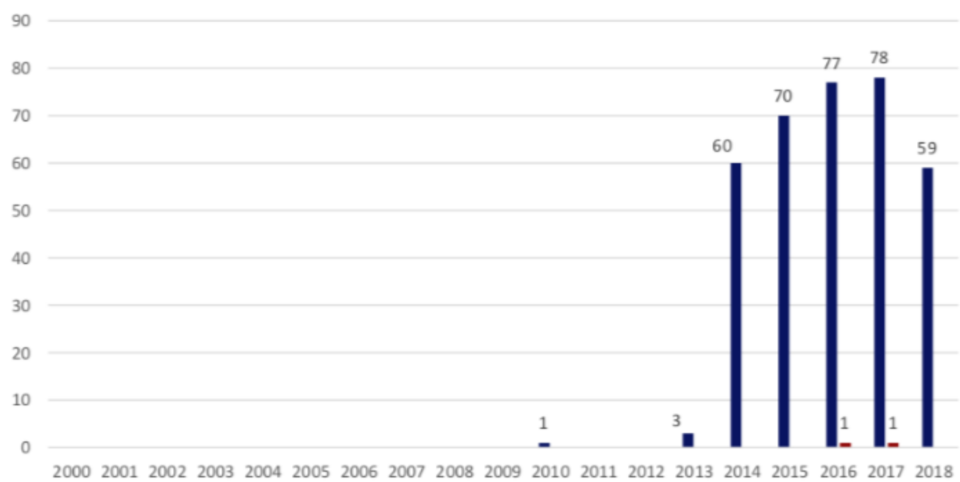
Exports of goods by commodity groups in %



China and Latvia accumulated direct investment by year

A foreign direct investment (FDI) is an investment made by a firm or individual in one country into business interests located in another country. Generally, FDI takes place when an investor establishes foreign business operations or acquires foreign business assets in a foreign company. However, FDIs are distinguished from portfolio investments in which an investor merely purchases equities of foreign-based companies.

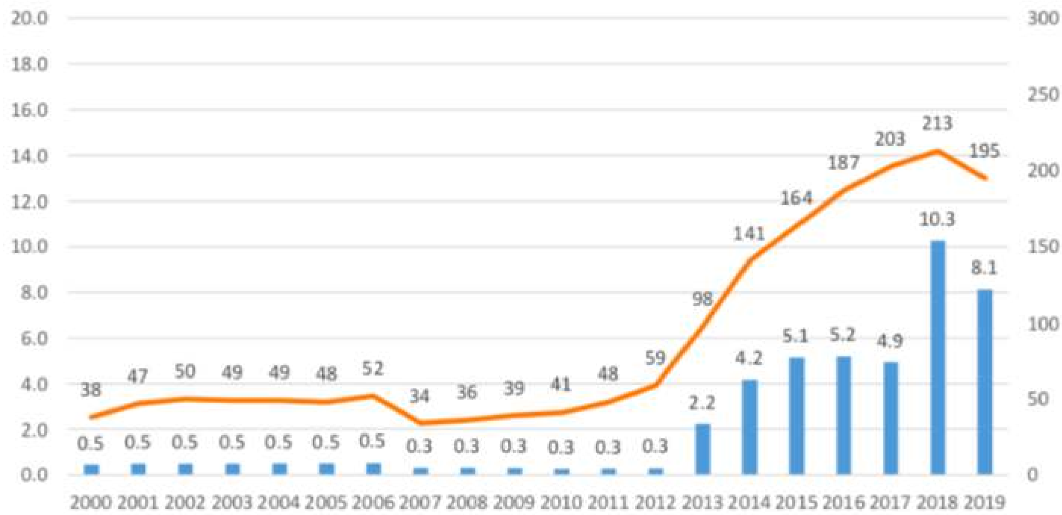
Direct investment (DI) by year in millions in Euro



Blue - DI in Latvia / Red – Latvian DI

At the end of 2018, China ranks 35th after investing in share capital of Latvian registered companies with a total investment of 10.3 million EUR and 213 companies.

China's accumulated direct investment in equity capital of Latvian enterprises



Blue - Resident direct investment in equity capital of Latvian enterprises / Orange - Number of enterprises

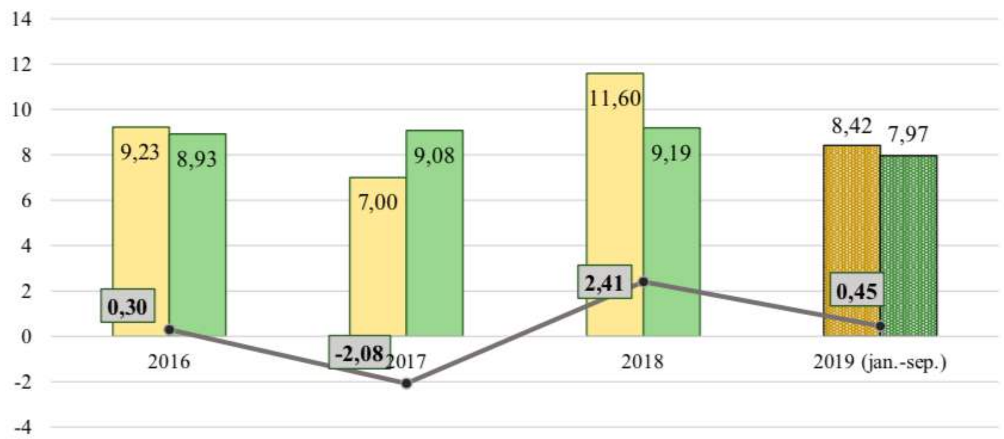
Latvian and Chinese trade in food, agricultural and fishery products

(hereinafter - agricultural products / re-export data included)

Overview

1. China is an important trading partner of Latvia among third countries - in 2018 China ranked 11th in agricultural exports and 6th in imports.
2. Latvia's trade balance with China is volatile, with a significant decline in 2017. However, in 2018, as the value of exports increased by 65.6%, balance sheet indicators improved. Imports in the last three years fluctuate around 9 million €.
3. In 2018, agricultural exports to China totaled $ 11.60 million € in total value, which is 65.6% more than in 2017. The import of agricultural products from China in Latvia reached 9.19 million €, up 1.2% compared to 2017.
4. In nine months of 2019 (January - September) Latvia exported 8.42 million tons of agricultural products to China. But imported agricultural products from China at 7.97 million €.

Latvia's and China's balance of trade in agricultural and food products (mil. EUR)

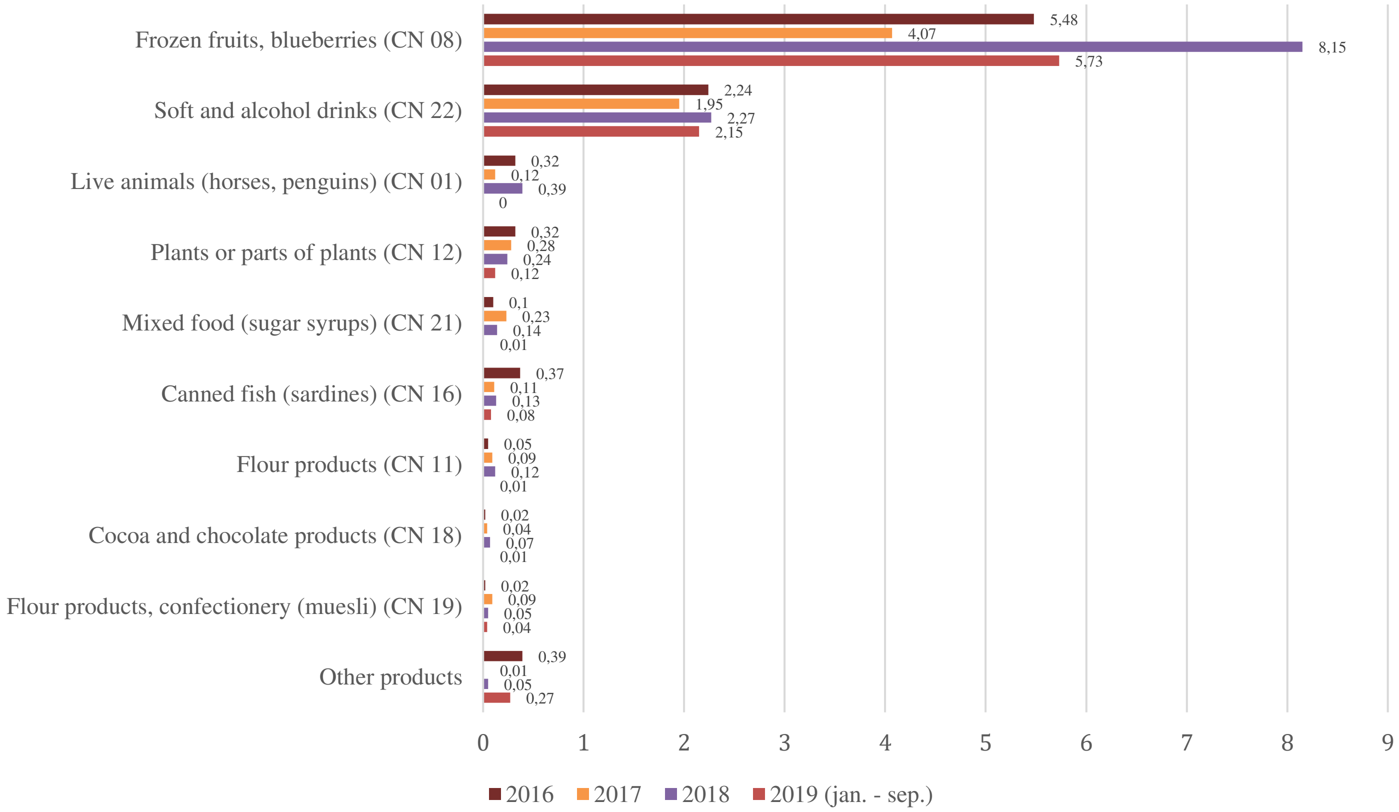


Yellow – Export / Green – Import / Line - Balance

Latvian exports to China

1. Frozen fruits and blueberries occupy the leading position in Latvia's export structure to China (CN 08): 92.9% of the value of this group consists of blueberries, other frozen fruits and black currants exported to a lesser extent. In 2018, this product group accounted for 70.2% of the total value of agricultural exports. The export value of fruit and berry products has doubled compared to 2017.
2. Non-alcoholic alcoholic beverages (CN 22) (predominantly vodka, beer, wine and whiskey) were the second largest category of exported products - the export value of this group accounted for 19.6% of the total exported value in 2018. The export value of this group in the total structure increased by 16.2% compared to 2017.
3. Live animals (CN 08) (horses and penguins) were exported to China in 2018 for 0.39 million tons €, the total value of which has tripled compared to 2017. It should be noted that the penguins were brought to Latvia from various European zoos, where they were transported to China after the exhibition ended.
4. In January-September 2019, the main export product group to China is frozen fruit and berries, accounting for 68% of the total value of agricultural exports.

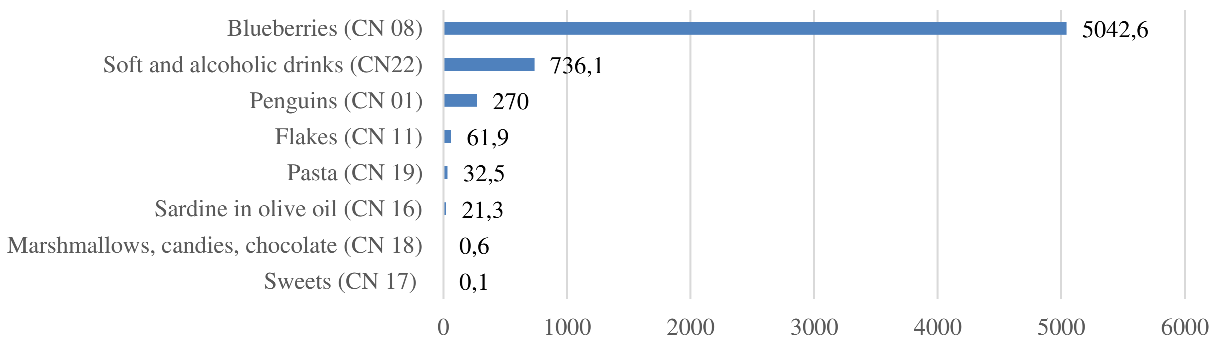
Export of Latvian agricultural and food products to China (million €)



Exports of agricultural products to China with an indication of Latvia's origin - such exports are dominated by blueberries, soft drinks (vodka, Riga Balsam, cider) and penguins. Flakes, pasta, flies, sardines in olive oil and sweets are exported in smaller quantities.

It should be noted that, for exports, the "country of origin" is optional or the country of origin may be "European Union", so the statistics may not fully reflect the actual situation.

Export of agricultural commodities to China with indication of Latvia's origin in 2018 (thsd EUR)



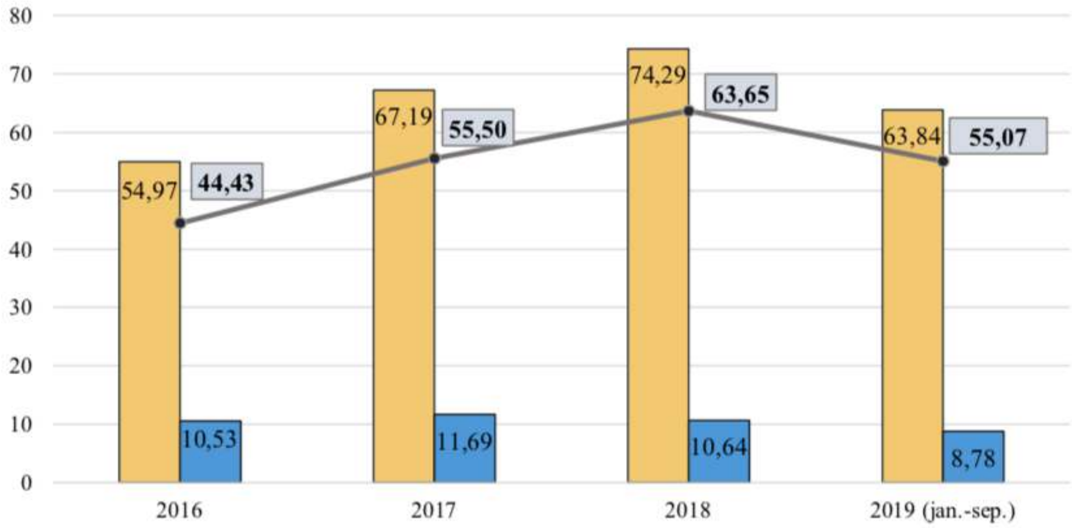
Latvian imports from China

1. Fruit and nuts (CN 08) occupy the largest position in Latvia's import structure from China, mainly importing grapefruit and frozen or dried fruit. In 2018, the total import value of this group reached 1.36 million € or 14.8% of the total value of agricultural imports. The value of fruit imports has increased by 2.2% compared to 2017.
2. Fish ranks second in import value (CN 03): frozen fish fillets, squid. In 2018, the value of fish imports reached 1.11 million € or 12.1% of the total value of agricultural imports. The value of imports of this group decreased by 16.7% in 2018 compared to 2017.
3. Non-alcoholic and alcoholic beverages (mainly spirits and vinegar) (CN 22), in 2018, imports from China reached 1.10 million. And accounted for 12% of the total imported value.
4. In January-September 2019, the main import product group from China is fish, which accounts for 17.7% of the total value of agricultural imports.

Trade in timber products

1. Latvia's and China's trade balance in wood products has been positive over the past three years. In addition, the value of exports tends to increase.
2. Latvia exported wood and articles of wood to China in 2018, which is up 10.6% compared to 2017. The main wood products exported are sawn or chipped length timber, raw wood, carpentry and joinery, wood furniture and paper.
3. In 2018, imports of wood products from China reached 10.64 million € value. Compared to 2017, the value of wood imports in 2018 has decreased by 9%. The main imported products are wooden furniture, paper and wood products.
4. January-September 2019 Latvian exports of wood products to China were 63.84 million and imports 8.78 million. €.

Balance of Latvian and Chinese trade in timber products (mil. EUR)



Yellow – Export / Blue – Import / Line - Balance

Additional information:

China is the EU's second largest trading partner after the US, and the EU wants to ensure that China builds a fair market, respecting intellectual property rights and fulfilling its obligations as a member of the World Trade Organization.

On 18 November 2019, negotiations between the EU and China took place during which the parties undertook to conclude as soon as possible a future agreement between the EU and China on the protection of geographical indications (GIs).

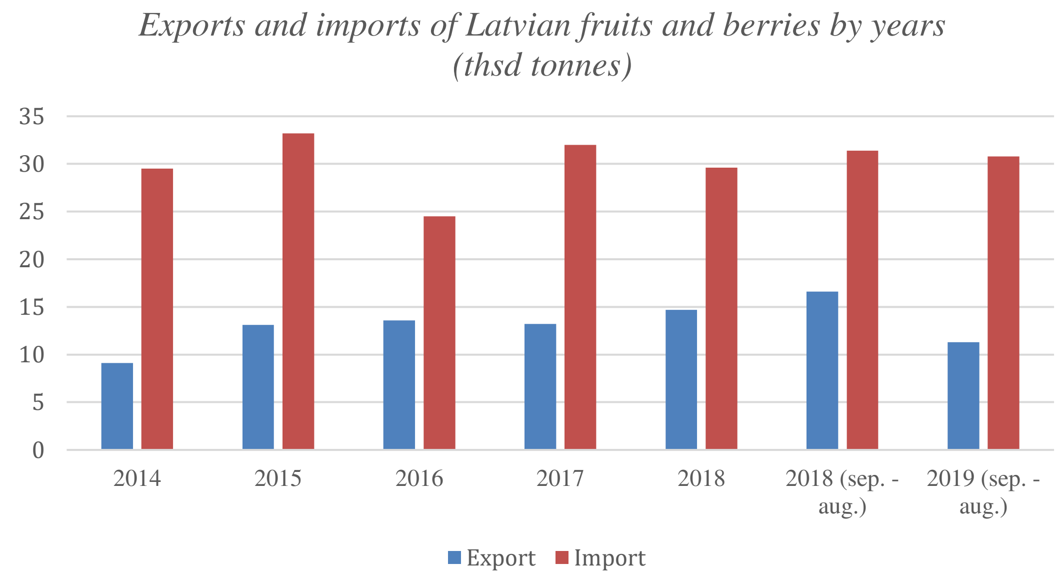
The Parties agreed that upon entry into force of the Agreement, 100 GIs should be protected per Party. The second list of 175 GIs on each side will be protected four years after the entry into force of the Agreement. In accordance with Article 23 of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), the Agreement provides for equivalent protection for the products of both Parties.

The GI Agreement is a milestone in EU-China cooperation and trade relations. At the EU-China Summit in April 2019, both sides committed themselves to agree on this agreement. The success of the agreement negotiations demonstrates the importance that the EU and China attach to their cooperation and opens up opportunities for closer cooperation.

China is a growing market for EU GI products, especially wines, cheeses and other products. It is therefore very important to protect GIs from abuses in China.

