STUDY

PRICES FLUCTUATION OF AGRICULTURAL PRODUCTS AND OF BASIC BASKET IN THE LAST DECADE

Measures to withstand inflation in uncertain economic circumstances

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January 2023

Domestic production of the main crops and livestock products does not cover the degree of self-sufficiency thereby local producers are considered price takers in international markets

Cereals, vegetables, livestock products, and basic basket products are characterized by price fluctuations in the period 2012-2022. Global markets and climate factors have marked the key factors influencing price fluctuations of agricultural products in Kosovo during the period 2012-2019. Past this period, the COVID-19 pandemic and the war in Ukraine are the main factors in the price fluctuations of agricultural products.

Agricultural policies should support production, and processing, and orient support policies towards production in sectors where the country has comparative advantages concerning the production capacity

FRIEDRICH EBERT STIFTUNG

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KAS - Kosovo Statistics Agency (ASK, in alb)

GDP - Gross Domestic Product

DEAAS - Department for Economic Analysis and Agricultural Statistics

FAO - Food and Agriculture Organization

MAFRD - Ministry of Agriculture, Forestry and Rural Development

USDA - U.S. DEPARTMENT OF AGRICULTURE

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OVERVIEW

Agricultural products are considered as one of the most important product groups in the global economy, providing the main base of food. However, in spite of this importance, agricultural and food products have historically been characterized by price variability. The changes (fluctuations) in the prices of food products, in particular agricultural products, have implications for the process of the economic development. But the triggers that impact the fluctuation of prices are often not known. Hence, the purpose of this study is to research into the fluctuations in the prices of agricultural products in Kosovo, and to identify the key factors (triggers) of such fluctuations.

In order to conduct this research, quantitative and qualitative data were used. Quantitative data were mainly obtained from existing sources of relevant public institutions and from several private entities, while qualitative data were obtained from interviews involving different stakeholders. The study itself includes an analysis of average prices for agricultural products and its by-products and market basket (basic basket products).

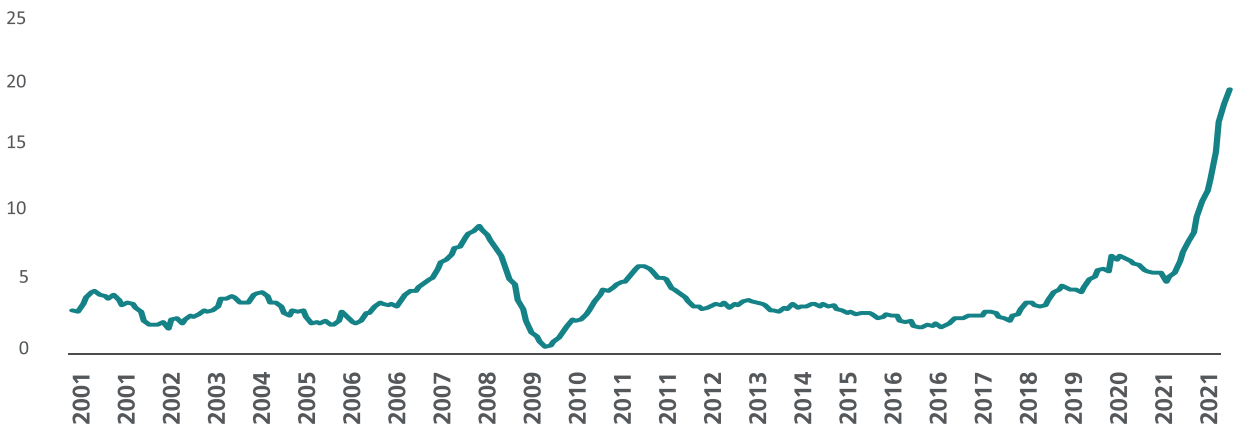
In Kosovo, as in other countries, prices have increased, this happened also due to the fact that Kosovo is a small economy and is influenced by external pressures. The results show that grain (cereals), vegetables, livestock products and basic basket products have been characterized by price fluctuations. In most of these products, the increase of the price of inputs has been the main factor in rising of prices. The rise in the price of inputs, especially in the last three years, happened due to the COVID-19 pandemic and the war in Ukraine. Moreover, knowing that Kosovo does not manage to cover its market demand with most of agricultural products, it is therefore compulsorily dependent on the import of almost all agricultural products. This way, the Kosovar producers of agricultural products are considered as price takers on the international agricultural product markets, where even the inflation rate has been higher.

Generally speaking, this issue requires the creation of comprehensive policies that address the entire value chain, starting from farmer to consumer. In the case of Kosovo, this study has introduced some key recommendations that could be implemented by the relevant institutions, in order to address these fluctuations and thus ensure a more sustainable development of the agricultural sector in the future. The recommendations mainly relate to the reorganization of the current support measures and the introduction of new policies (measures).

INTRODUCTION

Agricultural products are one of the most important product groups in the global economy, providing the main base of food. But, in spite of this importance, agricultural and food products have historically been characterized by price variability. For example, if we start with a comparison from the first decade of the new millennium, the prices of food products reached the highest increase since World War II, changing the downward trend of almost three-decades, when during these 10 years, the prices of food products were doubled (Baffes and Haniotis, 2016). Similar price movements were also observed in agricultural products. The figure below shows the food price index according to the World Food Organization – FAO[1], over a period of 21 years (2001-2022). The figure below shows the observed variability of prices over years, with an increase of the index price in 2007/08, 2011 and in the last four years, 2019, 20, 21 and 2022.

