GEFF Tajikistan Podcast #3: Cold storage

GEFF Tajikistan marketing expert:

Hello and welcome to the third episode of the GEFF Tajikistan Podcast Series! We continue to highlight the climate impact and green solutions that are applicable for Tajikistan. Amidst the climate changes occurring in Tajikistan, securing our domestic food supply chains have become even more important during the Covid-19 pandemic.

GEFF Tajikistan invests in high performing green technologies that aim to scale up Tajikistan's climate financing. It has direct impact on investors – through reduced expenses, increased competitiveness and improved life quality. GEFF partners with its network of financial institutions to reach small businesses and individuals.

I'm Aziz Gafarov, the GEFF Tajikistan Marketing Expert. In the last episode, we discussed modern greenhouses. This podcast is available for download on our website www.ebrdgeff.com/tajikistan. The GEFF Tajikistan Podcast series are focused on agri-business and agricultural value chains. It features conversations with local experts as well as agronomists and engineers.

Today we are going to talk about cold storages - a storage space to store fruits and vegetables, as well as other related products that prolong shelf life. About one third of fresh food is perishable and cold storage facilities are crucial to minimize post-harvest losses. The losses occur at every step in the post-harvest cycle. Cold storage is a key component that needs to be integrated in a supply chain network from the point of harvest to the point of purchase by the end consumer. Our engineering expert, Mr. Farhod Umarov, will share his thoughts about the benefits of this technology, challenges and solutions that can enhance competitiveness of the agricultural value chains and improve climate resilience in Tajikistan. Farhod, could you please share with us what the main benefits of investing in cold storage are?

GEFF Tajikistan engineering expert:

Throughout the country, farmers often face problems related to the storing of harvested fruits and vegetables. If vegetables and fruits need to be stored for a short period of time, then using a cool warehouse or basement would be enough. But for long-term storage of six months or more, refrigeration units will be required. According to the experts, in this case, the goods will retain their mass and quality, and the losses will be very insignificant - up to 0.5% of stored products per month. As for the benefits, selling fruits and vegetables in the winter season is more profitable. Apart from this, farmers investing in a cold storage could also rent out excess storage space to neighbouring farmers which will be an additional source of income.

GEFF Tajikistan marketing expert:

Could you please tell us more about the construction of cold storage and its related costs?

GEFF Tajikistan engineering expert:

The construction of a cold storage highly depends on customer's preferences and needs. There are several options available in the local market out of which top-quality storages are made of sandwich panels with automated control of temperature, moisture and air/gas composition. There are also cheaper solutions, such as the insulation of walls with polyurethane foam and the installation of chillers. A cold storage constructed with sandwich panels with the thickness of 5-7-10 or 15 centimetres can be constructed on an open space. The polyurethane foam can also be applied only on the walls of an existing building or a cellar.

The cost of the cold storage is linked to the desired level of cooling (bio-climatic storage, cooling and freezing), which defines the thickness of walls and insulation material, as well as chillers' capacity. These components play a key role in pricing. Generally speaking, a cubic meter of a cold storage equipped with chillers and insulation would range between USD 35 and USD 75.

GEFF Tajikistan marketing expert:

Thank you for sharing the general costs. That helps our listeners understand the financial effects of their decisions. And tell us please how many types of cold storage are there?

GEFF Tajikistan engineering expert:

Typically, Tajik farmers use two types of storage. These are the ones I mentioned earlier – storage made of sandwich panels and cold storage insulated with polyurethane. The storages equipped with sandwich panels can easily be assembled, disassembled and installed, reinstalled. Whereas application of polyurethane foam is made to the walls, roof and floor of existing buildings or warehouses. Apart from this, types of storages also depend on the three stages of cooling, that is bio-climatic, cooling and freezing. More advanced, modern, innovative cold storages allow control of atmosphere, taking into account complex bio-chemical processes, which took place inside of the vegetables and fruits. These types of cold storages are rarely used in Tajikistan due to the high initial investment costs.

GEFF Tajikistan marketing expert:

I am sure these explanations are interesting for our listeners. Please tell us how much power does a cold storage use?

GEFF Tajikistan engineering expert:

Again, it depends on the stored product, temperature conditions, insulation of storage and the efficiency of the used chiller or split -system. It is a bit technical, but for example, let's say we are planning to build a cold storage with a volume of 360 cubic meters, where the height of walls is 3 m, and the width of walls are 6 m by 20 m. Temperature conditions we are expecting in the storage is between -5 and + 5 ° by Celsius. This is a standard temperature mode for vegetables and fruits. And we cover concrete walls of 30-centimetre-thick with 50 millimetre of polyurethane insulation foam. In addition, we install an efficient chiller. Power consumption of this cold storage would be approximately 30,000 kWh/year or 400 kWh a year per ton of stored products, which is around 19500 TJS or roughly 1900 USD.