Latvian Fruit export in 2019

The EU Fruit and Vegetable Market Observatory has been in operation since the end of September 2019 to ensure transparency in the EU fruit and vegetable sector. That allows to trace development of this sector in Latvia:



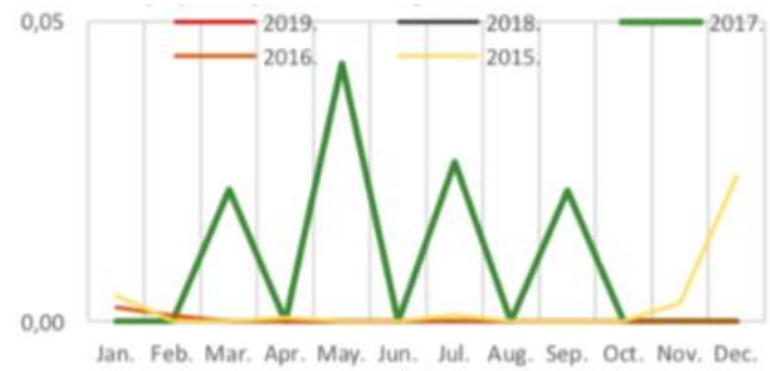
January - August 2019 (34.3 million, EUR) turnover of Latvian fruits and berries is on 6% lower than in the same period last year. Exports decreased by 27%, while imports increased by 5%.

The volume of Latvian fruits and berries exported in August 2019 was 824 tons, which is 14% or 138 tons more compared to the corresponding period of 2018. Characteristic fruits and berries exported in August: (1) plums - 41%, (2) apples - 31% and (3) pears - 15% of total Latvian fruits and berries export volume respectively.

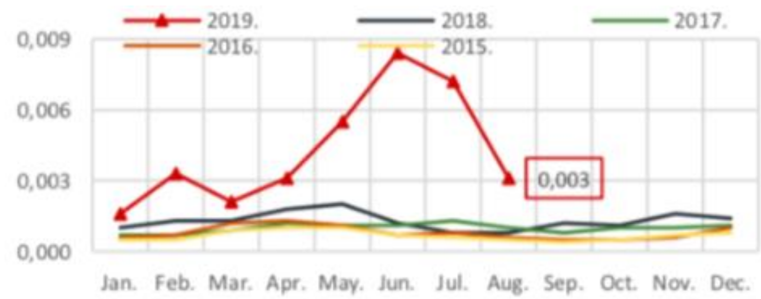
- ✓ Export partner country for plums: Estonia (68% of total exports) and Lithuania (31%).
- ✓ Export partner country for apples: Estonia (50%), Lithuania (28%) and Kazakhstan (22%).
- ✓ Export partner country for pear: Estonia (54%), Lithuania (35%) and Belarusian (12%).

Export of blueberries from Latvia (data in graphs is reflected in tons):

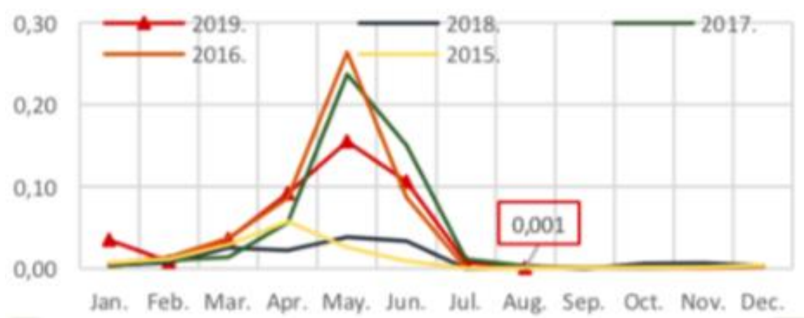
Export of black currant from Latvia (data in graphs is reflected in tons):



Export of raspberry from Latvia (data in graphs is reflected in tons):



Export of strawberry from Latvia (data in graphs is reflected in tons):



The volume of Latvian typical fruits and berries imported in August of 2018 was 3,076 tons, which is 73% more than a year before. Top import fruit and berry products were plums (34% of total import volume), apples (34%), cherries (24%) and pears (17%).

2018 Foreign trade of food, agriculture and fishery products of Latvia

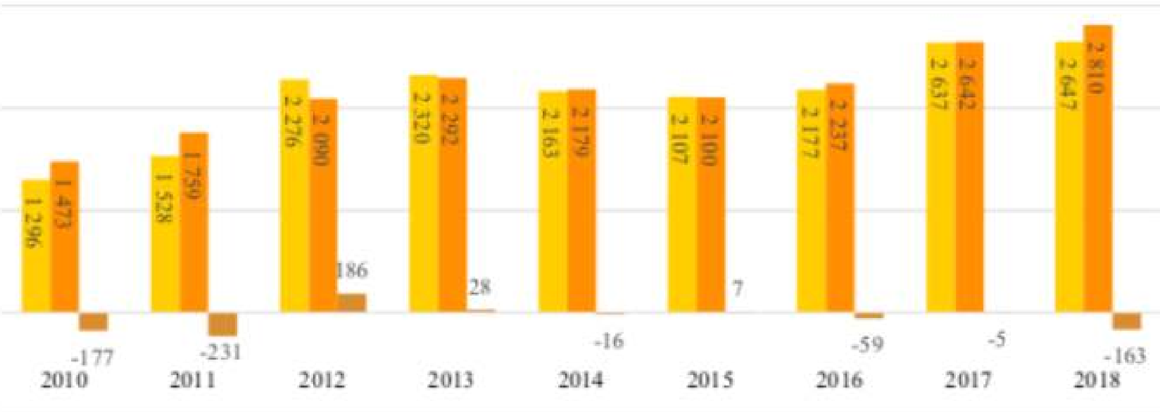
According to Eurostat data, in 2018 food, agricultural and fishery products were the second most important commodities in Latvia's total exports. In 2018, exports of food, agriculture and fishery products accounted for 19.96% of Latvia's total export value.

Export of Latvian food, agricultural and fishery products in 2018 compared to 2017 has increased by 9.9 million EUR or 0.4%. Among EU Member States, Slovenia has the fastest export growth in 2018 compared to 2017 (10.4%), while Denmark has the largest export decline (2.6%).

In 2018, both exports and imports of food, agricultural and fishery products increased compared to 2017. The value of imports of food, agriculture and fishery products increased more rapidly than the value of exports:

- ❖ Import increased by 167.8 million EUR or 6.3%;
- ❖ Export growth was 9.9 million EUR or 0.4%.

Foreign trade balance of food and agricultural products

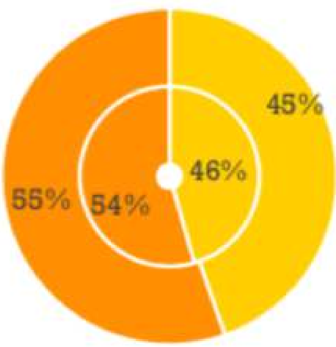


Yellow – Export / Orange – Import / Dark orange - Balance

In 2018, exports to third countries decreased (by 1.6% in value) compared to 2017, while exports to EU countries increased by 2.0%.

Traditionally, imports from other EU countries account for the largest share in the structure of food, agricultural and fishery products - in 2018, 87% of food and agricultural products came from other EU countries and 13% from third world countries.

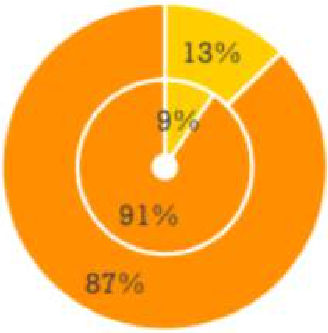
Exports of food and agricultural products to the EU



2017 - Inner Circle;
2018 - Outer Circle;

Orange – European Union countries.
Yellow – Third countries

Imports of food and agricultural products from the EU



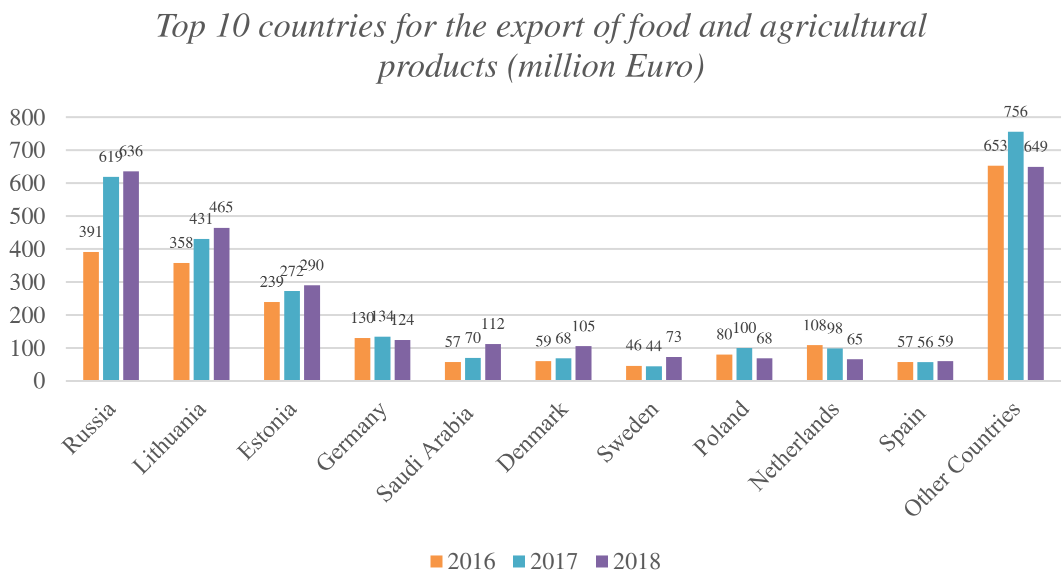
2017 - Inner Circle;
2018 - Outer Circle;

Orange – European Union countries.
Yellow – Third countries

Given the significant rise in the value of imports, the external trade balance for food, agriculture and fisheries will remain negative in 2018. Exports to other EU countries accounted for the largest share in the structure of food and agricultural exports: 55% of products were sold on the EU internal market and 45% were exported to third countries.

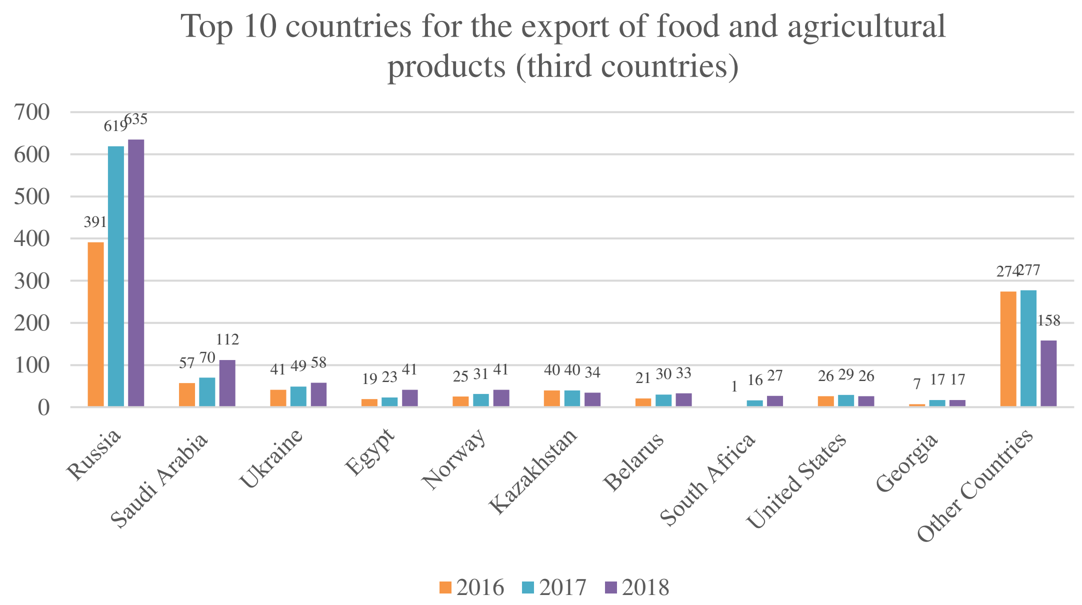
Russia was the most important export destination for Latvian food and agricultural products, to which 24% of the total export value of food and agricultural products was exported in 2018, and the value of goods exported to Russia increased by 2.8% compared to 2017.

Lithuania is the most important trade partner in terms of imports, with imports accounting for 23% of the total value of food and agricultural imports in 2018.



- In 2018, the total value of exports to third countries decreased by 1.6%, most significantly to Turkey - by 44.5 million EUR.
- Russia was a major partner among third countries, with exports accounting for 53.9% of total value. Exports to other third countries are significantly lower.
- Latvia's exports to Saudi Arabia, the second most important export country among third countries, are 6 times smaller than to Russia.

- In 2018, the largest export growth from third countries (among the top 10) was to Saudi Arabia (EUR 42.5 million), with exports of wheat and barley (EUR 44.3 million) and Egypt (18.4 million).



- Latvia exports food and agricultural products to all 27 EU countries, with Lithuania accounting for 31.7% of the total value of exports to EU countries.
- Estonia is the second most important export country, accounting for 19.8% of the total value of products exported to EU countries.
- Among the top 10 EU countries, exports increased most in 2017 to Denmark - 81.4% and to Sweden - 65.7%, while exports decreased to the Netherlands (33.8%), Poland (31.2%). %), Great Britain (22.6%) and Germany (7.6%).

Among major export products, in 2018, exports of edible roots and vegetables increased significantly (by 61.7%), while exports of oilseeds and fruits fell sharply (by 46%).

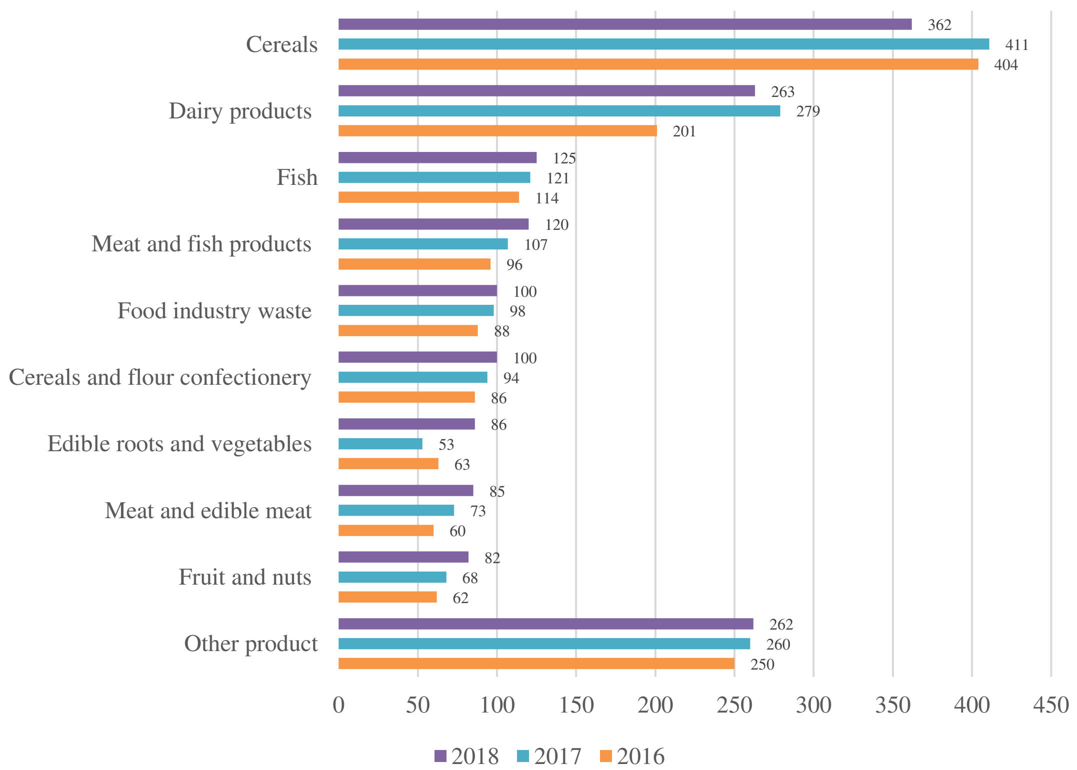
Major export products of Latvia in 2018

- Soft drinks - 30.6% of the total export value of food and agricultural products. In 2018, their average export value has increased by 5.1%.

- Cereals - 13.7% of the total export value of food and agricultural products. In 2018, the average export value of cereals has decreased by 11.8%.

- Milk and milk products, eggs, honey - 9.9% of the total value of food and agricultural exports. In 2018, their average export value has fallen by 5.9%.

Export of Latvian food and agricultural products (millions Euro)



In terms of value, exports of alcoholic and non-alcoholic beverages (EUR 38.9 million), edible roots and vegetables (EUR 32.7 million) and fruit and nuts (EUR 13.8 million) increased the most.

The most important import products have not changed compared to the previous year.

Major Import Products of Latvia in 2018

- Soft drinks - 27% of the total import value of food and agricultural products. In 2018, their import value has increased by 3.8%;
- Cereals - 7.3% of the total value of food and agricultural imports. In 2018, their import value has increased by 57.5%;
- Fruit and nuts - 6.3% of the total value of food and agricultural imports. In 2018, their import value has increased by 3.5%.

In terms of value, imports of cereals (EUR 74.8 million), soft drinks and alcoholic beverages (EUR 28 million) and flour products (EUR 10.6 million) increased the most. Imports of coffee, tea and spices decreased (by EUR 2.1 million).

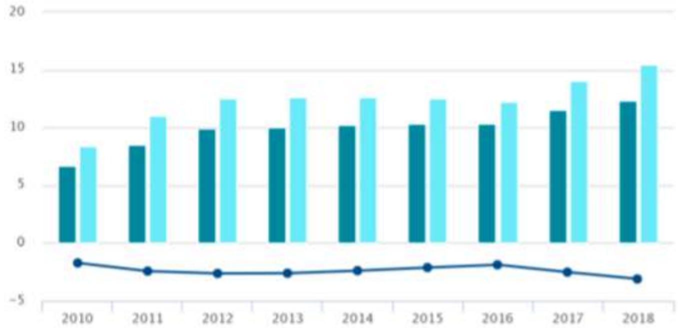
Latvia's foreign trade turnover in 2018

In 2018, Latvia's foreign trade turnover is EUR 2.25 billion higher than a year ago. In 2018, Latvia's foreign trade turnover at current prices reached EUR 27.8 billion, an increase of EUR 2.25 billion or 8.8% compared to 2017, according to the Central Statistical Bureau. The value of exports amounted to EUR 12.34 billion (an increase of EUR 833.9 million or 7.2%) and the value of imports to EUR 15.46 billion (an increase of EUR 1.42 billion or 10.1%).

In December 2018, Latvia's foreign trade turnover amounted to EUR 2.15 billion, which was 0.4% lower at current prices than a year ago, including a 1.3% drop in the value of exports of goods and a 0.3% increase in the value of imports. In December, Latvia exported goods worth EUR 943.7 million, but imported goods worth EUR 1.2 billion. Compared to December 2017, the foreign trade balance worsened, with exports falling from 44.4% to 44% of total foreign trade.

According to calendar and seasonally adjusted data, in December 2018, export value at current prices was 3.6% higher than in December 2017, while import value increased by 6.2% month-on-month, while export value decreased by 0.7% and imports - increased by 3.4%.