Figure 1:
Food price index in nominal terms, FAO



Source: Author using FAO data

This variability is a result of many factors, but the main ones are considered to be economic ones (demand and supply, exchange rate), energy cost increase, agricultural and trade policies (subsidies, customs tariffs) and other factors of lesser importance. Any change of the prices of agricultural products poses a risk to food provision, especially in developing countries, as consumers are impacted by higher prices and producers are pressured by higher production costs (Baffes and Haniotis, 2016).

Similarly, Kosovo, as a developing country[2], has faced a price increase over the past few years, especially during the last two years (2021 and 2022), Kosovo has faced a relatively high inflation, and in 2021, the inflation rate reached 4.1%, while in June 2022, compared to the same period in 2021, inflation rate was 14.1%[3].

Obviously for a country like Kosovo, where there is a percentage of the population which is very close to the poverty threshold, rising of prices of basic foods leads to a lower living standard and lower quality of life, thus further reducing their purchase power. In addition, price movements of agricultural products can have different effects on the economy, and this is why well-designed policies are required to prevent and help overcome these situations. But, well-designed policies must be based on a fair understanding of what are the causes of price movements. Therefore, this study aims to analyze the fluctuation of prices of agricultural products during the last decade in the market of Kosovo. More specifically, this study aims to identify the key factors that have influenced the price movements of these products over the last 10 years, with a particular focus on the last three years, 2020, 2021 and 2022. Some of the main questions of this study are: What are the main factors that have influenced the fluctuation of the prices of agricultural products and the basic basket products? What measures can be taken to cope with this situation and how to prevent similar economic situations in the future?

[1] Food and Agriculture Organization – FAO;

[2] Taken from or adapted from "Empowering Citizens through Education in Kosovo", from FES, 2020, (https://kosovo.fes.de/e/empowering-citizens-through-education-in-Kosovo).

[3] KAS Data (https://askdata.rks-gov.net/pxweb/sq/ASKdata/).

LITERATURE REVIEW

The literature has listed over the years several key (causative) factors affecting the price movements of agricultural and food products. Among these factors most commonly mentioned in the literature are market factors (demand and supply), economic growth, oil (oil markets), introduction of biofuels into use, price of electricity, climate conditions (weather), trade policies and other factors (some of these factors are also mentioned in papers by Trostle, 2008; Schnepf, 2008; Trostle et al., 2011; Hochman et al., 2014; Tadasse et al., 2016; Nigatu et al., 2020).

Market: Demand and Supply are one of the key factors influencing the price setting of agricultural products. The prices of agricultural products in a market economy are the result of the interaction between factors influencing the demand for a given agricultural product and factors influencing farmers' decisions to offer that product on the market (Nigatu et al., 2020). As the demand for a given product increases, so does the price, while the opposite happens to the supply – the increase in supply influences the reduction in price of a given product. The supply is also influenced by changes in production around the world, especially in countries with large production and a high presence in world markets. Mostly countries with a larger quantity of production have more influence on the setting of these prices, compared to other countries.

Therefore, one of the main causes for the decline in prices of agricultural products is the increase in supply – resulting from a combined effect of expanding cultivated areas and increasing productivity – exceeding the demand for agricultural products[4] (Nigatu et al., 2020).

On the other hand, demand may also be influenced by many other factors, but it is mainly related to income levels, and other social and demographic factors, such as population growth[5], changing feeding habits and diversification of food diets, middle class growth and urban area expansion (Schnepf, 2008; Nigatu et al., 2020).

Besides the market, namely the demand and supply, economic growth, exchange rate, and trade policies are some of other economic factors that also influence the prices of agricultural products (see studies by Abbott et al., 2008; Rosegrant, 2008; Akram, 2009; Frankel and Rose, 2010; Hochman et al., 2014; Rezitis, 2015; Nigatu et al., 2020). For example, economic growth is usually associated with an increase in demand for food products. For most food crops, the main contributor to the increase in demand is economic growth, which especially in developing countries, increases the demand for food and animal feed, since in addition to basic foods, their diets diversify to include more meat, dairy products and vegetable oils (Troste, 2008). This, on the other hand, increases the demand for grain and vegetable oils (Hochman et al., 2014).

Henceforth trade policies have an impact on the price of agricultural products. **These policies are primarily aimed at protecting their internal markets**. Moreover, some exporting countries make trade policy changes designed to discourage or limit exports (Trostle, 2008; Trostle et al., 2011). Such an example is mentioned by Hochman et al. (2014), where trade policies like banning grain exports (especially banning rice exports from some countries in Asia such as Bangladesh, Vietnam and India (see FAO, 2009) contributed to the increase in prices of food products in 2007/08, as well as in 2010/11.