GEFF Tajikistan marketing expert:

To help our listeners understand better, as an example, how long can vegetables be stored in cold storage during the winter season?

GEFF Tajikistan engineering expert:

Ripe, pink and fulvous tomatoes are usually stored in refrigerated chambers at a temperature of about + 1° C and relative humidity of the air of 90%, roughly for a month. At +4° C tomatoes can be stored 2-4 weeks and at + 6° C tomatoes can be stored for up to 10 days. But at an optimal temperature from 0 to +7 degrees, grapes for example, can be stored from 3 weeks to six months.

GEFF Tajikistan marketing expert:

Thank you for sharing this information.

GEFF Tajikistan engineering expert:

We are in continuous contact with various experienced local companies which supply and install cold storage facilities throughout the country. And we are happy to share contacts of reliable vendors with farmers and businessmen, who are ready to invest in cold storage technology.

Apart from this, we have several farmers and businessmen, who would be happy to share their experience of storing fruits and vegetables and give advice. Furthermore, a team of the GEFF engineers is available for any questions, queries and efficiency advice.

GEFF Tajikistan marketing expert:

It is worth noting, that GEFF Tajikistan supports construction of cold storages, by providing expertise and helping to obtain green financing. What can we do from home during current Covid-19 outbreak? Any suggestions?

GEFF Tajikistan engineering expert:

As domestic food supply becomes more important, cold storage is an important business opportunity. You can consider developing a business plan for cold storage. As a tip, I urge the farmers to take notice of the price for grapes, for instance, in September and its price in March.

GEFF Tajikistan marketing expert:

I would like to invite my colleague to share about a success story of a farmer who benefited from investing in a cold storage from Hisor city. Mr. Fathiddin Raupov has been selling construction materials in the Hisor market for last 15 years. He was looking for an opportunity to diversify his business and increase his income. And now Zamira will tell us more about this success story!

GEFF Tajikistan marketing expert:

Hello, yes, Mr. Raupov approached one of the EBRD's partner banks for a loan of US$ 18,570 and invested in a cold storage with a total capacity of 300 tons. In this particular case, the volume of cold storage for 300 tons of grapes is approximately 900 cubic meters. Based on his strong building expertise, he constructed his own cold storage within his home compound, and had obtained the loan under GEFF project for 2 chillers. Even though the energy savings in dollars is considered minimal due to the low energy price in Tajikistan, these cold storage systems ensure an adequate supply of fruits and vegetables in winter and spring, which allows the population to access a minimum supply of nutrition and vitamins which otherwise will not be possible. For areas in rural Tajikistan where electricity cuts are common, cold storage solutions ensure that fruits and vegetables remain fresh after harvesting for a long period of time. This in turn helps to strengthen Tajik agriculture supply chains.

GEFF Tajikistan marketing expert:

And also, Mr. Raupov received the European Union investment incentives of 30%, which makes the financing more accessible to farmers.

GEFF Tajikistan marketing expert:

It is important to mention that from next year onwards, Mr. Raupov will offer storage services for wine grapes for other farmers.

GEFF Tajikistan marketing expert:

Thank you, that is really interesting and inspiring story. To conclude I would like to add that cold storage is an important component of an agricultural value chain. Each type of fresh food has a specific and limited storage potential related to its physiological nature and storage temperature, and the use of the modern and efficient cold storages can reduce perishable food losses.

I would also like to share on how the Green Economy Financing Facility Tajikistan is a product of the European Bank for Reconstruction and Development, working in cooperation with the European Union, the Green Climate Fund and the Republic of Korea. The Facility operates through Participating Financial Institutions in Tajikistan, supporting its green economy transition with $25 million of financing for energy and resource efficiency investments. GEFF Tajikistan supports various innovative green technologies. The program supports gender activities that aim to enhance women and men's equal opportunity to access finance for green technologies. For more information, please visit www.ebrdgeff.com/tajikistan or find us on Facebook.

This is the third episode of the GEFF Tajikistan podcast series that are held on biweekly basis, thank you to our listeners for the attention and stay tuned for an upcoming podcast about orchards on a hill slope. Lastly, in this difficult time, we would like to encourage everyone to take care, to adhere to the social distancing rules and personal hygiene. Good bye!