Latvia's foreign trade turnover in 2010 – 2018
(In million Euro)



Dark blue – Export / Light blue – Import / Line - Balance

Key changes in exports in December 2018 compared to December 2017:

1. Exports of wood and wood products more than 24.5 million EUR or 17%;
2. Exports of base metals and articles of base metals exceeding 8.7 million EUR or 13.6%;
3. Exports of machinery, mechanical appliances and electrical equipment less than 14.5 million EUR or 8.2%;
4. Export of mineral products less than 9.9 million EUR or 19.2%;
5. Exports of food products less than 8.1 million EUR or 7.6%.

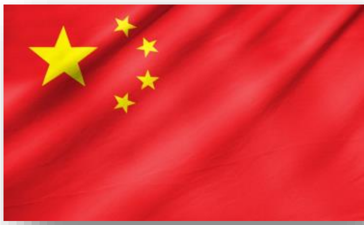
Key changes in imports in December 2018 compared to December 2017:

1. Imports of transport vehicles and equipment more than 30.9 million EUR or 21.4%;
2. Imports of wood and wood products more than 6.7 million EUR or 18.5%;
3. Imports of food products more than 6.4 million EUR or 6.1%;
4. Imports of machinery, mechanical appliances and electrical equipment less than 31.3 million EUR or 10.5%;
5. Import of mineral products less than 15 million EUR or 16.6%.

In December, Lithuania (16% of total exports), Estonia (12.2%), Sweden (7%) and Denmark (5.7%) were the most important export partners in trade with the European Union, while Lithuania (16%) was the most important import partner. Germany (10.9%), Poland (9%) and Estonia (7.8%).

The increase in iron and steel exports in December 2018 compared to December 2017 was influenced by an increase of 11.5 million EUR in iron and steel exports. Exports of cereal products, on the other hand, declined, with exports of wheat and mixtures of wheat and rye shrinking by 17.4 million EUR or 48.6%.

Short Report: Lithuania's food exports to China



The Action Plan signed in 2017 between the Chinese and Lithuanian ministries for agriculture provides a solid basis for the inter-institutional partnership. Lithuania are implementing this plan, to carry out joint activities in the areas of agricultural economy and trade and food safety, and to jointly participate in international agricultural exhibitions, as well as to share experiences and information.

Lithuania's agricultural and food product exports to China, mostly cheese and curd, frozen blueberries, concentrated milk and cream, and alcoholic beverages, last year grew by 46 percent to 8 million euros. China ranked 45th out of Lithuania's 143 export partners.

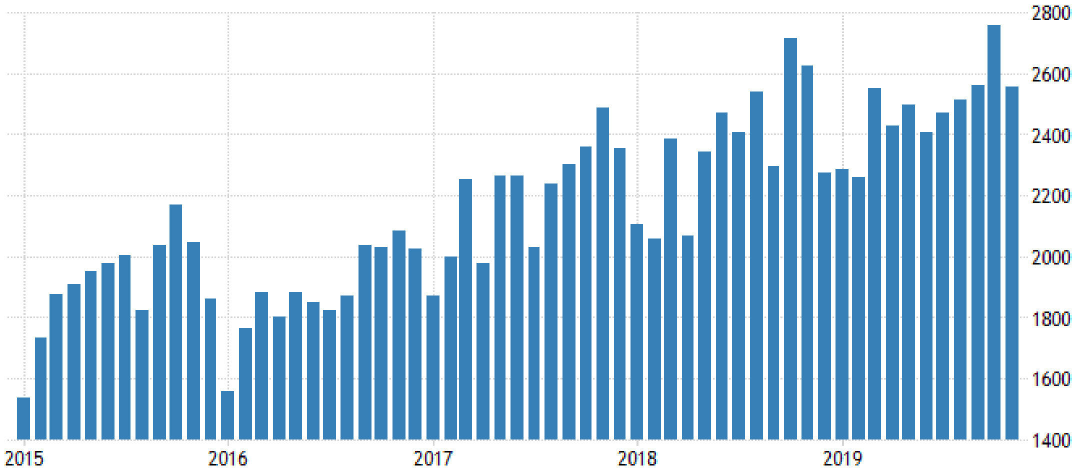
Lithuanian food sector is one of the key sectors of Lithuanian's economy, accounting for 4.1% of GDP. Being a member of the EU market requires the improvement of safety and quality of products together with the development of foodstuffs, the introductions of modern food manufacturing technologies, the implementation of innovations and new technologies into food industry. All these features are main strengths of Lithuanian food and beverages industry. More than 80% of all industry exports is oriented towards the European Union member countries.

Lithuania's exports of goods and services now account for 82% of country's GDP and companies are actively looking for new horizons for exports. With Lithuania's economy growing steady and the export recording the most rapid growth across Europe, the country's exporters have been expanding rapidly into new territories, including China. Lithuania's exporters put a sterling performance in 2017 – exports to China totaled EUR 180 million including nearly EUR 131 million of exports of goods of Lithuanian origin. In the first half of 2018 domestic exports to China increased by another 10% and amounted to EUR 69.6 million. Furniture accounted for the largest proportion of exports, with almost third in total. Other domestically produced exports to China consisted of wood (15.1%), optical, measuring, medical instruments (12.9%) and machinery and mechanical appliances (10.7%).

Interesting facts about Lithuanian food and textile industries

- Lithuanian beer was awarded at the European Beer Star Awards, World Beer Cup and World Beer Championship;
- Lithuanian ice cream got the highest awards for quality, superior taste and innovation at the various international exhibitions
- Lithuanian cheese got the highest awards at the international Cheese Awards Nantwich
- Most of the sewing companies, because of convenient geographical location, flexibility, short production and delivery time switched on a sub-contracting work for the major European and US brands ranking from houte couture to popular chains like Next, Laura Ashley, Hugo Boss, H&M, Mark & Spencer, Nike, Decathlon and others.
- Lithuanian clothing manufacturers produce uniforms and workwear tailored for such institutions like Lithuanian army, fire departments, police etc.

Exports in Lithuania decreased to 2554.90 EUR Million in November from 2759.60 EUR Million in October of 2019



In 2016, Lithuania exported mostly: Machinery and mechanical appliances, electrical equipment (15 percent of total exports); mineral products (14 percent); chemicals (11 percent); furniture (8 percent); food products, beverages and tobacco (8 percent); and plastics and rubber (7 percent). Lithuania's main export partners were Russia (14 percent of total exports), Latvia (10 percent), Poland (9 percent) and Germany (8 percent).

Lithuania Trade	*Last*	*Previous*	*Highest*	*Lowest*	*Unit*
Balance of Trade	-81.90	-92.00	69.20	-597.50	EUR Million
Current Account	222.90	482.70	482.70	-574.42	EUR Million
Current Account to GDP	1.60	0.90	3.20	-15.50	%
Imports	2636.70	2851.60	3005.50	153.20	EUR Million
Exports	2554.90	2759.60	2759.60	135.50	EUR Million
External Debt	33858.40	34108.70	35858.70	7273.80	EUR Million
Capital Flows	525.60	621.00	925.40	-791.80	EUR Million
Remittances	283.81	264.55	428.27	75.89	EUR Million
Gold Reserves	5.82	5.82	5.82	5.78	Tonnes

Short Report: Estonia’s food export to China

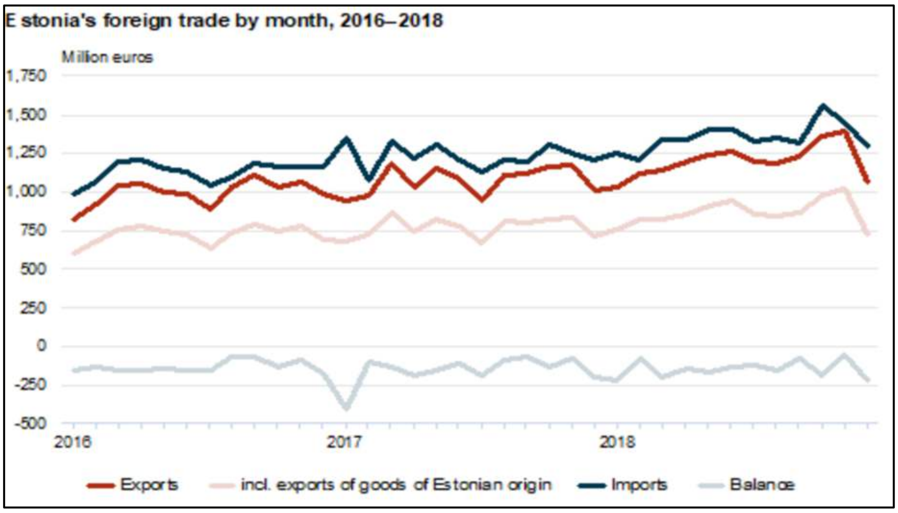
In 2018, the exports of goods from Estonia amounted to €14.4 billion and imports to Estonia to €16.2 billion at current prices. The trade deficit in 2018 totaled €1.8 billion euros, down €69 million on year.

The largest surplus was in the trade in wood and articles of wood and miscellaneous manufactured articles (including furniture, prefabricated wood buildings); the largest deficit was registered in the trade in transport equipment and in raw materials and products of the chemical industry.

Estonia	*Last*	*Previous*	*Highest*	*Lowest*	*Unit*
Balance of Trade	-61.00	-174.31	16.52	-411.47	EUR Million
Current Account	198.10	104.40	255.10	-751.70	EUR Million
Current Account to GDP	1.70	3.20	3.20	-15.00	%
Imports	1305.43	1451.09	1551.21	30.63	EUR Million
Exports	1244.43	1276.79	1387.96	32.11	EUR Million
External Debt	21787.70	22044.90	22044.90	883.10	EUR Million
Capital Flows	541.60	240.70	639.40	-641.70	EUR Million
Foreign Direct Investment	16.60	1745.20	1745.20	-437.50	EUR Million

In 2018, EU countries accounted for 68% of Estonia's total exports and 78% of its total imports. The trade deficit with other EU countries totaled €2.8 billion, down €55 million on year. Exports increased by 6% and imports by 4% in trade with EU countries. Trade in goods with non-EU countries grew even more — exports increased by 27% and imports by 37%. The trade surplus with non-EU countries was over €1 billion.

In 2018, electrical equipment was exported the most, accounting for 16% of Estonia's total exports. Next came mineral products (15%) and wood and articles of wood (11%). The increase in exports was mostly affected by a rise in the exports of mineral products (up by €900 million), wood and articles of wood (up by €152 million) and mechanical appliances (up by €131 million). The biggest decrease in 2018 was recorded in the exports of agricultural products and food preparations.



Export by countries

The top destination countries of Estonia's exports in 2018 were Finland (16% of Estonia's total exports of goods), Sweden (11%) and Latvia (10%). Electrical equipment and base metals and articles of base metal were the main commodities exported to Finland; electrical equipment and wood and articles of wood were the main commodities exported to Sweden; mineral products, and agricultural products and food preparations were the main commodities exported to Latvia. The biggest increase occurred in exports to the US, Singapore and Finland, while the biggest decrease occurred in exports to Sweden, the Netherlands and Russia.

The share of goods of Estonian origin in total exports of goods was 72% in 2018. Compared to 2017, the exports of goods of Estonian origin increased by 12% and re-exports by 11%. In the exports of goods of Estonian origin, the greatest increase was in the exports of mineral products (including shale oil, solvent), wood and articles of wood (birch and pine pulpwood) and electrical equipment (data communication equipment). The main destination countries of goods of Estonian origin were Finland, Sweden and Germany. The biggest increase in the exports of goods of Estonian origin was in the exports to the US and Singapore, and the biggest decrease in the exports to Sweden.

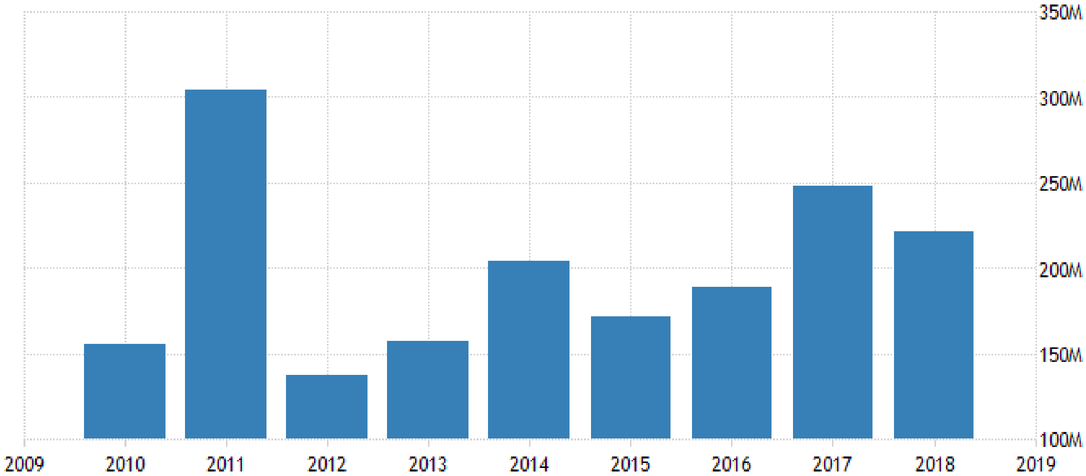
The main commodities imported to Estonia were mineral products (15% of Estonia's total imports of goods), electrical equipment (14%) and mechanical appliances, transport equipment, and agricultural products and food preparations (10% each). The greatest increase was in the imports of mineral products (up by €1 billion), mechanical appliances (up by €208 million) and base metals and articles of base metal (up by €168 million).

The main countries of consignment in 2018 were Finland (13% of Estonia's total imports of goods), Germany and Lithuania (10% each). From Finland, mineral products, and electrical equipment were imported the most. Transport equipment and mechanical appliances were imported the most from Germany, and mineral products and agricultural products and food preparations from Lithuania. The biggest year-on-year increase occurred in imports from Russia (up by €484 million), Belarus (up by €342 million) and Lithuania (up by €187 million), with the largest increase in the imports of mineral products. At the same time, imports decreased the most from Poland and the Netherlands.

Estonia exported goods to 183 countries and imported goods from 143 countries. A positive foreign trade balance was recorded in the case of 139 countries. The biggest surplus was recorded in trade with the US, followed by Norway and Singapore. The biggest deficit was recorded in trade with Germany, Lithuania and Poland.

In December 2018, exports of goods from Estonia amounted to €1.1 billion and imports to Estonia to €1.3 billion, increasing 6% and 7%, respectively. In December 2018, the growth in exports and imports was affected the most by increase in the trade of mineral products.

Estonia Exports to China was US $221.05 Million during 2018, according to the United Nations COMTRADE database on international trade



Estonia Exports to China	Value	Year
Electrical, electronic equipment	$67.94M	2018
Wood and articles of wood, wood charcoal	$52.78M	2018
Optical, photo, technical, medical apparatus	$33.41M	2018
Machinery, nuclear reactors, boilers	$13.52M	2018
Edible fruits, nuts, peel of citrus fruit, melons	*$5.77M*	2018
Copper	$5.67M	2018
Fish, crustaceans, mollusks, aquatics invertebrates	$5.05M	2018
Miscellaneous articles of base metal	$5.02M	2018
Dairy products, eggs, honey, edible products	*$4.76M*	2018
Mineral fuels, oils, distillation products	$3.54M	2018

Overview of popular NTFPs – various Baltic region berries

People began to eat berries even before the advent of agriculture, and they were the most important seasonal food for early hunter-gatherers. Nowadays the fruits of many shrubs and herbaceous plants are still considered a vital part of a healthy diet due to their rich vitamin and mineral content. Berries have shown capacity to strengthen the immune system, increase resistance to diseases, and some have been researched for their antiseptic, diuretic and expectorant effects. Besides, berries are low in calories - they contain only from 20 to 80 kcal per 100 grams. Frozen and dried berries are also a very popular export product as they are relatively easy to preserve. Of all the NTFPs berries take the major share of popularity by consumption and well exports/imports. Other popular forms of NTFPs include a very varied assortment of products in health, cosmetic, medicinal, beauty and food supplement sectors.

Berries are richer in phytonutrients than fruits: on average, a cup of berries contains 20-30 mg of vitamin C, depending on the species, as well as about 150-300 IU (international units) of vitamin A. The amount of vitamin B is lower than in fruits, but the mineral content is rich and varied: potassium, calcium, magnesium, silicon, iron. And, of course, berries are packed with fiber.

Due to antiseptic properties, berries are often recommended to be used against common cold. They also contain pectins, which lower cholesterol, improve metabolism and blood circulation. Due to the large amount of antioxidants, they protect the body from free radicals and slow down the aging process. In general, berries have a beneficial effect on the state of the cardiovascular system, intestinal motility, help to maintain visual acuity, and are useful for certain liver diseases. Sea buckthorn is good in case of a strong vitamin deficiency and is also rich in vitamin C. Gooseberries are indicated for anemia, blueberries for myopia.

There is no unequivocal opinion about the benefits of frozen berries, but such a product still contains many vitamins and minerals, especially ascorbic acid. In raspberries, freezing helps preserve quercetin, kaempferol, P-coumaric acid, flavonoids, and anthocyanins. Since only the ripe berries are usually frozen, they have the highest amount of phytonutrients. However, it is important that the end product is free of preservatives, dyes and other additives.

Dieticians suggest that berries should be eaten as a snack a few hours after having breakfast in the morning. Like fruits, they should be eaten as a separate meal. Lingonberries, black currants, gooseberries, cherries and other sour fruits can be combined with meat because they help with the iron absorption.

According to the recommendations of the World Health Organization, one needs to consume at least 400 grams of vegetables, fruits and berries in total per day. Of these, berries should account for no more than 200 grams. If a person consumes only berries, the recommended daily intake is 300-400 grams. Children under one year old should be given no more than 50 grams of berries per day, up to two years old can have - 100 grams, and three-year-olds: 150-200 grams.

Sourced by Beattie, Julie & Crozier, Alan & Duthie, Garry. (2005). Potential Health Benefits of Berries. Current Nutrition & Food Science. 1. 71-86.

Sea Buckthorn Market Research

Market research structure:

What is Sea Buckthorn?

- The history of sea buckthorn;
- Sea Buckthorn Today;
- Distribution of Sea Buckthorn;
- Production economics;
- Varieties of Sea buckthorn;
- History of sea buckthorn in Latvia;
- Size of plantations in Latvia.

Business Perspective

- Investment in sea buckthorn;
- European market.

Geographical Distribution of Sea Buckthorn

- Overview Sea Buckthorn Products;
- Sea Buckthorn in Cosmetic Industry;
- Sea Buckthorn in Pharmacy;
- Treatment of diabetes.

Interesting sea buckthorn facts

What is Sea Buckthorn

(*Hippophae rhamnoides*) is a member of the *elaeagnaceae* family; which comprises small trees and shrubs, native to temperate regions and generally found in the northern hemisphere. It's a perennial, woody, deciduous plant with silvery-green narrow leaves and intermittent thorns. It can grow as large as 8-10m in height, although 1-4m is more common. Wild plants will commonly live for between 30-60 years, whilst commercial orchards usually sustain production for 10-15 years on average.