Oil: Given the nature of agricultural production, as a sector with a relatively high consumption of energy (oil and electricity), especially oil, which is one of the key inputs of wide use in agricultural activity. Over the years, various authors have studied the possible correlations between oil prices and prices of agricultural products (see for example papers by Su et al., 2019; Vo et al., 2019; Cheng and Cao, 2019; Hung, 2021). Many studies have concluded that there is a causal link between agricultural products and oil markets. In other words, oil prices play an important role in the price movements of agricultural products (Baffes and Dennis, 2014; Vo et al., 2019; Shiferaw, 2019; Pal and Mitra, 2019; Taghizadeh-Hesary et al., 2019; Hung, 2021).

For example, in a study by Baffes and Dennis (2014) it was found that changes in crude oil prices accounted for more than 50 percent of the price increase for agricultural products (Nigatu et al., 2020).

[4] For example, if agricultural crop production from large producer countries (e.g., U.S.) was decreasing by 3 percentage points, product prices were projected to increase by an average of 12 percent per year over 2018/19 to 2021/22 (Nigatu et al., 2016).

[5] According to Schnepf (2008), the constantly growing world population, driven by strong growth in purchasing power, especially in developing countries like China and India, has contributed to a permanent increase in global demand for more food and different types of food.

Another study by Vo et al. (2019) reveals that gross oil prices play an important role in explaining price fluctuations and price volatility of agricultural products. At the same time, Taghizadeh-Hesary et al. (2019) confirm that the prices of agricultural products respond positively to any innovation from the crude oil market.

Electricity: similar to oil, electricity is another input that has an impact on the prices of agricultural products. The increase in energy prices increases the production costs of agricultural products, consequently of food products, and generally decreases the supply of food commodities (Hochman et al., 2014).
This connection has been evidenced by several studies (see for example studies by Hochman et al., 2010; Wang and McPhail, 2014). When it comes to the effects of oil and electricity, another factor mentioned in the literature with impact on the prices of agricultural products is biofuel. Biofuel is considered one of the factors of demand and supply, responsible for the increase in prices of agricultural crops and food products in recent years[6], mainly due to the surface of land used for biofuel crops, such as corn and sugar cane, which reduces food availability and increases aggregate demand for food commodities (Hochman et al., 2014).

The literature also highlights other factors influencing the price of agricultural products. Among other factors are the climate conditions (weather), since agriculture is one of the sectors that mostly depends on and is hit by climate conditions[7], then urbanization[8], agricultural policies (for example subsidies) and other factors of lesser importance.

[6] Moreover, see also papers by Rosegrant (2008), Collins (2008) and Mitchell (2008).

[7] Taken from or adapted from "Exploring the Potential of Agriculture in the Public Disclosure Authorized Western Balkans", from World Bank Group, 2018 (https://openknowledge.worldbank.org/bitstream/handle/10986/32198/Exploring-the-Potential-of-Agriculture-in-the-Western-Balkans-A-Regional-Report.pdf?sequence=1&isAllowed=y).

[8] Urbanization, or people's movements towards cities, can affect the structure of food consumption by changing calorie requirements or preferences, food availability, and food preparation (Hawkes et al., 2017; Nigatu et al., 2020).

METHODOLOGY

For the realization of this study, two main types of data were used: quantitative and qualitative data. Quantitative data were mainly obtained from existing sources of relevant public institutions and from several private entities, while qualitative data were obtained from interviews involving different stakeholders. Both of these data types are described below.

Data Collection

For the purposes of this study, several quantitative data sources were used, but three main sources are included in the analysis: data from the Kosovo Agency of Statistics (KAS), the Department for Economic Analysis and Agricultural Statistics (DEAAS) at the Ministry of Agriculture, Forestry and Rural Development (MAFRD), as well as data from the World Food Organization – FAO[9].

The retail prices of agricultural products and the basic basket products on a monthly basis for the period 2012-2022 were obtained from KAS, whereas in-farm and retail prices on a monthly basis for the last three years (2019-2022) were obtained from DEAAS, while the global prices and the food price index were extracted from the FAOs database.

In addition to these secondary data, some primary data were also extracted, mainly from interviews with different stakeholders such as farmers, collection points, processing centers, input vendors and private traders.

Most quantitative data have been collected for a 10-year period, starting from 2012 until June 2022 (2012-22). The time sequence of collected data is in months.

Interviews with stakeholders

Since the methodology applied in this study is a combination of quantitative and qualitative data, interviews with different stakeholders have been used for the collection of qualitative data. In total, some 20 different stakeholders have been contacted, ranging from primary production (farmers), collectors and processors, to policy makers and universities. Of these, 14 interviews have been conducted successfully. The interviews have been conducted in 9 Kosovo municipalities.

The purpose of these interviews was to obtain additional data and information about the price fluctuations (changes) of agricultural products, what have been the effects of these fluctuations and what measures should be taken by the various governance levels to address this issue.

A semi-structured questionnaire was used to collect qualitative data, with a total of 10 open questions mainly related to price changes, influencing factors, coping modes and stakeholders' proposals to overcome similar situations in the future.

Both types of aggregated data were analyzed using different software, namely quantitative data were analyzed descriptively with STATA, while qualitative data with MAXQDA, extracting some of the key discussion points from the interviews.

[9] 9 FAO – Food and Agriculture Organization.

RESULTS

Results from analyzed data

This analysis, introduces the results of price changes in a comparative form for different time periods (mainly before the COVID-19 pandemic and after the outbreak of war in Ukraine) for basic basket products, main agricultural crops and livestock products. These analyses are the result of data from official sources, mainly data from KAS and MAFRD.

As a result of the COVID-19 pandemic during 2020, a global economic crisis was triggered. The crisis affected Kosovo as well, with lockdowns followed by a decrease in demand, and a decrease in the level of production, which consequently led to having less supply in the market. But, overall, during 2021 the global economy experienced a rapid recovery which caused scarcity of products in the market against the high demand. This fact influenced the rise in prices of many products in global markets. This trend of economic developments was felt in Kosovo as a result of the increase in domestic demand, the fiscal recovery packages of the Government of Kosovo, as well as the support from the diaspora. Unfortunately, in Kosovo, the level of self-sufficiency with basic basket products, main agricultural crops and livestock products is in deficit, therefore, insufficient production over the years has caused import dependency and this dependency has been accompanied by supply and price uncertainty.

In Kosovo, during 2021, the prices of basic basket products have increased; for example, cooking oil had an increase of 38% compared to 2020, flour of about 10%, eggs 7% and sugar 3%. There was also a price increase in the category of - bread and grain by 4.3% and potatoes by 24%.

Following this price increase coming as a consequence of the COVID-19 pandemic, prices began to stabilize as a result of alternative markets being found by local traders. But the start of Russia's invasion of Ukraine in February 2022 has caused significant price increases in the global markets and in the Kosovo market as well. Many basic products such as wheat, corn, cooking oil and various chemical fertilizers had another price increase, and the reason for this was that Russia and Ukraine are among the world's largest producers and exporters of mentioned products.

In the first half of 2022, the level of inflation reached its peak in Kosovo. The annual inflation rate measured in June 2022 compared to June 2021 was 14.1%. The inflation rate of basic food products is multiple[10] times higher than the average annual inflation. All of these give an indication of significant increases in price of basic products throughout 2022, with expectations to remain the same even in the medium term, based on global market developments. The indications for significant increase in the prices of basic agricultural and livestock products throughout 2022 are clear. The performance of the price increase and the key factors that influenced this increase are analyzed in this study.

The group of products analyzed in this study are basic basket products (flour, cooking oil, milk, eggs, meat, sugar), agricultural products (wheat, corn, pepper, tomato, onion, beans, potato, apple, grapes) and livestock products (milk, eggs, bovine meat and chicken meat). The group of agricultural products such as grains, vegetables and basic basket products have been characterized by higher price. The average price for the period January-June 2022 for one kg of flour amounted to €0.73 while the price of bread (0.500 kg) was €0.46, 42% and 26%, higher compared to the same period of 2021. For the same comparative period, an increase in prices has been observed in the group of vegetables which are one of the most preferred foods of citizens, ranging from tomatoes with the highest rise of 51%, followed by peppers with 23%, potatoes with 22%, and beans and onions with 6%. Prices have also risen in the meat category, where boneless bovine meat scored an increase of 15% and chicken meat 26%. The exception to these crops (agricultural products) are apples, which have been characterized by a price reduction of 8% over the same period.

Kosovo is an importer of over 90% of basic agricultural inputs (seeds, chemical fertilizers, pesticides and other crop protection chemicals) and oil. **Developments in international markets are directly reflected in the basic basket of products and in the Kosovar agricultural and livestock economy, as a result of import dependency**. In other words, the Kosovar producers of agricultural products are considered as price takers on the international agricultural product markets. This means that Kosovar producers do not have any influence on the prices of global markets which are determined by the dynamics of global demand and supply.

[10] Inflation data for basic products are presented in the " basic basket products " chapter;

Therefore, beyond any other planning, it is important that the government supports domestic production with adequate policies, because if not, then the expectation that prices for basic products will remain the same or continue to rise for a medium-term period is real.

Key factors that have influenced the fluctuations in the prices of agricultural products in Kosovo

Based on the analysis of secondary and qualitative data extracted from interviews with stakeholders, global markets (demand, supply) and climatic factors (especially spring frosts, high temperatures and hail) have noted the key factors that have influenced the price movements of agricultural products in Kosovo over the period from 2012-2019. But after this period, the COVID-19 pandemic and the war in Ukraine are the main factors causing fluctuations in the prices of agricultural products. The description of these two factors and of their effects are presented below.

Pandemic: During the COVID-19 pandemic, the prices of many products were increased, mainly due to pandemic measures that limited the supply with almost all products to global markets. This supply chain constraint was accompanied by price increases for most products, similar to agricultural ones. Mainly this price increase came as a result of constraints on supply chains, rise of transport costs, difficult conditions in primary production and the large increase in demand during the same period[11].

Even in the case of Kosovo, after analyzing the data, it turns out that the price increase of agricultural products started in March 2020 and continued until June 2020. During the pandemic, the prices of many products were raised, mainly due to pandemic measures and the mentioned factors (lockdowns, general decline in demand, decrease in the level of production – supply in the market) and so on. From 2021 onwards, there is a presence of an increased demand in Kosovo. With the rapid recovery of economies worldwide during 2021, the shortage of products in the market against high demand led to a rise in price for many products.