Sea buckthorn is dioecious; having separate male and female plants. Female trees are fertilized by male trees via wind pollination. As insects are not required for pollination, the flowers are quite discrete and not resplendent. The plant has a relatively shallow rooting habit. The main root mass extends horizontally from trees at a depth of 10-40cm. The plant also has vertical roots that can grow down to a depth of 3m. These anchor the tree and seek out soil moisture and nutrients from depth. An *actinomycetes* soil bacterium called frankia has a symbiotic relationship with, and fixes, atmospheric nitrogen on root nodules. The quantity of nitrogen fixed is thought to be similar to that of leguminous rhizobia, adding around 180Kg/Ha of nitrogen annually.

The fruit grows in tight clusters on female plants, typically on two-year-old branches. Sea buckthorn are commonly spherical, cylindrical or elliptical in shape and are attractively coloured in red, red-orange, bright orange or yellow. The berry size varies according to cultivar and the season, but usually ranges between 6-12 mm. Sea buckthorn prefers sandy, free draining soils. However as a pioneering plant, it is highly adaptable to a wide range of soil and climatic conditions. I have seen it thriving in deserts in China, on high altitude weathered bedrock in the Indian Himalayas and in drained marshland in Latvia. In the UK wild sea buckthorn is usually found growing in sand dune locations.

A soil pH at or close to neutral is optimal for sea buckthorn production, although it doesn't seem to be a limiting factor and can still grow in soils with pH ranging from 5.5 to 7.5. It can also tolerate or adapt to soils with high salinity too.
Another remarkable attribute is sea buckthorn's ability to sustain extremes of temperature. Plants have endured temperatures ranging from +40C to -40C, although that is variety dependent.

Whilst it is considered that sea buckthorn is drought tolerant, it is actually a moisture sensitive plant. Inadequate soil moisture, particularly during early spring, can negatively impact flowering and fruit set. Sea buckthorn can endure lengthy periods of drought better than other woody shrubs, but under such conditions high fruit yields would not be expected. Production areas receiving less than 400mm of annual rainfall should provide supplemental irrigation. Under dry conditions irrigated fruit yields were 100% higher than those of trees not receiving irrigation. Sea buckthorn is strongly phototropic and prefers to grow in full sunlight. Under shaded conditions the plants tends to grow in a distorted manner and often will not bear fruit.

Sourced by National Farmers Union Mutual Charitable Trust

The history of sea buckthorn

The Latin name for sea buckthorn – *hippophae rhamnoides* - translates from the Greek word hippo, meaning horse, and *phaos*, which means to shine. Therefore the literal translation is shining horse. In ancient times sea buckthorn leaves were fed to horses which then noticeably improved in condition, gaining weight and having shiny coats. There is some mythology surrounding sea buckthorn and the mythical winged horse Pegasus. Legend has it that Pegasus's favourite snack was a berry that grew at high altitudes – sea buckthorn.

Good horses were key to victorious battles and to communication across vast empires. Legend has it that after one battle, injured, old and weak horses were left to die next to some sea buckthorn shrubs. When Genghis Khan next passed through the area (returning from another victorious campaign no doubt), they came across these horses: strong and fully reinvigorated, the horses whinnied when they saw their former soldier masters. Khan commanded his soldiers to pick the berries and to take them daily. Feeding his horses and his soldiers sea buckthorn replenished them and gave them the energy, strength and endurance to win many more battles.

Pliny The Elder made one of the oldest known factual references to sea buckthorn in his books on natural history, written in 77-79AD. One chapter is titled "Two varieties of the hippophaes: two remedies". He refers to the fact that the name is derived from its suitability to treat horse ailments. This also indicates that botanists had already named and identified its usefulness at a prior date. The medicinal properties of sea buckthorn were first mentioned in the ancient Tibetan Buddhist medical texts 'rGyud Bzi', written in the 8th century. There are many prescriptions in which the use of sea buckthorn is described in detail.

Sourced by National Farmers Union Mutual Charitable Trust

Sea Buckthorn Today

In more modern times the Chinese supplied sea buckthorn as the official drink to their athletes, giving them strength and energy to perform at the 2008 Beijing Olympics. Coincidentally China went on to win the most gold medals and came first overall.

The Indian Army provides sea buckthorn juice to soldiers to help alleviate altitude sickness at high altitude border patrol bases in the Himalayas. The main military base is Leh, at an altitude of 3500m. Due to border discrepancies over the years with neighboring Pakistan and China, India have some 80,000 soldiers based there. Soldiers are flown in from New Delhi (216m) before going on to perform duties at even higher altitudes. Inevitably, altitude sickness has caused many casualties in the past and the army is now using sea buckthorn to try and prevent this. The Defense Research and Development Organization (DRDO) has also developed a sea buckthorn-based skincare product to combat the higher levels of ultra violet radiation experienced at altitude.

Russian cosmonauts use sea buckthorn juice and oil as part of a nutritional plan to counter the intense cosmic radiation found in space. Yuri Gagarin took sea buckthorn before becoming the first human to travel into space in 1961.

Yurijs Ovsjannikovs was one of the first people to establish a commercial orchard in Latvia in the 1990s. When I asked why he chose sea buckthorn he simply said:

"For the Russians to put anything into space it costs them weight for weight the same value as gold. Every time they go to space they take sea buckthorn with them, so to me that makes it a crop that's as valuable as gold"

He also added that a crop that can grow itself without using vast quantities of artificial pesticides or fertilisers and yet produces a fruit that is beneficial to health was a big attraction and seemed logical. In the UK, sea buckthorn is beginning to catch the eye of celebrity chefs, with both Hugh Fearnley-Whittingsall and Nathan Outlaw featuring the berries as unique ingredients in their recipes.

Sourced by National Farmers Union Mutual Charitable Trust

Distribution of Sea Buckthorn

The orange area in the map below shows where sea buckthorn grows worldwide. Please refer to the Appendix at end of this report for the fully itemized list of countries. Commercial cultivation of sea buckthorn reportedly started in China and Russia in the 1930s. Reputedly, 95% of the global sea buckthorn population can be found in China, where the total area is thought to be well in excess of two million hectares. However, this is not all in commercial fruit production. The plant is also used extensively to prevent soil erosion. Please see case study one on next page.

In North America, sea buckthorn is not a native species. It was purposely introduced as a shelterbelt plant for use on the prairies. At some point in time, people began harvesting the fruit from the trees. Subsequently some commercial orchards were established, predominantly in Canada where the national commercial crop area is thought to be around 400Ha.

The 1992 sand dune survey of Great Britain recorded an area of approximately 650Ha of sea buckthorn (Houston and Weaver: 2009). Approximately 250Ha of that was native sea buckthorn, with the remainder being planted for conservation purposes. Presently, the national commercial sea buckthorn crop is in the region of a mere 10-15Ha.

In India, vast wild sea buckthorn forests exist in the Himalayas. In the principal production region of Ladakh, some 15,000Ha of sea buckthorn prevail. However, some areas of the forest are so thick they are impenetrable and other areas inaccessible due to terrain. This causes obvious constraints to the harvesting of fruit. The Indian Ministry of Environment & Forests (MoEF) has recently granted permission for some commercial orchards to be established, in order to improve the productivity of the industry.

Similarly in Nepal, wild sea buckthorn is found at altitude growing on Himalayan mountainsides, river valleys and glacial moraine. Strong local industries exist, where the sea buckthorn juice is sold to trekking tourists, the pulp is fed to yaks/donkeys/chickens, and the wood is used as a heating fuel. Access to the more populated lowlands is logistically challenging, preventing further expansion of the industry. The devastating 2015 earthquake has added further setbacks to the industry.

In Europe: Germany, Finland and the Baltic States lead in terms of commercial production areas. The industry has been around since the 1970s and modest expansion continues each year. Some planting was opportunistic, specifically taking advantage of an available EU subsidy. It is thought that these areas are now abandoned and not actively managed or in production.

Sourced by National Farmers Union Mutual Charitable Trust

Sea Buckthorn around the world

The table below shows the estimated area under commercial production worldwide. For the purposes of the list, commercial is defined as a sea buckthorn orchard specifically planted for fruit production. This will therefore preclude such countries as Nepal, Bhutan, Iran and India where the foraging of wild sea buckthorn facilitates production.

Sourced by National Farmers Union Mutual Charitable Trust

Production economics

I don't wish to dwell on this subject for too long as in reality it is very subjective indeed. Nevertheless it is, of course, an important topic to consider. As with all UK fruit production, costs here are comparatively higher than those found elsewhere in the EU and indeed the world.

Higher labor, fuel, energy and land costs all combine to add extra pressure to profitability. However, we do have 63 million sales opportunities in the country and they are becoming increasingly health conscious with a growing appetite for healthy products.

Domestically produced sea buckthorn would initially achieve a niche market status. However, as the market develops, foreign competition will be quick to take advantage of any new opportunities. Suffice to say that producing sea buckthorn fruit as a commodity will be a risky venture and margins will inevitably be under constant pressure from imports or subjected to market volatility. There's currently a strong demand for raw product on the continent. However, the margins are unlikely to be large enough to justify the necessary investment required in producing a commodity crop.

Maximum income from sea buckthorn is split between approximately 38% from food and drink products and 59% from pulp and seed oil. Capturing or adding value to the seaberries by processing them into a range of different products will be integral to delivering sustainable profits.

To ensure profitability and longevity for a British sea buckthorn business enterprise, the main principle is to deliver an exceptionally high quality product, through a robust brand. Added value through processing will be of significant importance. It will also be especially important to promote the provenance and quality aspects as a point of differentiation.

Sourced by National Farmers Union Mutual Charitable Trust

Country	Area (Ha)	Country	Area (Ha)
China	600,000	Mongolia	300
Russia	2,000	Poland	150
Estonia	850	Italy	150
Germany	600	Sweden	50
Finland	500	U.S.A.	50
Latvia	450	U.K.	15
Romania	400		
Canada	300		

Varieties of Sea buckthorn

There are four existing environmental groups of SBT varieties, potentially suitable for commercial growing in the NE of Europe:

1. Selections of native SBT in Germany (Sirola, Leikora, Hergo, Askola, Dorana, Frugana, Orange Energy, Pollmix etc).
2. Selections of native SBT in Finland (Tytti, Terhi, Tarmo etc).
3. Crossings between continental Russian varieties with native SBT from southern coast of Baltic Sea (Botanicheskaya Ljubitelskaya, Prozrachnaya, Podarok Sadu, Marija, Tatjana, Lord etc).
4. Crossings between continental Russian varieties with native SBT from northern coast of Baltic Sea (successful trials since 2004, no commercial plantations yet).

Latvian climate allows to grow all of them, however we have chosen C and D groups because of larger and more juicy fruits with better taste. Latvian final product market demands mostly SBT juice and drinks. We can get only 50-60% juice out of SBT varieties of A and B groups in comparison to 80-90% out of C and D groups. There are significantly less troublesome stellate hairs on the fruits of groups C and D. Juice made of C and D groups is not as acid and requires less sweeteners.

SBT orchards are planted by one or two years old mostly bare root plants. Potted plants are not so popular for commercial plantings, as they are expensive and difficult to transport. Due to very late entry to dormancy bare root plants overwinter in the nursery, and they are planted out in next spring. Distance between plants within the rows is 2 m, between rows is 4 m. That results in 1250 plants/ha. Male plants are arranged in mixed or single rows in ratio of 1:8 to female plants. Grass growing between rows is mowed several times per season. Grass between plants within row is mowed only first two years after planting, when young plants are small. Both organic and mineral fertilizers are applied right under the plants in the area of fine roots, as space between rows is occupied mainly by propagative roots, which do not take up nutrients and water. Creeping rootstalks or "cable roots" are diageotropic or growing perpendicular to the force of gravity. They send out new shoots from their nodes. Some growers retain them within rows, as they are clones and can replace lost main plants. These roots do not feed the main plant, conversely they move water and dissolved nutrients from the main plant to the root sprouts. The evidence of this one-way streaming was observed in Canada, BC, Summerland, where system herbicide glyphosate was applied to eliminate weeds and SBT suckers. Suckers died without any visible influence on the main plants.

Sourced by 3rd European Workshop on Sea Buckthorn

History of sea buckthorn in Latvia

Sea buckthorn (SBT) is not a native plant in Latvia, though fossil pollen records indicate its presence in postglacial raw soils. Until 1980 only wild sea buckthorn seedlings from Kaliningrad region were grown in Latvia along the roadsides as windbreakers and have been planted for re-cultivation of used dolomite, sand and gravel pits. There were several trials of SBT introduction in Baltics of Russian continental varieties from Altai region. This group of varieties belong to ecotype *Hippophae rhamnoides ssp. mongolica*, These were not able to adapt to Baltic maritime climate with frequent winter thaws. In 1984 another introduction trial took place, using different group of varieties. As these varieties have been bred by crossings among *H.rhamnoides ssp. mongolica*, *H.rhamnoides ssp. rhamnoides* and *H.rhamnoides ssp. fluviatilis*, the adaptation was more successful mainly due to the presence of *H.rhamnoides ssp. rhamnoides* genes. Since then they are still grown in Latvia and Estonia.

There are about 350 ha of SBT orchards in Latvia, about 250 ha of them are in the age of harvesting. Average yield is 4 tons/ha. Harvesting is done by cutting off the whole branches. Until last year most of harvested fruits were consumed by local processing companies, producing different SBT drinks. On year 2014 situation was changed – several local and Estonian enterprises made a big demand of non-processed fresh fruit bearing branches. Gross price (fresh fruits on cut branches) raised from 1.00 EUR/kg in season 2013 to 1.60 EUR/kg in season 2014. Net price (cleaned IQF fruits) accordingly from 2.20 EUR/kg to 3.00 EUR/kg. The reason of market change is a rising demand of large juicy fruits. Some technically equipped local entrepreneurs buy small lots of non-processed fruit branches. After freezing, cleaning and blending fruits are bulk exported. Price was pushed up as well due to recent poor harvest of SBT in Baltic countries. Residues of SBT fruits by insecticides applied against the SBT fly in southern regions may as well influence the international market shares.

Sourced by 3rd European Workshop on Sea Buckthorn

Size of plantations in Latvia

There are three plantations in Latvia with size of 20 – 40 ha, but most of SBT orchards are 1-3 ha large. Two hectares could be considered as a minimum size for a small commercial growing and processing enterprise. It is large enough to use equipment efficiently and implement a continuous orchard renovation program, yet small enough that one person can take care of most of the work.

In case of selling non-processed fruits on branches, the optimal size of plantation is 10-20 ha. Larger orchards can make more efficient use of machinery and equipment, but more hired labor, and thus more management skill is required. In the Baltic states migrant workers would be needed in this case. Large sized orchards usually are poorly maintained, as a rule without irrigation, so their annual yield is well below the average and unpredictable. To reduce production costs of water demanding juicy varieties it is advisable to place SBT orchards on well drained lowlands along the rivers, streams and lakes, out of flood reach. Such plots in Latvia are small sized.

The appropriate time of harvest is one of the most important factors affecting the quality of SBT fruits. Owners of small plantations have advantage to manage late harvesting, when fruits are completely ripe. This is very important for quality juice and oil producers.

Sourced by 3rd European Workshop on Sea Buckthorn

Business Perspective

Sea buckthorn is a plant producing fruit containing high levels of complex nutrients that competes within a developed market of internationally traded natural nutraceutical products. It has been grown as an agricultural crop in Europe since the 1970s. This is part of a global production that is largely Asian centered where investment in processing development and facilities has grown significantly since the year 2000. The health conscious consumer in Europe is spending 9 billion euro a year on nutritional supplements. Sea buckthorn as a crop is expanding in some EU member states, but cost structures and technical difficulties relating to harvesting need to be answered for production to grow.

Consumers in Europe demand quality. The European marketplace is highly regulated at all levels of the supply chain. These regulations are instigated both by the European Commission and by individual EU member states and impact on inter-state trade. The objective of regulation is to protect the consumer from poor quality, adulterated or dangerous products. These regulations apply to product manufactured within the EU member states and do not create a barrier to entry to product from non-EU countries.

Quality is measured by comparing things of a similar kind. This measurement formulates into standards which may be legally enforced or be a statement by a manufacturer to show the consumer that a product is both safe and suit the consumers' needs. Good regulation and standards can build trust and loyalty in consumers for products and services. Creating standards must build strong supply chains delivering value consistently to the consumer. Standards must return value in price premium so that costs and investment are recovered through the whole supply chain.

Supply chains are made up of businesses of varying size. Small and medium sized businesses are highly creative and innovative, but often have limited resources. It is the larger companies that will drive market growth but standards need to be set at realistic levels to be affordable by all members of the supply chain to achieve the objective of delivering consistent quality to the consumer.

There are very few unique products in the world. Standards set on product alone reduce differentiation between similar products made by different manufacturers. Consumers expect product quality but they chose between brands based on trust and association with the supplier or manufacturer. European sea buckthorn growers, processors and manufacturers have already invested in producing high quality. National identity, traceability, transparency, sustainability and environmental/ethical management are aspects that build trust, loyalty and competitive strength.

If global standards for sea buckthorn develop, Europe must respond in order to ensure that European sea buckthorn has a clear identity based on combined product and service standards. To grow and succeed it needs to communicate its strengths to the global market. European sea buckthorn must be defined as exceptional in product, range, service and value for money to become accepted as premium market leader.

Sourced by 3rd European Workshop on Sea Buckthorn

Investment in sea buckthorn

Investment in sea buckthorn is growing in Asia and this is a competitive challenge to Europe. To compete in Europe, production costs must reduce; there needs to be a solution to affordable harvesting but of primary importance is market development. The European consumer must know what is exceptional about sea buckthorn and why European sea buckthorn is the best.

It is as important for the sea buckthorn industry to understand the consumer, as the consumer to understand sea buckthorn. Consumers are a dynamic mix of gender, age, lifestyle, perception and need. One needs to understand what people want and match product to their mindset – not just produce in the hope that there is someone out there that might buy it. Market development needs to be clever not expensive. This is particularly fundamental as supply chains are shortening and direct selling to the consumer is on the rise. In an era of economic downturn; growing consumer price sensitivity and the rise of value brands market development needs careful strategy to develop demand based on consumer need.

But the market will only develop if sea buckthorn can deliver what it needs. Identifying what sea buckthorn can deliver will define what sea buckthorn is to the consumer. Once linked to consumer need, then it will become attractive to investors for new product development.

Of course sea buckthorn is not a simple product as it falls into food, drink, cosmetic, and nutraceutical categories. Creating standards needs to consider the growth markets within this diversity and how standards can enhance market development.

Standards alone will not drive development but they can focus capability that investors can feel confident in. Standards could be seen as a catalyst to develop market awareness and the supply capacity of the sea buckthorn industry.

I see standards as a powerful tool to develop the market, grow the industry and create competitive advantage. In Europe we live and work in a world full of regulation - National and EU regulations cost time and expense to business. If sea buckthorn standards are to be created they must not add to these regulations. They should build a trusted image of business that delivers sea buckthorn to consumers; adds value to product and gives competitive advantage within the marketplace. Introducing standards will only work if business commits to them and believes in them. At the same time buyers and consumers must recognize standards as securing and providing added value for their needs.