War in Ukraine: The start of the war in Ukraine had immediate effects on the price of agricultural products. This due to the fact that Russia and Ukraine are among the world's largest exporters of some agricultural products like wheat, corn, and other products like gas, oil, cooking oil and fertilizers. In percentages, these two countries account for 10 to 40% of global markets with these products (GAP, 2022). Russia and Ukraine, respectively, account for nearly one-third of the global wheat and barley market, and two-thirds of global sunflower oil exports, while Ukraine alone is the world's fourth corn exporter. The conflict has damaged Ukraine's ports and agricultural infrastructure, and is likely to limit the country's agricultural production for years[12]. Moreover, according to FAO, due to Ukraine's inability to plant or harvest crops, such as corn or sunflowers, food and feed prices in 2022 could increase by 8 to 22 percent[13].

In the case of agricultural products, the COVID-19 pandemic and the war in Ukraine caused a significant rise in the price of inputs with a widespread use in agriculture. Input prices have been a major reason for rising of food prices and remain a constant concern. On the agricultural production side, energy and input markets are the main factors that can drive changes in the prices of agricultural products, as they are an important part of the production costs for farmers. From the post-pandemic period (March 2021) until the second half of 2022[14], prices of agricultural inputs showed almost a continuous increase, even led to a doubling of price for some agricultural inputs. Rising of prices from Russian exporters, market concentration in a share of the world's largest producers[15], rising demand and energy prices, especially of coal and natural gas in Europe have affected the fertilizer markets since the beginning of 2021[16].

For example, since **fertilizers** account for a significant share in the total cost of production/ operation of the farm, the main components of the fertilizer price index and the energy price index are the price of natural gas and the price of crude oil (Nigatu et al., 2020). In the case of Kosovo, Kosovo imports from Russia about a quarter of the fertilizers used in its agriculture, including urea (GAP, 2022).

In this market, Russia is a major exporter of nitrogen-based fertilizers, such as urea, accounting for over 12% of total global exports (GAP, 2022). These and several other factors are discussed, particularly for each agricultural crop in the sub-chapter below.

[11] Taken or adapted from "The COVID-19 crisis and rising food prices, a year on", by Rachel R, Ajla V, and Rob H., 2021 (https://devpolicy.org/the-covid-19-crisis-and-rising-food-prices-a-year-on-20210928/).
[12] Taken or adapted from "Why are food prices going up? Key questions answered", Reuters, 2022 (https://www.reuters.com/business/retail-consumer/why-are-food-prices-going-up-key-questions-answered-2022-05-10/).
[13] Taken or adapted from "The importance of Ukraine and the Russian Federation for global agricultural markets and the risks associated with the current conflict", FAO, 2022 (https://www.fao.org/3/cb9236en/cb9236en.pdf).
[14] Until the period when data were available for this study;
[15] GAP (2022);
[16] Taken or adapted from "Food prices continued their two-year-long upward trajectory", by Baffes, J., Temaj, K. 2022 (https://blogs.worldbank.org/opendata/food-prices-continued-their-two-year-long-upward-trajectory).

In general, taking into account the fact that Kosovo is a small and import-dependent economy, changes in global markets are quickly reflected in Kosovo's market as well.

What happened to the prices of the main agricultural crops in Kosovo?

The chapter below shows in detail what happened to the price fluctuations of some of the main agricultural products in the country, focusing mainly on the period before the COVID-19 pandemic and after the start of the war in Ukraine. This chapter includes grain, vegetables, fruits, vineyards, livestock products and six basic basket products.

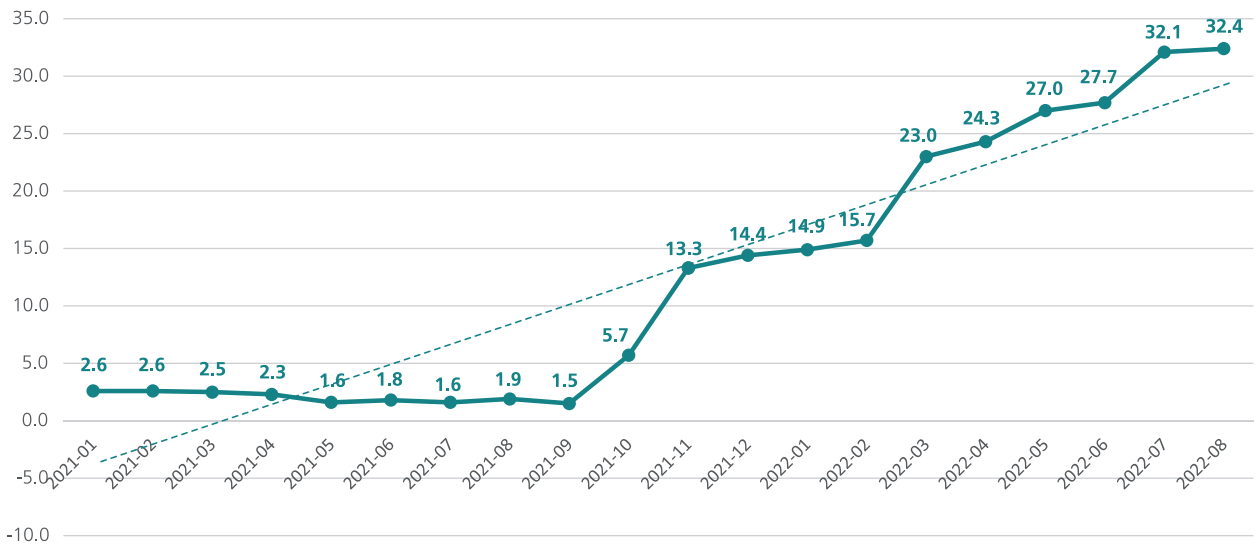
Grain crops

Kosovo has traditionally grown grain crops, mainly for the purpose of self-consumption and less for the market. Over the years, more than half of arable land has been used for grain crops cultivation (about 66% in 2021),[17] which makes up the largest area of arable land in Kosovo. The area cultivated with grain crops in 2021 was about 125 thousand ha, wheat with 64.2%, followed by corn with 31.9%, while the rest of the surface was cultivated with other grain crops (cereal crops), such as (barley, rye, oats and other grain crops), (KAS, 2022).

Grain crops cultivation has been characterized with low yields, as well as cultivation being fragmented into many plots. No improvement worth mentioning has been noted over the years. Therefore, even the degree of self-sufficiency with grain crops is in deficit. Consequently, insufficient grain crops production has caused a dependency from imports, which then is associated with supply insecurity and price fluctuations.

Grain crops and bread price suffered major changes in recent years. Figure 2 shows the increase in the price of bread and grain crops expressed in indexes for the period from January 2021-August 2022. If the Harmonized Consumption Prices Index (HCPI) of the KAS for the period January 2021-August 2022 (2015 = 100) is analyzed, the growth rate highlighted has started in November 2021 at -13.3%, and the growth trend continued and reached at 32.4% in August 2022.[18]

Figure 2:
Monthly index of price change for bread and grain crops over the period January 2021 – August 2022 - (2015 = 100), (%)



Source: Author using KAS Data[19].

Local grain crops depend on the import of the bulk of agricultural inputs. **Price change of these inputs on the global market has an immediate effect and it increases the cost of domestic grain production.** Below is the description of two main grain crops - wheat and corn.

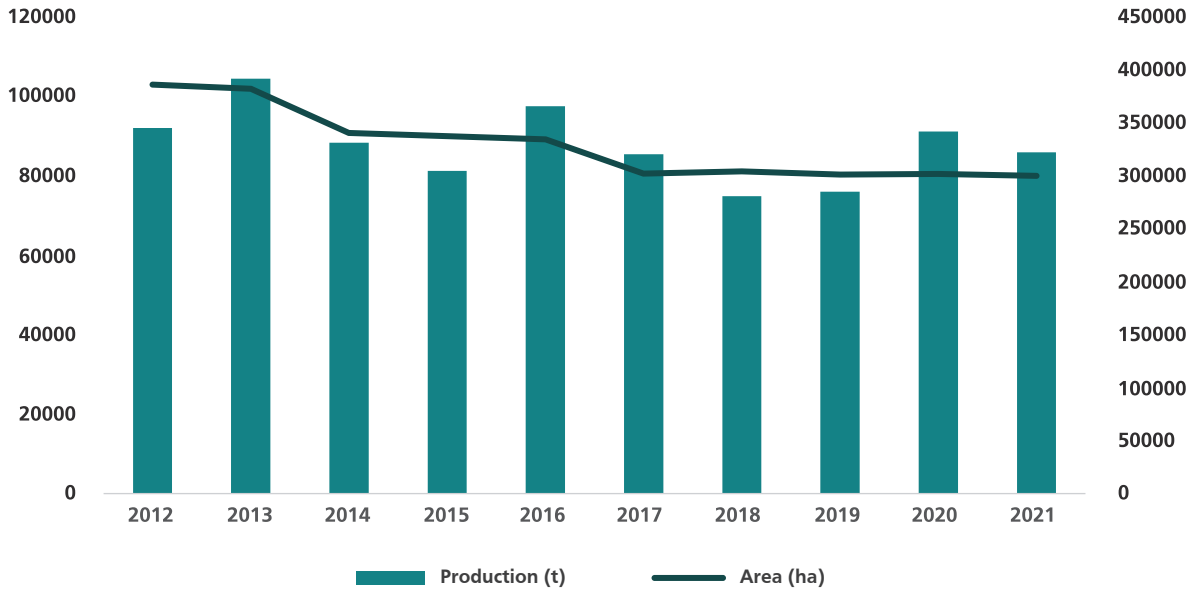
[17] Household Agricultural Economies Survey – KAS (2022);
[18] KAS Data (https://askdata.rks-gov.net/pxweb/sq/ASKdata/)
[19] KAS Data (https://askdata.rks-gov.net/pxweb/sq/ASKdata/)

Wheat

The total wheat production over the years according to data[20] from MAFRD and KAS[21] has not changed much. In 2021, it accounts for 64.2% of the total area used for grain cultivation (KAS, 2022). Despite subsidies[22] that are given for more than a decade, the area commonly cultivated is of about 80 thousand ha, exception to this is in 2013 and 2016, when the cultivated area was bigger for about 20% and 10%, respectively. This area has an average production capacity of 350 thousand tons, and the highest value was achieved in 2016, reaching close to 366 thousand tons (see Figure 3 below). However, wheat cultivation has been characterized with a low yield, and with cultivation fragmented into many parcels. Wheat yields range from 3.5 t/ha to 4.2 t/ha, and over the years no improvement has been noted.