Sourced by 3rd European Workshop on Sea Buckthorn

European market

Europe is a sophisticated marketplace. Premium markets value exceptional qualities. It is an unfortunate truth that almost all products are not unique. But what can be unique is the service that delivers them. To be an exceptional product every link in the supply chain must be committed to delivering exceptional service. These commitments can be quantified when producers are part of recognized codes of practice; quality assurance schemes; traceability schemes; trademarks and so on. This means of attracting market admiration is used by big players. A new example is the Sustainable Agriculture Initiative – Its code of conduct demands transparency and integrity, commitment to sustainable practices and promoting them to their supply chain stakeholders. Membership includes many household name brands across the world including Arla, Danone, Nestle, Pepsico, Kellog, Coco Cola and so on. It would be easy to say these companies need to improve their image, but they are creating these standards so that the market can judge them on the standards they set.

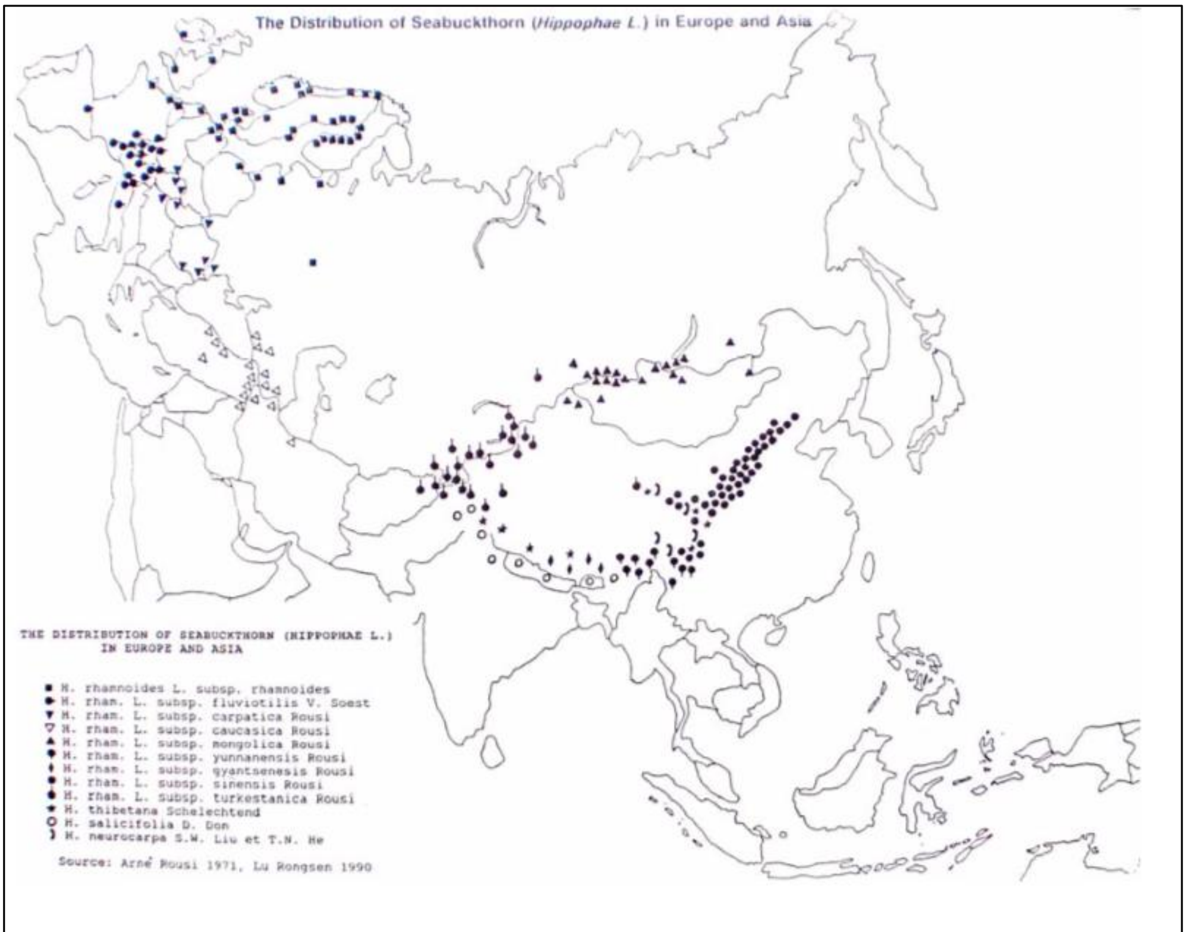
It is possible that across the European sea buckthorn industry many companies are already signed up to quality assurance schemes. These are all valid and show commitment but for sea buckthorn to make a name in the marketplace it must present a united industry with common standards. United should not compromise competition between business, nor the strength or identity of brands or national associations.

There should be consideration however towards building a European co-operative network to promote best practice to deliver quality.

Sourced by 3rd European Workshop on Sea Buckthorn

Geographical Distribution of Sea Buckthorn

Many scholars and experts have certified that the genus Hippophae originated in the Himalayan mountain regions and then spread to southwest, northwest and northern China and eastern Inner Mongolia, as well as to the northwest regions of Eurasia where one route progressed west to reach the Alps via the Caspian and Black seas before finally arriving at the northwest shore of the Scandinavian peninsula and another route progressed northwest to reach northwestern Mongolia and southern Siberia in the Russian Federation via India, Nepal, Pakistan, Afghanistan, the Xinjiang Uygur Autonomous Region in China and several Central Asian countries of the former Soviet Union (Lu, 1990). It occurs at least in 38 countries including Afghanistan, Azerbaijan, Belarus, Bhutan, Britain, Bulgaria, Canada, China, Czech Republic, Denmark, Estonia, Finland, France, Germany, India, Iran, Italy, Kyrgyzstan, Kazakhstan, Latvia, Lithuania, Moldova, Mongolia, Nepal, Netherlands, Hungary, Norway, Pakistan, Poland, Portugal, Romania, Russia, Slovakia, Sweden, Switzerland, Turkey, Ukraine and Uzbekistan.



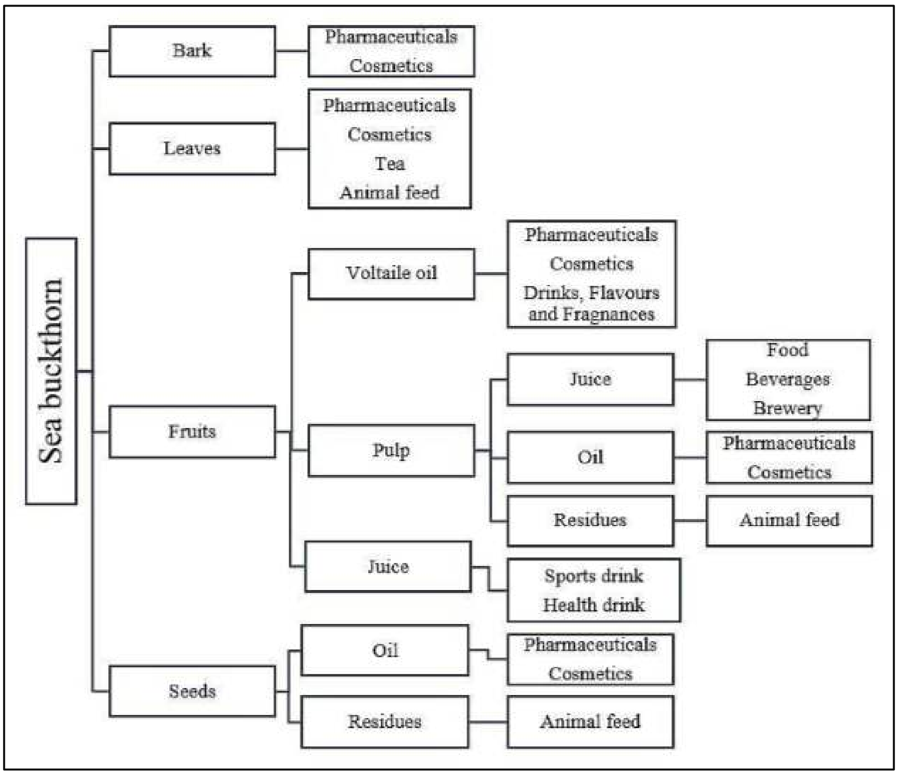
Source: Lu, 1992

The distribution throughout Europe and Asia shown in the map below shows that the species concentrates mostly in the Hindu-Kush Himalaya adjoining areas of China and parts of Europe and the former USSR as well as Scandinavian region. Considering the vertical range of elevations, sea buckthorn has a very strong ecological adaptability. It can grow from the seashore of the Baltic Sea in Europe to 5200 m above sea level in the Mount Everest in Asia. Generally, sea buckthorn grows in temperate regions of the world and it naturally occurs in the arid, semi- arid and high mountainous ecosystems. It grows well in the following climatic conditions: the monthly average temperature of the hottest month is 15 to 25°C and the maximum radiation on clear days in the vigorous growing season is 23500 to 26000 cal/cm2; annual rainfall ranges from 250 to 500 mm (Lu, 2002).

Overview Sea Buckthorn Products

The basic processed sea buckthorn products are juice, beer, wine, jam, and preserves, compote and tea (from leaves). Essential oil from seeds and berry pulp are the most valuable product that has medicinal values. High contents of Vitamin C and carotenes are another valuable natural product.

Considerable research is currently being conducted into the pharmaceutical, cosmeceutical and nutraceutical applications of sea buckthorn. The following table outlines the major constituents of sea buckthorn.



Sourced by Canada Sea Buckthorn Enterprises Limited

Sea Buckthorn in Cosmetic Industry

Especially valuable and the most widely resource from sea buckthorn used in cosmetic industry is the oil extracted from its fruits and seeds. One of its most well-known properties is nourishing and regenerating effect on skin and mucous, which results in high content of fat-soluble vitamins (vitamin A and E) and nutrients (EFAs, phytosterols).

Sea buckthorn oil, like all plant fats, can be divided into two groups due to their the chemical construction. The first group are esters, which can undergo alkaline hydrolysis – they are mainly triacylglycerols and they are fundamental component of vegetable oils. The second group includes substances referred as unsaponifiable fraction, that doesn't undergo alkaline hydrolysis. The unsaponifiable fraction with esters of alcohols other than glycerol create non-glyceride fraction, formed by many chemical substances with cosmetic potential such as hydrocarbons, esters, sterols, ceramides, lecithins, tocopherols and carotenoids. The composition and content of this fraction can change depending on various factors like plant variety, weather conditions or crop irrigation. The average content of unsaponifiable fraction in sea buckthorn oil is 2.5-4.0%.

Sourced by Department of Biochemistry and Toxicology, University of Life Sciences

Sea Buckthorn in Pharmacy

Sea buckthorn is a plant that contains a lot of different compounds and for this reason is widely used in the treatment, what is presented in Table 1. It has antimicrobial, antiviral, antioxidant and antidiabetic properties. Its active substances have positive impact for cardio-vascular system, eyes and liver functions. Moreover these compounds have neuroprotective effect and may prevent from cancer diseases.

The most important biologically active compounds in sea buckthorn and their main therapeutic effects:

Name of compound	Therapeutic effect of compound
Tocopherols	Antioxidant activity Limitation of lipid peroxidation Pain relief
Carotenoids	Antioxidant activity Participation in the synthesis of collagen Participation in the growth of epithelial
Vitamin K	Prevention of hemorrhage Wounds healing Positive effect against ulceration
Vitamin B	Antioxidant activity Maintaining the integrity of the cell membrane
Vitamins from group B	Stimulation of cell regeneration Regeneration of neural tissue
Phytosterols	Improvement of microcirculation in the skin Anti-tumor effect Antiatherosclerotic action Prevention of the formation of ulcers Regulation of inflammatory processes
Polyphenols	Antioxidant activity Cytoprotective effect Cardioprotective effect Wounds healing
Polysaturated fatty acids (PUFA)	Immunomodulatory effect Neuroprotective effect Anti-tumor effect
Organic acids	Reducing the risk of heart attack and stroke Wounds healing Anti-tumor effect Reducing the risk of arthritis
Coumarin and triterpenes	Assisting appetite, sleep, memory and learning
Zinc	Increase of blood circulation Function of enzyme cofactor Increased use of vitamin A

Sourced by Department of Biochemistry and Toxicology, University of Life Sciences

Treatment of diabetes (Sea Buckthorn)

In the case of patients with diabetes it is indicated to decrease activity of alpha- glucosidase. This enzyme has abilities to cleavage glycosidic bonds in oligosaccharides. Therefore compounds that may inhibit that enzyme are necessary to prevent postprandial hyperglycemia. Sea buckthorn includes a lot of different substances with mixed properties. Flavonoids from seeds and fruits of Hippophae rhamnoides L. cause hypoglycemia and hypolipidemia.

In 2015 there have been presented results of research, which aim was to evaluate the effect of sea buckthorn extracts. The researchers used two different extracts – aqueous and methanolic - in different concentrations (from 0,0625 to 0,5 mg/ml). They wanted to estimate antidiabetic and antioxidant functions of sea buckthorn leaves. To evaluate antidiabetic activity of plant they used alpha-glucosidase inhibitory assay. The results showed that methanolic extract of leaves caused better effects connected with the values of IC50. That parameter (IC50) is the amount of analyzed sample that is required to inhibit 50% activity of an enzyme. Alpha glucosidase inhibition activity of aqueous extract (0.50 mg/ml) was lower than 50%, and in the case of methanolic extract (0.50 mg/ml) that value was about 73,67%. Value of parameter IC50 of methanolic extract was in the concentration of 0.25 mg/ml, but it was impossible to assess similar effects in the aqueous extract. These results showed that methanolic extract of sea buckthorn leaves include compounds demonstrating alpha-glucosidase inhibition activity. These biochemical particles may be used in diabetes because they can control glucose absorption. There are also results of the other research based on the streptozotocin-induced diabetics rats, where used sea buckthorn leaves also showed antidiabetic activity. In that research non-diabetic and diabetic rats were compared. Diabetic rats fed by sea buckthorn had lower levels of blood glucose and cholesterol comparing to non-diabetic rats fed by the same supplement.

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lecithins, tocopherols and carotenoids. The composition and content of this fraction can change depending on various factors like plant variety, weather conditions or crop irrigation. The average content of unsaponifiable fraction in sea buckthorn oil is 2.5-4.0%.

Sourced by Department of Biochemistry and Toxicology, University of Life Sciences

Interesting sea buckthorn facts

1. Fruits of the sea-buckthorn are orange to reddish colour stone-fruits with weight of about 0,2-0,35 gram;
2. Ancient Greeks fed their horses with the leaves of the sea-buckthorn to heal them. This improved not only their health, but gave a great appearance with a smooth and shiny skin. Probably this is the way the sea-buckthorn got its Latin name Hippophae („hippos" – horse, „faos" – shiny);
3. Thanks to the great taste and juiciness, Russians call it „the Siberian Pineapple";
4. This plant contents more than 190 different nutrients, therefore, it is often called „sacred fruit";
5. There is enough of the vitamin C in the fruits of the sea-buckthorn to supply all the people in the world with it;
6. Some research in Germany has proved that the stone-fruits of the sea-buckthorn contain the same amount of vitamin B12 as in liver;
7. Antioxidant is the right name to characterize the sea-buckthorn;
8. Juice of the sea-buckthorn contains a lot of organic acids, its pH is close to 2,7;
9. The sea-buckthorn is able to survive even cold weather (up to – 40°C) or extended drought;
10. Fruits of the sea-buckthorn are significant source of provision for many birds in the winter, including the fieldfare;
11. The sea-buckthorn was mentioned first time in the Tibetan medicine scripts „rGyud Bzi" in eight century AD;
12. According to the Greek mythology, the sea-buckthorn was a favourite food for Pegasus – a winged horse;
13. The sea-buckthorn was mentioned in works of philosophers in ancient Greece;
14. Historic records say that the sea-buckthorn was used in medicine of ancient China, gaining the official status 1977;
15. Products of the sea-buckthorn were included in the diet of Soviet astronauts;
16. Medicine made of the sea-buckthorn was the used first of all to heal victims of catastrophe in Chernobyl 1986;

17. In 1988, during the Olympic Games in Seoul, the Chinese team used drinks made of the sea-buckthorn to increase their results;
18. 90% of the sea-buckthorn of the world grows in China, though it is widely spread in Europe, too;
19. The sea-buckthorn is also used to reduce the land erosion and to increase land quality and biodiversity;
20. In the period from 1950 to 1985 in China, there were wide plantations set in area of about 200 000 hectares to preserve soil and water and to obtain a firewood.

Sourced by Goldberry

Blueberry Market Research

Photo by Palmers

Blueberry fields photo by James Wheeler

Acknowledgment (blueberry) / Introduction
Consumer profile / market area
Industry structure

- Farms and produce sales
- Direct produce sales
- Wholesale handlers

Marketing assistance programs

- Product promotion
- Recruitment
- Facilities
- Multiple aspects of wild blueberry industry in Latvia
- Wild blueberry supply chain actors
- Description of chains

Acknowledgment of blueberry

Blueberry: the dark blue fruit of a bush that is grown in North America, similar to a bilberry. Blueberries are sweet, nutritious and wildly popular. Often labeled a "super food", they are low in calories and incredibly good for you. Here are 10 proven health benefits of blueberries.

Sourced by Cambridge Dictionary

Blueberries Are Low in Calories But High in Nutrients

The blueberry bush (*Vaccinium sect. Cyanococcus*) is a flowering shrub that produces berries with a bluish, purple hue — also known as blueberries. It is closely related to similar shrubs, such as those that produce cranberries and huckleberries. Blueberries are small — around 0.2–0.6 inches (5–16 millimeters) in diameter — and feature a flared crown at the end. They are green in color when they first appear, then deepen to purple and blue as they ripen.

The two most common types are:

- Highbush blueberries: The most common cultivated variety in the US.
- Lowbush or "wild" blueberries: Typically smaller and richer in some antioxidants.

Blueberries are among the most nutrient-dense berries. A 1-cup (148-gram) serving of blueberries contains:

- Fiber: 4 grams
- Vitamin C: 24% of the RDI
- Vitamin K: 36% of the RDI
- Manganese: 25% of the RDI
- Small amounts of various other nutrients

They are also about 85% water, and an entire cup contains only 84 calories, with 15 grams of carbohydrates.

Blueberries are the King of Antioxidant Foods

Antioxidants protect your body from free radicals, which are unstable molecules that can damage your cells and contribute to aging and diseases, such as cancer. Blueberries are believed to have one of the highest antioxidant levels of all common fruits and vegetables. The main antioxidant compounds in blueberries belong to a family of polyphenols antioxidants called flavonoids.

One group of flavonoids in particular — anthocyanins — is thought to be responsible for much of these berries' beneficial health effects. Blueberries have been shown to directly increase antioxidant levels in your body.

Blueberries May Lower Blood Pressure:

Blueberries appear to have significant benefits for people with high blood pressure, which is a major risk factor for heart disease. In an eight-week study, obese people who had had a high risk of heart disease noted a 4–6% reduction in blood pressure after consuming 2 ounces (50 grams) of blueberries per day. Other studies have observed similar effects — especially for postmenopausal women.

Blueberries May Help Prevent Heart Disease

While eating blueberries may lower blood pressure and oxidized LDL cholesterol, it's important to keep in mind that these are risk factors — not actual diseases. It would be much more informative to know whether blueberries help prevent hard endpoints like heart attacks, which are the world's leading cause of death. A study in 93,600 nurses found that those with the highest intake of anthocyanins — the main antioxidants in blueberries — were at a 32% lower risk of heart attacks compared to those with the lowest intake. Because this was an observational study, it cannot prove that the anthocyanins alone caused the reduction in risk. More studies are needed before any claims can be made.