This is due to many reasons, such as low production capacities from farmers, outdated machines and use of low-quality inputs, ranging from seed, chemical fertilizers, and disease and pest protection chemicals. Also, the cultivation of wheat as a monoculture for many years on the same surface (field) has an impact on low yields.

Figure 3:
Productivity (t) and area of wheat (ha) in the period 2012-21.



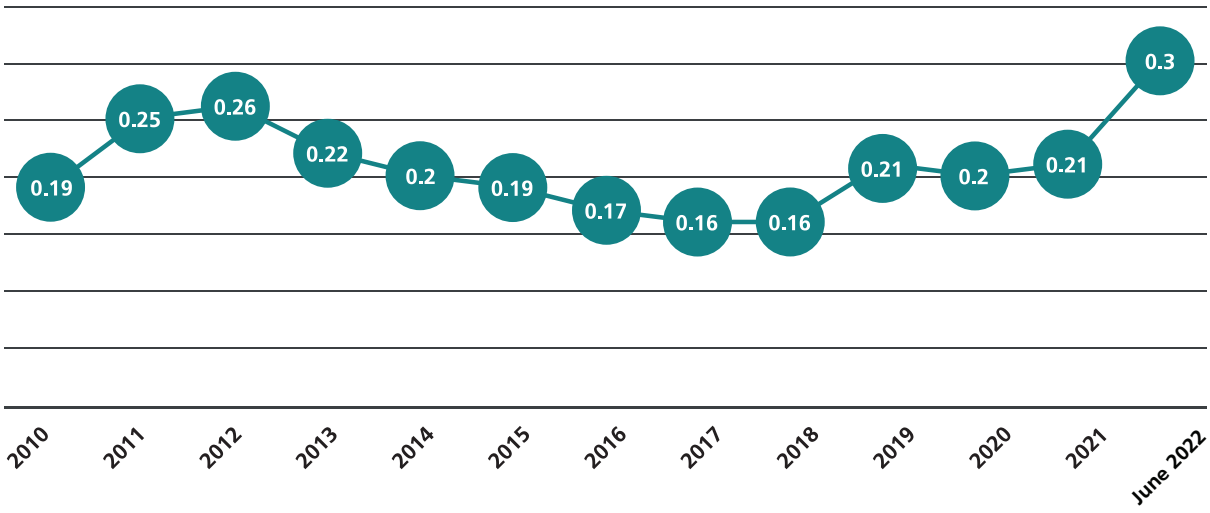
Source: Author using MAFRD (2022) and KAS Data (2022)

According to data from MAFRD, the self-sufficiency rate of local wheat production for the period 2012 – 21 reaches the value of 57% to 78% of domestic consumption needs, and the lowest rate was in 2019 - only 57%, while the highest was in 2020 - with 73.3%. Consequently, insufficient wheat production has caused an import dependency. Compared to 2012, the import of wheat as quantity (in tons) has increased by 24% (GAP, 2021). Dependence on import is mainly associated with uncertainties in supply and price fluctuations.

In the case of wheat, the price of local wheat from 2010 to June 2022, has changed year by year. In this period the price of local wheat ranged from 0.16-0.21€/kg. The price of wheat in 2011 and 2012 was 0.25€/kg and 0.26€/kg respectively, the latter has the highest price for this time-period (until November 2021), while in 2017 and 2018 the price of wheat was 0.16€/kg, and it marks the lowest point in the price of wheat for this time-period. From November 2021, there was a continuous price increase until June 2022, with the price of 0.30€/kg. At this point, compared to the same time-period of 2021 (June 2021), an increase of 65.8% has occurred (see Figure 4).

[20] Green Report
[21] Household Agricultural Economies Survey
[22] See the table of subsidies (direct payments) in Annex 2, which shows the direct payments scheme for 2021 in Kosovo.

Figure 4:
Average annual price of wheat, 2010-2022 (June), (€/kg)



Source: Author using KAS Data

Wheat, including its by-products (flour and bread) are some key factors that have influenced the price fluctuations of this product. Key factors to be distinguished are:

- **Imposition of 100% Tax/ fee** by the Government of Kosovo on imported products originating from Serbia and Bosnia and Herzegovina (BiH);
- **Covid-19 pandemic;**
- **The war in Ukraine.**

The imposition of the 100% Tax fee by the Government of Kosovo on imported products originating from Serbia[23] and Bosnia and Herzegovina (BiH) had an immediate effect on prices. According to data from KAS[24], November 2018 marks the first significant movements in the price of local wheat, with an increase of 31.5% in 2019 compared to 2018. The price increase in this period is a result of the imposition of the 100% Tax fee which is also mentioned by GAP (2021).