Blueberries Can Help Maintain Brain Function and Improve Memory

Oxidative stress can accelerate your brain's aging process, negatively affecting brain function. According to animal studies, the antioxidants in blueberries may affect areas of your brain that are essential for intelligence. They appear to benefit aging neurons, leading to improvements in cell signaling.

Human studies have also yielded promising results. In one of these studies, nine older adults with mild cognitive impairment consumed blueberry juice every day. After 12 weeks, they experienced improvements in several markers of brain function. A six-year study in over 16,000 older individuals found that blueberries and strawberries were linked to delays in mental aging by up to 2.5 years.

Blueberries May Reduce Muscle Damage After Strenuous Exercise

Strenuous exercise can lead to muscle soreness and fatigue. This is driven partly by local inflammation and oxidative stress in your muscle tissue. Blueberry supplements may lessen the damage that occurs at a molecular level, minimizing soreness and reduced muscle performance. In a small study in 10 female athletes, blueberries accelerated muscle recovery after strenuous leg exercises.

Sourced by Healthline.com

Multiple aspects of wild blueberry industry in Latvia

Non-timber forest product: "Non-wood forest products for rural income and sustainable forestry" summarizes that the NTFP has not attracted attention of actors involved in food industry because: (1) most of the harvested products go for rural subsistence or local markets; (2) the statistics of produce harvested in forests is incomplete - it has been split between conventional economic sectors (as agriculture, forestry, horticulture) and it is therefore impossible to grasp the true importance of NTFP; (3) modern forestry favours large-scale and has associated NTFP with something incidental.

Culturally embedded economic practice: In literature NTFP are more often associated with developing countries. However, there is a considerable interest in NTFP in developed countries as well – in some cases gathering of NTFP is perceived as a recreational activity, in some others – as a cultural activity representing certain lifestyles, or even an activity that secures local identity. Wild blueberries (Vaccinium myrtillus) is one of such products – its biological compound as well as historical heritage of picking berries ensures that there is a growing market for wild berries. Despite the fact that blueberry picking for self-provisioning cannot be interpreted as an important source of income for most of the population, gathering of wild blueberries and other NTFP are common recreational and cultural activity in Latvia. Mushrooms that are picked by 67.6% of Latvia's inhabitants. Wild berries are picked by 35.4% of Latvia's inhabitants and that makes berries the second most popular NTFP

Geographical origin and nutritional and pharmaceutical value of the product: The most significant characteristic of blueberries is their high content of beneficial nutrients and bioactive phytochemicals. Wild blueberries have much higher level of anthocyanins than almost any other products

Resource for food and pharmaceutical industry: Anthocyanin is highly valued substance for producing various medicines in pharmacological industry. With the development of the wild blueberry industry, the evolution of long supply chains and inclusion of blueberries in food and pharmaceutical production systems worldwide, berry picking has become an important activity granting income for the most vulnerable part of population.

Global, local and mixed chains: two types of food supply chains. On the one hand, historical practice of blueberry picking (or – picking of NTFP in general) should be associated with short chains – a situation when picker is often simultaneously a consumer, or when the pickers and consumers are connected through direct sales; or slightly more complex chains where picker groups and/or families organize to ensure constant flow of the product, which is sold through an intermediary in local markets.

Does not hold any economic benefits – these transactions are purely strengthening social ties within the group. 'Long' blueberry chains are located. These chains have emerged just recently and typically include much more actors – as for example, these chains would typically include collecting points, dealers, primary processors, food producers and pharmaceutical companies, as well as transportation enterprises. Long chains can be regionalised by the fact that the end client is food processor, which is located in the same region where berries has been picked (in this case – Latvia) or, indeed, globalised (some of the final clients of Latvia's wild blueberry industry are food or pharmaceutical processor companies located in Western Europe or Asia). According to EUROSTAT Latvia is 9th biggest exporter of frozen blueberries in Europe exporting 3000t in the year 2013.

The multiple meanings of wild blueberry sector: Every autumn media publishes stories explaining the importance of this income source in rural communities.

Source Glamur: Global and local food assessment

Governance issues and controversies

The whole situation has created a fruitful soil where grey business structures can emerge. On the one hand – it seems impossible to find a way how to control the global without harming the local. On the other hand, due to the difficulties to separate culture rooted and business oriented picking it is almost impossible to collect data and portraying the situation with various NTFP correctly. However, these are just a few problems, which can be associated with NTFP. We should pay attention to some other as well:

1) Traceability. However, the practical cause is much more trivial – unwillingness of the commercial berry pickers to admit to the state (and municipality) that they have this source of income (they are selling berries without official contracts and by doing this avoiding possible taxes)). This is the reason, why significant amount of berries do not have identifiable origins.

2) *Greyness.* The most visible issue of wild blueberry supply chains from national perspective is the greyness of transactions. This issue is strongly related to traceability – wild blueberries with unknown origin (or non- registered, officially nonexistent blueberries) can be sold and exported without accounting for economic transactions.

3) *Lack of formal regulation*. There have been attempts to regulate the wild berry picking sector, however, all attempts so far have failed. To put it in in other words – state is not ready to overlook a sector that has significant cultural roots and does not have one clear entrance actor (for example – farm). Inexperience to govern NTFP (as we can observe in case of blueberries) lead to greyness.

4) *Influence of labour.* While conventional industries are complaining about the lack of fitting labour (no matter how they interpret it) wild blueberry sector has offered people a possibility to earn extra income without posing any requirements.

Food processing industry and pharmaceutical market for which forest blueberries is an extremely lucrative product. According to experts, in Latvia case approximately 20% of blueberries are sold to food industry; the rest is sold to pharmaceutical companies. The recent growth of the overall wild blueberry market has been based only on a discovery of lucrative foreign market (namely – China). First of all, foreign markets might lose their interest in the product (possibility to chemically synthesize compounds found in berries could be one reason why this could happen); second, there are states that can supply the product either cheaper (for example – Belorussia, Ukraine, Russia) or have bigger amounts of the product which presumably is of higher quality. Furthermore, the analysed product is seasonal. Typical berry picking season lasts for around two month – July and August.

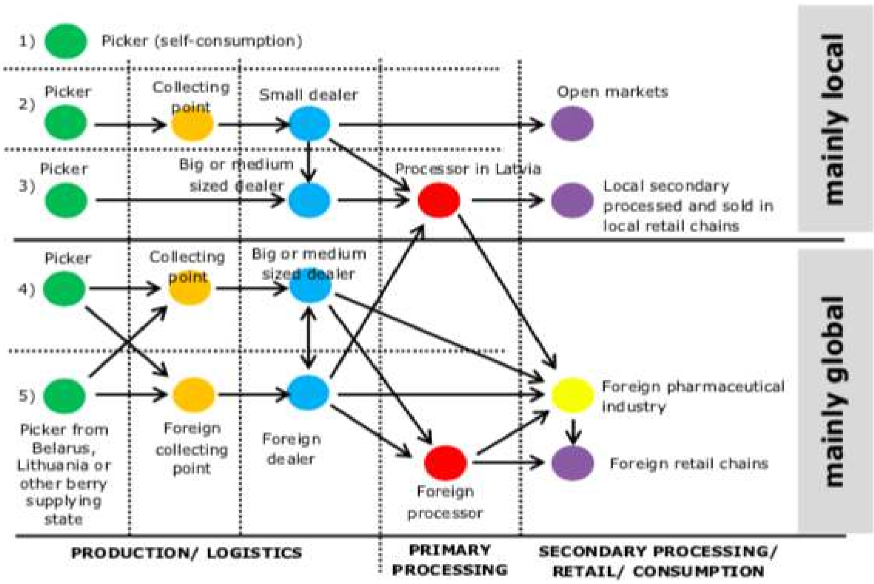
Source Glamur: Global and local food assessment

Boundaries of local and global WBSC

Differences between local and global blueberry chains. The distinction will provide a better understanding of the difficulties the sector faces. All the studies has addressed blueberries as just one of the NTFP market level and even then it is common that the issues of the chains have been analysed only superficially.

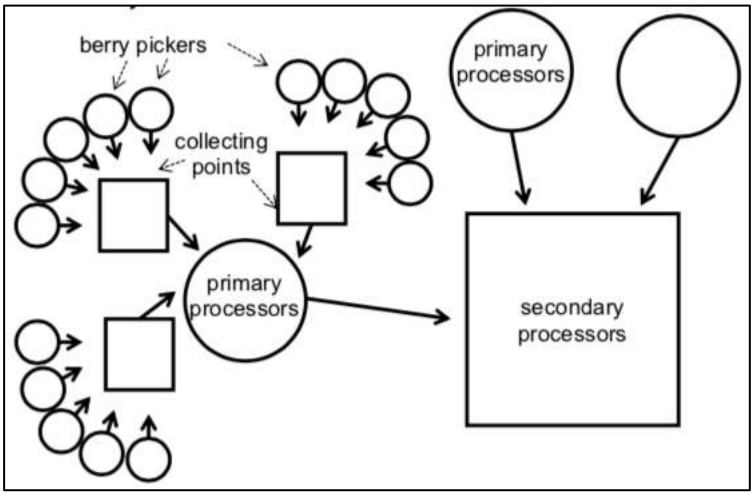
Historical versus new structures: As we have stated beforehand - blueberries and blueberry picking is deeply rooted cultural activity in Latvia. Media illustrates the healthiness of blueberries, recipes of blueberries and gives overall accounts of berry picking. Although the berry picking is a historically relevant cultural activity – the global industry built around this cultural phenomenon is relatively new. There are some evidences of opportunities to sell wild berries in high quantities just before the WW24 (*Pēdējā Brīdī, 1930, 4th july*). Also there are evidences of organized berry picking in the Soviet Union.

Geographical length of the blueberries' chain



Clearly it is possible to distinct the chain length development from perspective of the geographical distance: the length blueberries travel has become much longer – nowadays – blueberries are exported all across the Europe and even to some parts of China and Japan. Meanwhile berries are imported from all northern states (Ukraine, Belarus, Russia, Lithuania, Sweden, Estonia). The illustrations show that there is a ground to suggest that term local describes blueberries picked, passed and processed within the territory of Latvia (yet, the reference to the state is used rather vaguely).

In case of local (all transactions are located within (or "more or less" within) the territory of the state) – we mainly talk about micro transactions and there are just a few bigger enterprises that work only in the territory of Latvia. For these market members tapping into the global is a way how to overcome variations in yields, prices, raise income, attract new markets and reduce effects posed by seasonality.



Chain management and number of intermediaries: In its shortest form pickers are the consumers, or vendors that sell their product to the consumers. The next step in chain complexity is when the picker sells his blueberries to a collecting point. Network of collecting points represents berry collecting enterprise that freezes the berries and sells them to a secondary processer. However, actors are not in a business for a long term opportunities but to benefit from short term price fluctuations and speculations. This chain then, according to interviewed experts, could be called a global chain. Furthermore, the argument offers interesting discussion if confronted with chain governance as an aspect allowing to draw the lines between local and global. Global legal chains comply with national regulations and global food system requirements – its comparatively small number of intermediaries is a result of compliance with top-down structuring.

Final destination of the product and resource use: First, there are differences in the markets, where berries are sold. For the local chains – berries exclusively end up in local food chains. Meanwhile, pharmaceutical industry has become major consumer in global supply chains. The interest of pharmaceutical industry in wild blueberries creates taught competition for local (and global) food processers and is main aspect fueling the strengthening of global chains currently. To start with, these enterprises import some share of blueberries. However, these enterprises are also dependent on technologies provided by global actors – such as freezers, blueberry sorting machines, instruments measuring blueberry content, etc.

Source Glamur: Global and local food assessment

Wild blueberry supply chain actors

Wild blueberry chains are formed by a number of interlinked actors. At the basis of these chains are the berry pickers. Dealers are followed by primary processers, which then are followed by secondary processors.

Berry pickers: Blueberry chain starts with blueberry pickers. According to the survey conducted in 2009, 35.4% of Latvia's inhabitants pick wild-blueberries. "35.2 ± 1.5% of the respondents have picked wild berries for their own-consumption, on average 8.34 ± 0.64 kg. On the whole 5.0 ±s 0.9 thousand tons of wild berries were in the households. 4.1 ± 0.6% of the respondents have gathered berries for selling purposes, on average 16.33 ± 3.73kg. Relating this information to the inhabitants of Latvia - they are 69.4 ± 20.8 thousand people. On the whole, 1.1 ± 0.6 thousand tons of wild berries were in the market (sold or transferred to other households)".

For this group berry picking has an important impact on household economy, employment and income. In several interviews it was reported that a diligent commercial picker would collect more than 50 euro per day which is considered a good earning in Latvia's rural territories. Selling the berries in local chain can secure higher profits per kg.

Collecting points: From the perspective of collector – it is easier to be part of dealers network because it secures that there will always be someone buying berries as well as secure information exchange. Also – dealers ensure that collecting points have their initial inventory – such as boxes, weights and cash. It is difficult to estimate overall number of collecting points in Latvia, however, it could be somewhere between 500 and 800 collecting points. Very profitable collecting point in a good season can collect up to 1000 kg berries per day. However, it is more common that the collected amount is significantly smaller (often the collected amount can be significantly smaller than 100 kg per day). On average collecting point representative receive 10 to 25 euro cents per kilo. There are also cases when collectors receive their salary per worked hours. The salary calculated for hours will be smaller yet it also means closer collaboration between berry collectors and the dealer.

Dealers: The commercial berry industry is built around dealers – enterprises that centralize berries to sell them either to primary or to secondary processors. There are around five major blueberry dealers and ten smaller ones in Latvia. The difference between a major and a smaller dealer is in the number of collection points and infrastructure accessible to a dealer. A typical big dealer might have up to 100 collection points spread over vast geographic areas with collection point located in villages, small towns and at country side homes.

Small share of dealers operates only in Latvia. These enterprises supply blueberries to just a few local processing enterprises. Other dealers resell the products to intermediary companies (for example to Polarica (http://www.polarica.com) or berry processing enterprises from neighbour countries). Finally, few enterprises have established direct contact to the final food processing enterprises (mainly located in Europe) or enterprises in China or Japan (pharmaceutical companies). Some of these bigger dealers are blueberry importers as well – thus they have found a way to overcome bad blueberry yields and to raise the amount of produce they are working with.
The smaller dealers typically would have a much smaller collection area, produce volume and supply network (approximately 25 to 30 buying points).

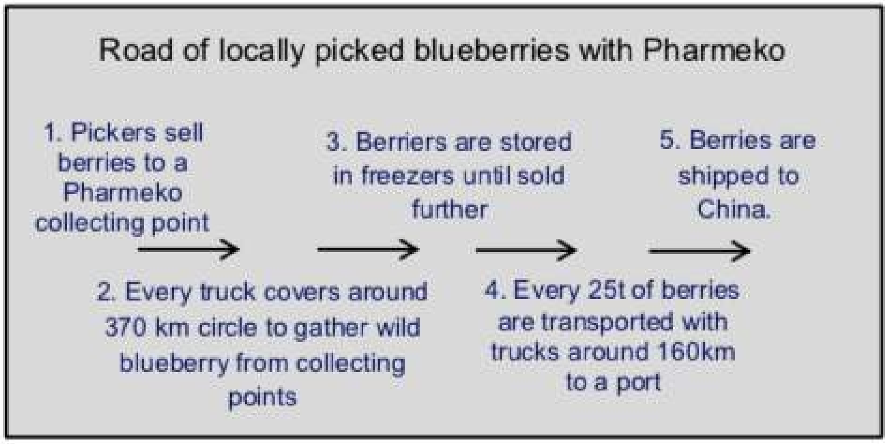
Secondary processors: There are just some secondary processors of wild blueberries in Latvia (for example food companies Puratos or Spilva which produce jams and juices mostly for industrial customers and a part of production also for end consumers. Majority of the food processors which buy frozen blueberries from dealers are located abroad.

Source Glamur: Global and local food assessment

Description of chains

For the comparative analysis of wild blueberry chains we have chosen three examples – global legal chain (illustrated with Pharmeko Lettland); intermediary case combining characteristics of global and local - grey chain and local chain.

Global legal chain – Pharmeko: Pharmeko Lettland is one of the biggest wild blueberry processing enterprises in Latvia. The enterprise's turnover has been almost 3 000 000 EUR in 2013 and it has sold around 600 t of berries in the same year. Enterprise's estimates suggest that it holds around 15-20% of total wild blueberry market. Pharmeko Lettland holds its own blueberry collecting network consisting of up to 100 points (amount of collecting points might change depending of blueberry harvests every year) through half of Latvia.



Due to a transparent structure and documentation, all of the berries bought from pickers must be documented. The enterprise has strong international ties and is both: exporting and importing blueberries. The main export market is China. Yet its produce is send to several European countries as well. Pharmeko Lettlland also holds its own freezing and blueberry sorting facilities and has invested massively in order to expand its activities (both in size as well as in implied technological solutions). Furthermore, it has invested in facilities allowing testing the quality of the products (testing the content structure of the product).

Global grey chain – "Enterprise B": "Enterprise B" is a significant enterprise operating in the wild blueberry market and it represents intermediary case between purely local and purely global food chains (it holds characteristics of both – global and local chains). The enterprise's declared turnover in 2013 has been ~1000000 EUR and representatives estimates its share in Latvia's blueberry market around 10 – 15%. Furthermore, blueberries remain the most profitable product of the product stock (it is clear that the supply chains of all the other NTFPs are built around this product).

The enterprise B has more than 100 collecting points located through half of Latvia's territory. However, these points are not officially employed. They might have an agreement that collecting point will sell berries to the enterprise B, however the collectors are not employees. The collectors are paid for each kg of berries they supply to the enterprise, in such a manner they make their profit from the margin and therefore –berry prices can differ between collecting points.

Source Glamur: Global and local food assessment

Raspberries Market Research

Market research structure

Varieties of raspberries

1. Global experience
2. Global Trends
3. Global Frozen Raspberry Exports
4. Global Competition in the Frozen Raspberry Market

    - Serbia
    - Poland
    - European Union
    - Japan
    - Taiwan
    - China
    - South Korea
    - Hong Kong

5. Food Service
6. Facts About Raspberry

Varieties of raspberries

Red Raspberries

Characteristics:

Commodity: raspberries
Category: berries
Appearance: a vibrant pinkish red. The fruit is composed of individual drupelets connected by fine hairs.
Flesh: delicate and fuzzy.
Flavor: intensely sweet and tangy.
Size: an average raspberry weighs 3-5 grams.
Color: a vibrant pinkish red.
Shape: slightly oblong or conical, with a hollow center.
Served Raw: yes
Seed: individual drupelets contain a single central seed.
Availability: red raspberries are available year-round.

Gold Raspberries

Characteristics:

Commodity: raspberries
Category: berries
Flesh: delicate and fuzzy.
Flavor: sweet with subtle tartness.
Size: an average raspberry weighs 3-5 grams.
Color: yellow to dark orange.
Shape: slightly oblong or conical, with a hollow center.
Served Raw: yes
Seed: individual drupelets contain a single central seed.
Availability: summer. Gold raspberries have limited distribution.

Global Experience

The lack of reliable data available on annual production levels in Russia affects the ability to accurately calculate world production, but it is estimated that the country produces more than 100,000 tons annually. It is assumed that most of Russia's raspberries are consumed internally so the country's influence on the global market is very limited.

The U.S. produced nearly 73,000 tons of raspberries in 2010, about 40% of which was destined for processing. Of those raspberries that are processed about 30% are Individually Quick Frozen (IQF), 30% are processed into juices, 20% are pureed, and the remaining 20% are block frozen. Most U.S. processing raspberries are of the Meeker variety and are harvested from mid-June to late August.

Serbia produced about 70,000 tons of raspberries in 2010. Only 10-15% of Serbia's raspberries are consumed domestically, while the other 85-90% is further processed or frozen and then exported. Between 90- 95% of Serbian raspberries are of the Willamette variety and are harvested from late June to July.

Poland produced about 65,000 tons of raspberries in 2010.14 The main varieties grown in Poland include Polka and Polana. Polka is an early primocane cultivar, which is harvested between late July and October, while Polana is a late variety, which is generally harvested between mid-August and September.

Chile produced about 60,000 tons of raspberries in 2010. The majority of Chile's 19,000+ growers operate small-scale farms with an average 0.8 hectares of productive land. Due to the small farm sizes, about 95% of the raspberries in Chile are harvested manually. Chile has traditionally concentrated on fresh berries, as its harvest occurs during the winter season in the U.S., but now the majority of exported raspberries are frozen. 2007 estimates indicate that less than 5% of the Chilean crop is consumed domestically, while the rest is destined for export markets. About 85% of Chilean raspberries are of the Heritage variety and are harvested from November to May.

Other top raspberry producing countries include the United Kingdom, Mexico, Spain, Ukraine, France and Germany. Generally, these countries are either serving large domestic markets or are exporting the majority of their raspberries fresh to the U.S. or markets in Europe.

Sourced by Government of Canada Market Analysis Report "A Global Export Market Overview"

Global Trends

Over the past decade there has been a steady increase in demand for fruit and fruit-based products as consumers seek out healthier options in their diets. Raspberries have benefited from this trend, but are also seeing greater competition from other berries – such as blueberries – that have received tremendous promotion as super fruit because of their disease-fighting nutritional benefits. It can be expected that global demand for raspberries will continue to grow, but most growth will likely come from processors looking for fruits to use in value-added products alongside more expensive super fruits. Beverage concepts are expected to dominate the future for healthy nutrition and functional foods, as consumers increasingly look for convenient, single-serving products that taste good and are easy to consume.

Due to the short shelf life of raspberries, most traded raspberries are sold in frozen blocks and are treated as a commodity product. As a result, prices for frozen raspberries can fluctuate a lot from year-to-year as they are influenced greatly by exchange rates, import duties, weather conditions, and supply and demand. With the large increases in production from low-cost producers in Eastern Europe and South America, it can be expected that high competition in current markets for frozen raspberries will continue to be a challenge for exporters.

Outside of the traditional fresh and frozen raspberry markets, raspberries are also being used in other products such as teas, artificial sweeteners and fruit wines. Tea producers have developed several herbal tea varieties that incorporate raspberry leaves and are marketed for their health benefits; alternative sweetener producers are extracting sugar alcohol from raspberries to develop the sugar substitute Xylitol; and wineries are creating raspberry fruit wines and using raspberry juice to create raspberry-flavored grape wines.

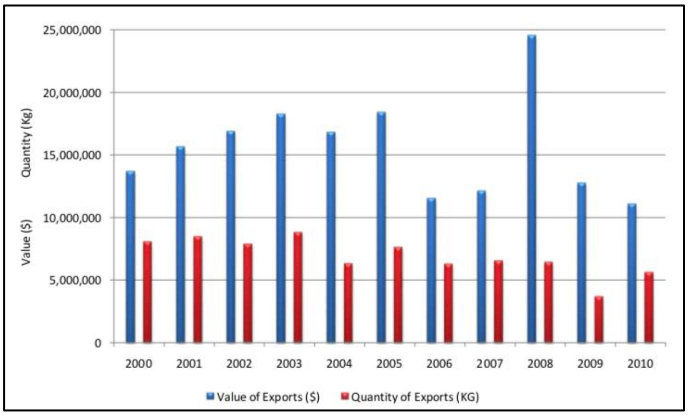
Sourced by Government of Canada Market Analysis Report "A Global Export Market Overview"

1. After rising the past two years, raspberry sales fell a slight 0.1% in 2017.
2. Volume fell 5.7% while per-pound retail prices rose 6%.
3. 31% of consumers said they purchased raspberries in the past year.
4. Consumers in the South and Northeast were much less likely to purchase raspberries than those in the West and Midwest.

Sourced by Produce Market Guide

Global Frozen Raspberry Exports

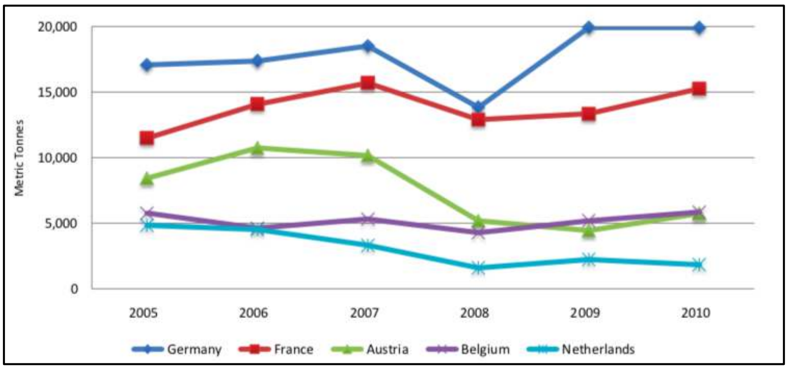
Most exporting countries do not differentiate between raspberries, blackberries, mulberries and loganberries when collecting customs trade data. However, considering raspberries account for the majority of the export trade in these berries, the aggregated statistics provide a good representation of the world's top exporters of frozen raspberries.



Sourced by Government of Canada Market Analysis Report "A Global Export Market Overview"

Serbian Export

Serbia is a strong competitor in Europe because of low transportation, labour and land costs, which enable exporters to compete strongly on price. However, the lack of machinery, technology and adequate infrastructure in Serbia, combined with its relatively low food-safety and quality-assurance standards, highlight the country's key challenges to expanding its share of the global raspberry market.



Sourced by Government of Canada Market Analysis Report "A Global Export Market Overview"

Poland's Export

Poland grows about two thirds of all soft fruits produced in the EU for the processing industry. The country is well situated in Europe to export its raspberries to processors in other European countries, where about 90-95% of the countries frozen raspberry exports are destined each year. Of the roughly 40,000 tons of frozen raspberries exported out of Poland in 2009, 38% went to Germany, 11% to Belgium, 7.5% to the Netherlands, 6.5% to France, 6% to Sweden, and 5% to the U.K.

Poland has a strong tradition of growing raspberries and invests heavily in researching and developing new raspberry cultivars, which has created a strong foundation for the country to grow into one of the world's top exporters of frozen raspberries. With a large semi-processing industrial basis and low costs of production, Poland is Serbia's strongest competitor in Europe's frozen raspberry market. However, like Serbia, Poland still faces challenges with quality-assurance and food-safety standards. In 2005, Poland's frozen raspberries were identified as the source of six different outbreaks of norovirus infection in Denmark, which affected more than 1,000 people.

European Union's Raspberries

Germany is the largest consumer of fresh and frozen raspberries in the EU, followed by the United Kingdom and France. As the three largest economies in Europe, these markets are the focus of B.C.'s competitors. Import data shows substantial frozen raspberry imports entering Belgium and the Netherlands from Serbia, Chile and Poland, but these raspberries are generally destined for further processing in these countries before the finished raspberry products are re-exported to Germany, the U.K. and France.

Germany is one of the world's most prosperous countries, where citizens enjoy a high standard of living and sizeable disposable incomes. With a population of 81.7 million people, Germany is the largest consumer market in Europe and a top destination for raspberry exports. As a result of an aging population, there is a strong trend in Germany towards living healthier lifestyles, which is driving demand for fruit and fruit-based products. The average consumer's annual expenditure on fruit increased by 27.5% between 2005 and 2010.

The United Kingdom is considered the most important fresh berry market in Europe, with consumers expecting them to be available 52 weeks a year. In 2010, the average consumer bought raspberries 6.2 times.43 Although, the U.K. economy experienced stronger than average growth in the EU for most of the past decade, the country was hit hard by the recession in 2008 leading consumers to be more cautious about their spending. Despite this, the berry market in the U.K. is still seeing growth as consumers continue to put emphasis on healthy eating. In 2010, frozen raspberries outpaced all other frozen berries sold through retail, with a 17.2% increase in sales to 1,766 tons.

Raspberry production in the U.K. expanded considerably between 2005 and 2009, with the planted area increasing by 22% to nearly 1,800 hectares and the production volume increasing 31% to 16,000 tons. About 80% of these raspberries are grown for the fresh market in the U.K., while the majority of the remaining berries are used in the production of juice and puree. Most of the IQF raspberries berries sold in the U.K. are imported from Serbia, Poland, and Chile, while the majority of frozen raspberry concentrate and puree is imported from Poland.

France is the second largest economy in Europe and one of the most important food markets in the world. The country ranks first in Europe and third worldwide, behind the U.S. and Japan, in overall expenditures on food and related items. The government's health campaigns against obesity are contributing to an increase in fruit consumption that is driving fruit sales and supporting a strong market for frozen raspberry exporters in Serbia, Chile and Poland.

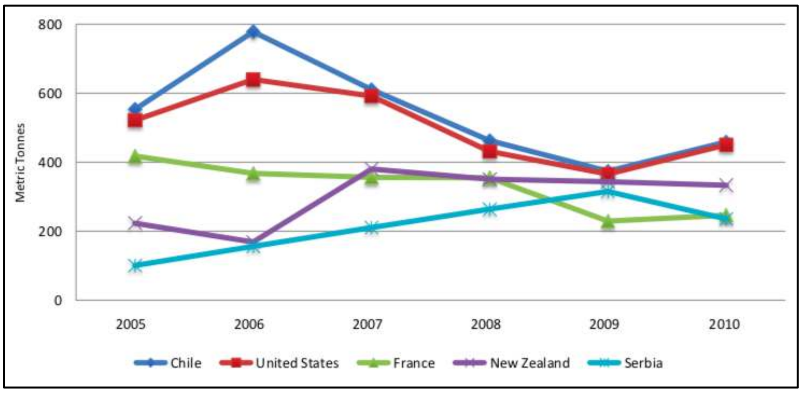
France is the second largest importer of frozen raspberries in the EU, with more than half of its approximately 31,000 tons of frozen raspberries imported in 2010 coming from Serbia. Frozen raspberry exports from Serbia to France increased 32.8% between 2005 and 2010, rising from 11,495 to 15,261 tons.

Sourced by Government of Canada Market Analysis Report "A Global Export Market Overview"

Japan's Raspberry Imports

Frozen raspberry imports into Japan have declined by 5.4% in the past five years, as the country has experienced a slowing economy, a reduction in disposable incomes, and strong promotion of other super fruits. Of the 1,953 tons of frozen raspberries imported into Japan in 2010, 23.5% were sourced from Chile, 23% from the U.S., 17% from New Zealand, 13% from France, 12% from Serbia, and 4.5% from Poland. Serbia has had the largest growth in market share in Japan between 2005 and 2010, rising from 100 to 235 tons.

Japan – Frozen Raspberry Imports 2005-2010



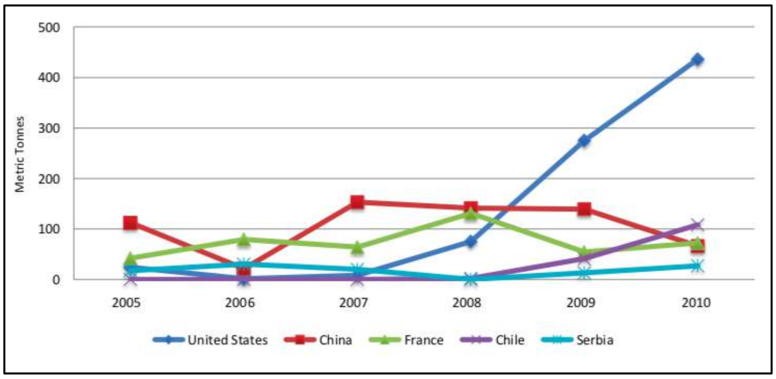
Sourced by Government of Canada Market Analysis Report "A Global Export Market Overview"

South Korea's Raspberry Imports

Like Japan, South Korea's available farmland has steadily declined over the past two decades, which has increased the need for food imports from other countries. South Korea's total agri-food and seafood imports climbed 30% in the past five years, from $16.6 billion in 2006 to $21.7 billion in 2010.

An increased focus on health and wellness is driving demand for imported fruits in South Korea. As a result, frozen raspberry† imports climbed over 500% over the past five years, from 134 tons in 2006 to 830 tons in 2010. Of the frozen raspberries imported in 2010, 52.5% were sourced from the U.S., 14% from Canada, 13% from Chile, 9% from France, 8% from China and 3% from Serbia. During the past five years, the U.S. has had the largest increase in market share in the South Korean frozen raspberry market, rising from 0.7% in 2006.

South Korea – Frozen Raspberry Imports 2005-2010



Sourced by Government of Canada Market Analysis Report "A Global Export Market Overview"

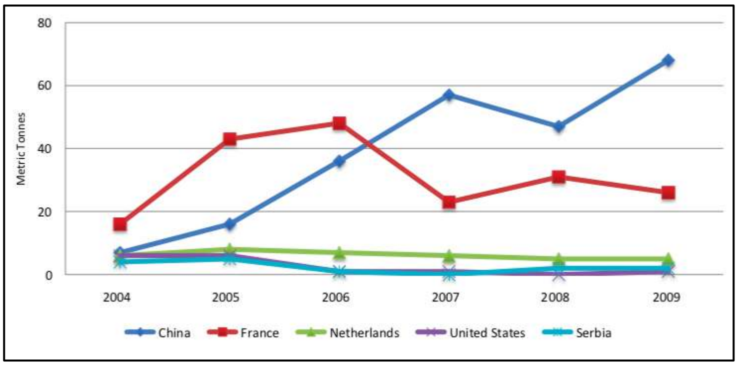
Taiwan's Raspberry Imports

Taiwan's frozen raspberry imports climbed 155% between 2004 and 2009, rising from 42 to 107 tons. Of the frozen raspberries imported into Taiwan in 2009, 64% came from China, 24% from France and 4.7% from the Netherlands.

About 95-99% of the frozen raspberries imported into Taiwan are destined for value-added processing. The higher-quality raspberries that come from France are used in cakes and pastries while the lower-quality raspberries from China are used for making jam. For those raspberries destined for the cake and pastry market, taste, flavor and consistency of size are the factors most emphasized by importers. However, due to the high price sensitivity of Taiwanese processors, importers are also very concerned about price so that they can ensure an acceptable mark up.

The majority of the frozen raspberries imported into Taiwan go through professional importers who then sell to major food processors or smaller fruit dealers. The fruit dealers typically service smaller food service establishments that have product needs that extend beyond frozen berries. These smaller establishments, typically local bakeries, use the berries for making cakes and pastries that are then sold in the shop front. Frozen raspberries are not sold through any retail outlets in Taiwan.

Taiwan – Frozen Raspberry Imports 2004-2009



Sourced by Government of Canada Market Analysis Report "A Global Export Market Overview"

China's Raspberry Imports

In 2000, China introduced raspberries from Europe and North America and began experimental plantings in many areas of the country. By 2010, the raspberry plantings in China were estimated to cover 4,300 hectares and produce 13,000 tons of raspberries. Reports from China indicate that about 90% of the raspberries produced in China are for the frozen market, while the remainder go to the production of raspberry juice concentrate. The proportion of raspberries sold into the fresh market in China is negligible.

Only 3.8% of households have a freezer in China as the infrastructure for frozen products is still in development and Chinese consumers don't have the space in their house to store extra food. As a result, about 95% of the frozen raspberries in China are exported. China's export data for frozen raspberries, mulberries, loganberries and currants indicates that the country exported 12,630 tons in 2010, with 20% going to Russia, 18% to the Netherlands, 12% to Australia and Japan, and 10% to Germany, and smaller amounts to Turkey, the U.S., New Zealand and Canada. It is unknown how much of these exports relate to raspberries specifically, but reports from China have indicated that the majority of China's frozen raspberries are exported to European markets.

China's import data indicates that the country imported 2,312 tons of frozen raspberries in 2010, with nearly 70% of those coming from Canada, 9% from New Zealand, 8% from the U.S., 5.5% from Serbia and 5% from Chile. However, there seems to be a large discrepancy between Canada's export data and the import data that China reports.

Although China is increasing its raspberry production and will likely be able to meet some of the future demand from Chinese processors, reports from within the country indicate that major challenges exist with the management, quality control and harvesting processes on raspberry farms.

Hong Kong's Raspberry Imports

Hong Kong is a Special Administrative Region of China that is known for its open market economy. All products imported into Hong Kong are tariff free, with the exception of alcohol, tobacco, gasoline and methyl alcohol. Hong Kong is a transportation hub where products are imported from countries around the world and re- exported to markets in Asia, Europe and North America. Many of the products that eventually make it to Japan, South Korea, Taiwan and China are first brought into Hong Kong where they are further processed and repackaged for these markets.

Hong Kong benefits from a strong economy where the average disposable income is more than ten times as high as the rest of China. Hong Kong has a large expatriate population that purchase Western-style foods and are looking for familiar foods from North America and Europe. As a result, Western-style food service outlets that utilize frozen berries – such as Jugo Juice – have established themselves in the market, and a large portion of Hong Kong's food service and retail outlets are tailoring their products to meet this consumer demand. A 400 gram box of Sara Lee frozen raspberries sells for approximately CAD$5.40 in Hong Kong.

Hong Kong's frozen raspberry imports have climbed nearly 800% between 2005 and 2010, from 10 to 89 tons. In 2010, 43% of Hong Kong's frozen raspberry exports were sourced from Belgium, 29% from the U.S., 14% from the Netherlands, 6% from China and 6% from Chile.

Food Service

1. Raspberries make a great addition to baked goods, such as pies, pastries and breads.
2. Include raspberries in a berry shortcake dessert or as a topping for ice cream.
3. Use raspberries as a decorative topping for a decorated cake.
4. Add raspberries to salads and offer them on salad bars.
5. Raspberries are a tasty topping for cereal and yogurt, so include them on breakfast bars. Use them as a topping for pancakes and waffles.
6. Include raspberries in a berry cup side dish on your children's menu.
7. Dip raspberries in chocolate and use them as a dessert plate garnish.

Facts About Raspberry

Raspberries' increasing popularity has much to do with their health benefits. Raspberries have antimicrobial properties, which help prevent too much bacteria from growing in the bottom. Ellagic acid found in raspberries helps prevent damage to cell membranes. Research shows that eating raspberries may help prevent the growth of cancerous tumors. Raspberries contain antioxidants that reduce inflammation in the body.

1. The U.S. Food and Drug Administration has approved the following nutrient content descriptors for raspberries: fat-free, saturated fat-free, sodium-free, cholesterol-free, high in fiber, high in vitamin C and a good source of folate.

Sourced by Produce Market Guide

2. The United States is the world's third-largest producer of raspberries (FAOSTAT, 2013). Raspberries are mostly grown as red (Rubus idaeus) and, black (Rubus occidentalis) varieties. However, there are also purple varieties (a cross between red and black raspberries) and yellow varieties (a mutation of red or black raspberries) (Penn State - Extension, 2014). Production occurs across much of the country, although most of it is concentrated in California, Oregon and Washington. California leads the nation in both black and red raspberry production (NASS, 2015).

Sourced by Agricultural Marketing Center

Other Potential Health Benefits

Because raspberries are high in many nutrients and antioxidants, they may provide other health benefits as well.

1. May Improve Arthritis:

Raspberries have anti-inflammatory properties, which may reduce symptoms of arthritis.
In one study, rats treated with red raspberry extract had a lower risk of arthritis than rats in the control group. Additionally, those that developed arthritis experienced less severe symptoms than the control rats.

In another study in rats, those given raspberry extract had less swelling and joint destruction than the control group. Raspberries are believed to protect against arthritis by blocking COX-2, an enzyme responsible for causing inflammation and pain.

2. May Aid Weight Loss:

One cup (123 grams) of raspberries has only 64 calories and 8 grams of fiber. What's more, it's made up of more than 85% water. This makes raspberries a filling, low-calorie food. Additionally, their natural sweetness may help satisfy your sweet tooth. The chemical substances naturally found in raspberries may also aid weight loss. In one study, mice were fed a low-fat diet, a high-fat diet or a high-fat diet supplemented with one of eight berries, including raspberries. Mice in the raspberry group gained less weight than mice only on a high-fat diet.

Raspberry ketone supplements are widely promoted for weight loss. However, little research has been conducted on them. In one animal study, mice fed a high-fat diet and given high doses of raspberry ketones gained less weight than mice in the control group. The only human-based study on raspberry ketones and weight loss used a supplement containing several other substances, including caffeine, making it impossible to determine whether raspberry ketones were responsible for any positive effects. While little evidence suggests that raspberry ketone supplements aid weight loss, eating whole, fresh raspberries may help you shed weight.

3. May Combat Aging:

Raspberries are high in antioxidants, which can help reduce signs of aging by fighting free radicals in your body. Antioxidants have been linked to longer lifespans in various animal models and show anti-aging effects in humans. Raspberries are also high vitamin C, which is necessary for healthy skin. It may improve collagen production and reverse damage to skin caused by UV rays. In one eight-week study, aging rats fed a diet with 1% or 2% raspberries showed improved motor functions, including balance and strength.

4. May Have Cancer-Fighting Properties:

Raspberries' high levels of antioxidants may protect against cancer. Berry extracts — including those of red raspberries — block the growth of and destroy cancer cells in test-tube studies on colon, prostate, breast and oral (mouth) cancer cells. In one test-tube study, red raspberry extract was shown to kill up to 90% of stomach, colon and breast cancer cells.

Another test-tube study demonstrated that sanguiin H-6 — an antioxidant found in red raspberries — led to cell death in over 40% of ovarian cancer cells. Animal studies with raspberries also observe protective effects against cancer. In one 10-week study on mice with colitis, those fed a diet of 5% red raspberries had less inflammation and a lower risk of cancer than the control group. In another study, red raspberry extract prevented the growth of liver cancers in mice. The risk of tumor development decreased with larger doses of raspberry extract. Human studies are necessary before raspberries can be conclusively linked to cancer prevention or treatment.

5. High Fiber and Tannin Content May Benefit Blood Sugar Control:

Raspberries are low in carbs and high in fiber, making them a smart choice for anyone watching their carbs. One cup (123 grams) of raspberries has 14.7 grams of carbs and 8 grams of fiber, which means they have only 6.7 grams of net digestible carbs per serving. Raspberries also are unlikely to raise blood sugar levels.

The glycemic index (GI) is a measure of how quickly a given food increases your blood sugar. Though the GI for raspberries has not been determined, most berries fall into the low-glycemic category. Additionally, studies show that raspberries may lower blood sugar and improve insulin resistance. In animal studies, mice fed freeze-dried red raspberries alongside a high-fat diet had lower blood sugar levels and less insulin resistance than the control group.

The raspberry-fed mice also demonstrated less evidence of fatty liver disease. Furthermore, raspberries are high in tannins, which block alpha-amylase, a digestive enzyme necessary for breaking down starch. By blocking alpha-amylase, raspberries may reduce the number of carbs absorbed after a meal, which lessens the impact on your blood sugar.

6. Potent Antioxidants May Reduce Disease Risk:

Antioxidants are plant compounds that help your cells fight and recover from oxidative stress. Oxidative stress is linked to a higher risk of cancer, diabetes, heart disease and other illnesses. Raspberries are high in several powerful antioxidant compounds, including vitamin C, quercetin and ellagic acid.

Compared to other berries, raspberries have a similar antioxidant content as strawberries, but only half as much as blackberries and a quarter as much as blueberries. A review of animal studies suggests that raspberries and raspberry extracts have anti-inflammatory and antioxidative effects that may reduce your risk of chronic diseases, such as heart disease, diabetes, obesity and cancer. One eight-week study in obese, diabetic mice observed that those fed freeze-dried red raspberry showed fewer signs of inflammation and oxidative stress than the control group.

Another study in mice found that ellagic acid, one of raspberries' antioxidants, may not only prevent oxidative damage but also repair damaged DNA. Raspberries boast many nutrients despite being low in calories. They provide more than half of the RDI for vitamin C, a water-soluble nutrient essential for immune function and iron absorption. Raspberries also contain small amounts of Vitamin A, thiamine, riboflavin, vitamin B6, calcium and zinc.

Sourced by Heathline.com

Cranberry Market Research

Market research structure

Acknowledgment (cranberry) / Introduction
Growing Cranberries

- Background
- Classification

Tools of the trade
Success of Cranberries in U.S.
Cranberries Export

- Potential Export Possibilities

Cranberry Production

- Overview Latvian Situation

Introduction to cranberry

Cranberries are a one of a kind fruit. They grow under very particular conditions. They require a special kind of spongy, acidic soil called peat. They need plenty of fresh water and sand, and quite a long growing season (from March to November). Cranberries do not grow in water as some people think. Instead, they grow on vines in beds that have layers of sand, peat, gravel, and clay.

Cranberries even created a high protein meal called pemmican. Pemmican was a mixture of dried strips of meat, fat, and cranberries that were pounded into paste, pressed into small cakes, and then dried in the sun. Pemmican stored well and was used on long journeys as a sort of "to go" meal. Native Americans also discovered that the cranberry plant was very useful in treating various illnesses. They often used the cranberry in a poultice, or dressing, to treat wounds. In addition, Native Americans used the cranberry to make dyes for their rugs and blankets. They never needed to farm or cultivate the cranberry vine.

Pilgrims arrived in New England they could not find the same types of berry bushes they were accustomed to in Europe. Fortunately, they learned how useful the cranberry was from the Native Americans living nearby. It wasn't long before the colonists began to trade some of their goods and belongings, like pots, axes, and blankets for cranberries. The colonists realized that the cranberry was very valuable in helping to prevent scurvy, a serious disease that could be fatal (They didn't know it at the time, but scurvy results from a lack of vitamin C).

Sourced by Cape Cod Cranberry Growers' Association

Background:

Cranberries are a unique fruit. They can grow and survive only under a very special combination of factors. These factors include acid peat soil, an adequate fresh water supply, and a growing season that extends from April to November. Cranberries grow on low-lying vines in beds layered with sand, peat, gravel and clay. These beds are commonly known as bogs or marshes and were originally created by glacial deposits. Commercial bogs use a system of wetlands, uplands, ditches, flumes, ponds and other water bodies that provide a natural habitat for a variety of plant and animal life.

Sourced by Massachusetts Cranberries

Success of Cranberry's in U.S.

Roughly 60 percent of the U.S. cranberry crop is produced in Wisconsin, generating close to US$1 billion in revenue and 4,000 jobs. Other top-producing states include Massachusetts, New Jersey, Oregon and Washington. Overall, cranberries are almost exclusively North American. Roughly 85 percent are grown in the United States and Canada, with the rest scattered across Chile, Western Europe and a few former Soviet republics. The industry is working to boost demand for cranberry products at home and expand new export markets in Asia and Latin America.

Adjusting for inflation, cranberry prices increased at a steady 6.3 percent for almost 25 years prior to the mid-1990s. In 1996 cranberries hit $65 a barrel, which led to record crops and oversupply in ensuing years. By 1999 cranberry farmers were getting a paltry $17.20 per barrel.

Reeling, the industry needed a savor. It came in the form of a dried-up sugary snack: Craisins, created by the Ocean Spray co-op, which controls 65 percent of the U.S. cranberry industry. Competitors were quick to jump on board with their own versions, more blandly branded as "dried cranberries." Prices rose to record levels, and farms once again expanded production. By 2008 Ocean Spray was reportedly paying growers $70 per barrel.

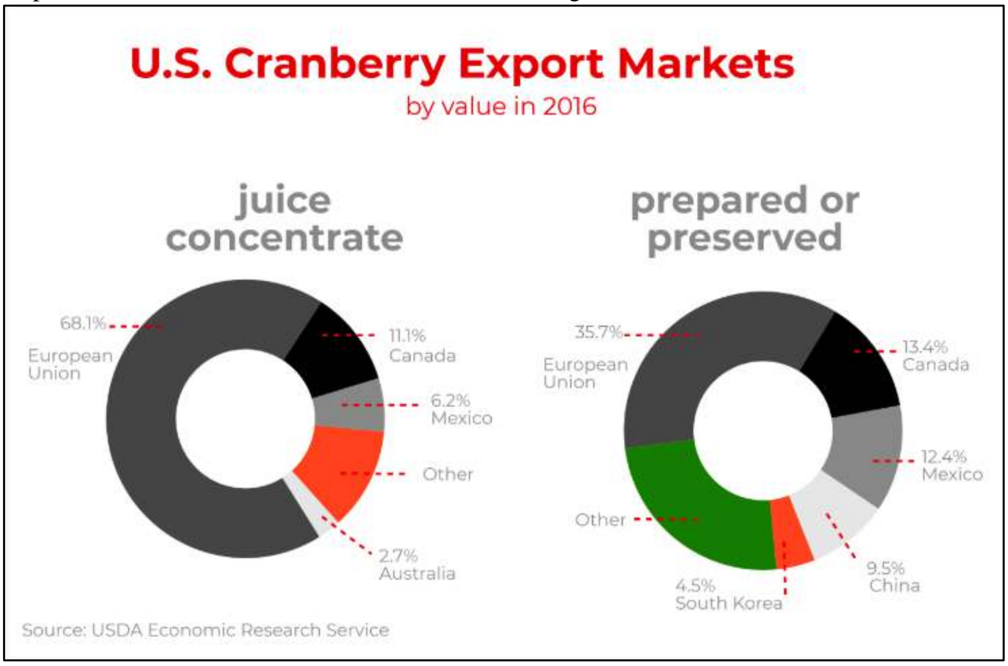
Craisins boosted profits by generating demand, but leftover cranberry juice concentrate sat orphaned in storage thanks to flat cranberry juice sales. By 2015 cranberry prices had fallen to $8 per barrel. It takes a price of $30 to $34 for farmers to break even.

Cranberry Export

U.S. export to Europe: Cranberries could face a new business hurdle for international customers as it could face a 25 percent tariff on exports to Europe. Europe is the top consumer of cranberry exports from Massachusetts. The bay state produces 15 percent of the world's cranberries. The Trump administrations move to impose tariffs has led other countries vowing to retaliate. the EU could assess its taxes on incoming U.S. goods. Members of the Congressional Cranberry Caucus are warning of the impact of potential tariffs on the fruit.

Future in Overseas Markets (USA Example)

American producers sold 9.8 million barrels of cranberries in 2016, according to the U.S. Cranberry Marketing Committee. About two-thirds of the cranberries were sold domestically (5 percent in fresh form and the other 95 percent was made into concentrate or otherwise processed); the other third was exported, primarily for processing in other markets. The thirst for cranberry juice has waned slightly in recent years, and somehow a lack of appeal for fresh uses for cranberries has yet to catch on with Millennials. But the increased popularity for dried, sweetened cranberries has made up for that slack to drive both domestic sales growth and export growth for U.S. producers.
Europe, where cranberries were introduced centuries ago, is a historical market for U.S. cranberry



growers, as is Canada where cranberries also grow natively. Mexico, South Korea, and China are among the more promising new markets. Emerging markets in general are ripe opportunities as per capita income grows and the use of dried cranberries as ingredients in a wide variety of sweet and savory foods piques global culinary interest.

Sourced by TradeVistas

Potential Export Possibilities

Cranberries are frequenting the lists of retaliatory tariffs imposed by nations in trade disputes with the United States. And for US cranberry producers, the tariffs are crimping sales of the fruit that is a staple of American Thanksgiving dinners.

China, the European Union and Mexico — the top three markets for US cranberry exports and which together count for more than half of those exports — all are slapping tariffs on the bitter berry produced primarily in the US and Canada. The tariffs come at a time when a sluggish US domestic market made exporting a viable option. US cranberry prices have been falling since 2015, according to US Department of Agriculture (USDA) data. Overproduction had been so concerning that the USDA announced volume control in July, asking the industry to withhold 15 percent of the current corp.

Concerns about losing share in the increasingly important international market due to the tariffs have arisen among US cranberry growers, said Terry Humfeld, executive director of the Cranberry

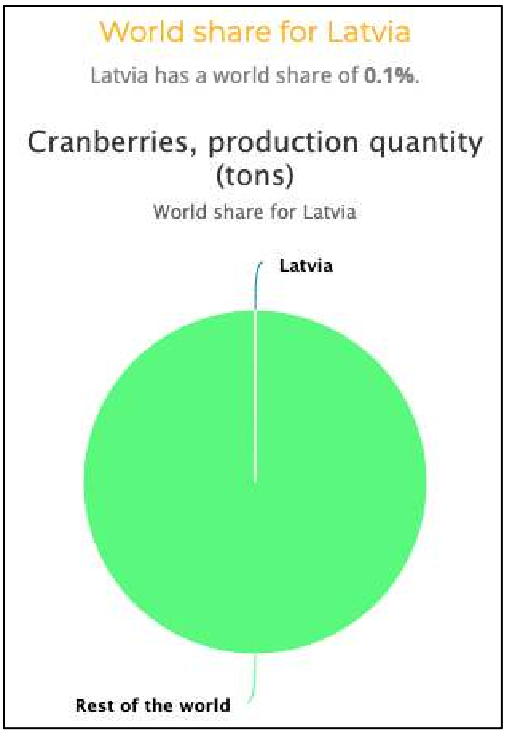
Institute. Particularly affected are Wisconsin growers, who have been producing over half of US cranberries for more than a decade, at prices below the national average. Approximately 250 Wisconsin growers, as well as cranberry processors, product manufacturers and others that rely on a strong cranberry industry will be affected, said Tom Lochner, executive director of the Wisconsin State Cranberry Growers Association. "International exports are an important part of the Wisconsin cranberry industry and market. The EU, Mexico and Canada are and have been significant purchasers of US cranberries, and China is a targeted growth market for our industry," he said. Before the tariffs, exports to those markets were expanding. The European Union, the industry's biggest importer for years, took in 16 percent more cranberries last year.

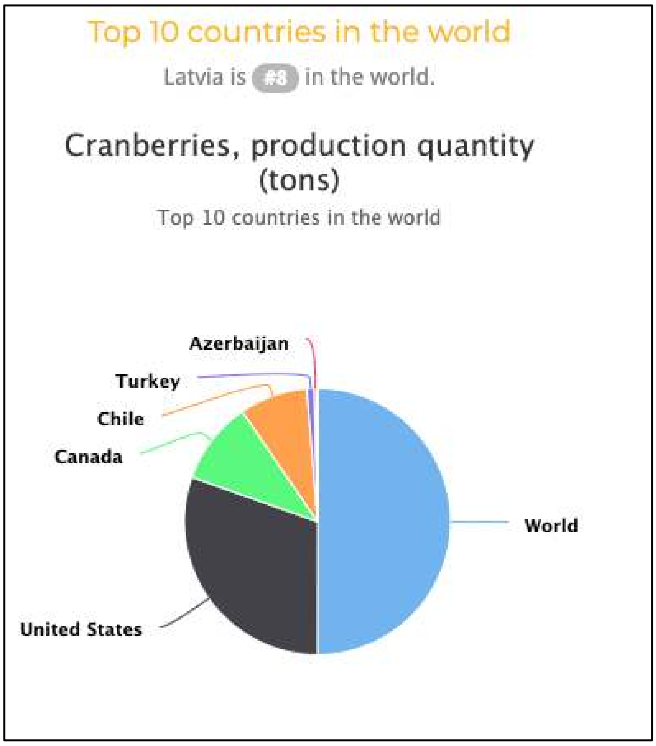
China, a relatively new but fast-growing market, had been increasing imports for six consecutive years. Both markets are now tightening for US cranberries, with the EU's 25 percent tariff on US cranberry juice concentrate imports started June 22, and China's 25 percent tariff on fresh and dried cranberries effective July 6. Based on the 2017 crop and export levels to those countries, the industry projects that the EU, Canadian, Mexican and Chinese tariffs already in place and those proposed could have a $50 million impact annually on a $270 million industry, according to Lochner. Wisconsin is the home state of House Speaker Paul Ryan, who has repeatedly criticized the Trump administration's use of tariffs. For the top importers of US cranberries, there is an alternative.

China recorded a 328 percent increase in dried cranberry imports from Canada, as indicated in a USDA report. Mark Mariani, chairman and chief executive of Mariani Premium Dried Fruit, which processes cranberries in Wisconsin, told The Wall Street Journal that China was his largest export market and that the orders just stopped. Noting that the Chinese market alone would cause more than $11 million in losses for the US industry, Humfeld called for free and fair trade across all markets.

Sourced by ChinaDaily

Overview of situation in Latvia





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Closing Words

The main purpose of this report was to give a general overview of the market situation in China and to introduce readers to the most commonly produced NTFPs (non-timber forest products) in the Baltics. The data for this report was mainly gathered during 2019-2020, which implies that the reader has to account for the described situation accuracy in the post COVID-19 circumstances. Overall, the report still reflects relevant market tendencies but, while some of the described sectors, for example, organic foods and wellness, have become even more relevant in 2021, consumer behavior of the Chinese has shifted heavily towards digitalization: e-marketing, online purchases, no-contact deliveries etc. even in the previously “dormant” senior population.

During the first half of 2019 China’s slowing GDP and the trade dispute with the U.S. had injected a certain level of uncertainty into the Chinese economy. Some experts had even predicted that these developments will negatively impact China’s consumption, who had been a powerhouse for economic growth for some time. Despite the pessimistic predictions, as we could see throughout 2020-2021, China's economy has seen a strong rebound, while the rest of the world is still struggling with the millions of job losses and businesses shutting down.

Of course, COVID-19 has changed the way that Chinese consumers behave across multiple aspects – from shopping for groceries to traveling and purchasing luxury goods, but current forecasts are predicting a robust growth for the China’s market. China’s economy in the final three months of the 2020 picked up to 6.5%, despite Covid-19 shutdowns and this trend seems to keep on.

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