Following this increase, the price of wheat stabilized as a result of alternative markets being found by local traders up to the beginning of 2020, when an "**artificial**" increase in the price of wheat was caused . This price increase came as a result of the large demand for wheat by-products such as flour and bread, triggered by a panic from citizens due to the first cases with the **SARS-CoV-2 virus (COVID-19) - the pandemic** in Kosovo and the restriction measures imposed by the Government. But, the beginning of the harvesting season in July 2020 shows a 25.4% decrease in the price of wheat and the market was stabilized by autumn of 2021.

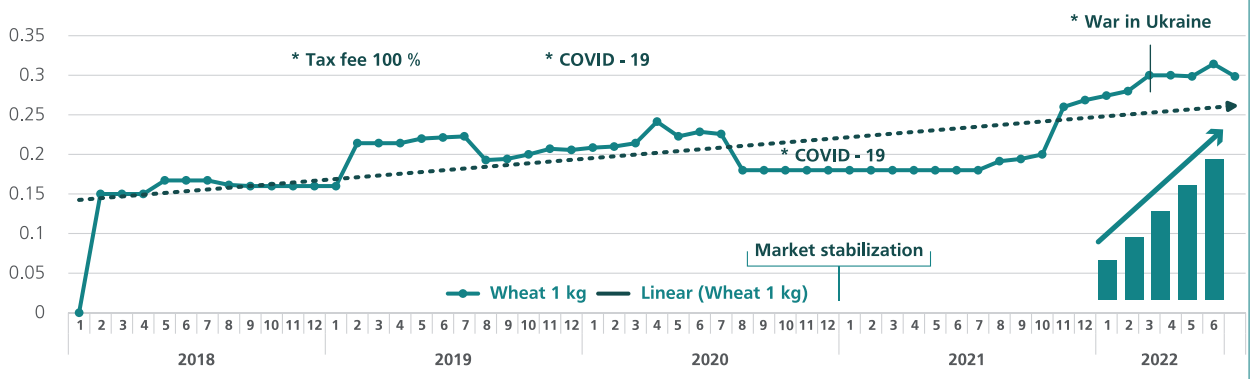
Agricultural inputs were also affected by this price increase, namely (seeds, chemical fertilizers, and other protective chemicals). As a consequence of the increase in their prices in autumn of 2021, which is the optimum period for wheat planting, this was consequently reflected in the change in the price of wheat, leading to an increase of 48.7% in the fourth quarter period (4QP) of 2021, compared to the same period of the previous year - 2020.

However, the biggest rise in the price of wheat happened in 2022, immediately after the start of the **war in Ukraine**[26] (February 2022). In this period, price rises started immediately, while the highest price of wheat was recorded in May 2022, and compared with the same period of the previous year, the price rose by 75% (from 0.18 to 0.31 Euro/kg), (see Figure 5 below).

[23] Serbia has historically been the main exporter of grain in Kosovo, especially corn;
[24] KAS Data (https://askdata.rks-gov.net/pxweb/sq/ASKdata/).

[25] According to GAP (2020), in 2019, when Kosovo had imposed a 100% Tax fee on raw material, Kosovo imported grain mainly from Croatia and Bulgaria.
[26] Russia and Ukraine are major exporters of grain and have a significant impact on global markets.

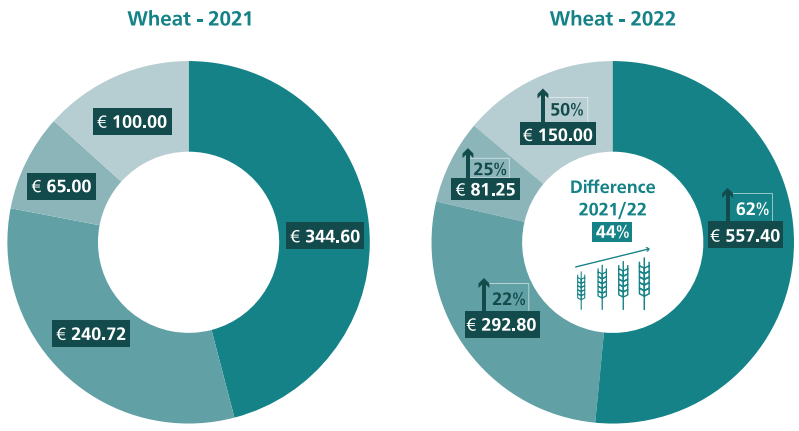
Figure 5:
Average monthly price of wheat, 2018 - 2022 (June), (€/kg)



Source: Author using KAS Data

The main consequence of the last two influencing factors in the wheat price fluctuations – the COVID-19 pandemic and the war in Ukraine - is the increase in the price of agricultural inputs. Generally, in agricultural products, inputs play the main role in determining prices from farms. As mentioned in a World Bank study[27], input prices have been the main reason for rising food prices and thus remain a constant concern. In Kosovo, the prices of agricultural inputs according to the KAS have marked an increase of 20 to 160% in 2021, compared to 2020. In the case of wheat, if we compare the cost of production (CP) of wheat in 2021 with that of 2022, CP scored an increase of 44% (see Figure 6 below).

Figure 6:
Comparison of the cost for wheat production for 2021 and 2022, (€/ha)



Corn

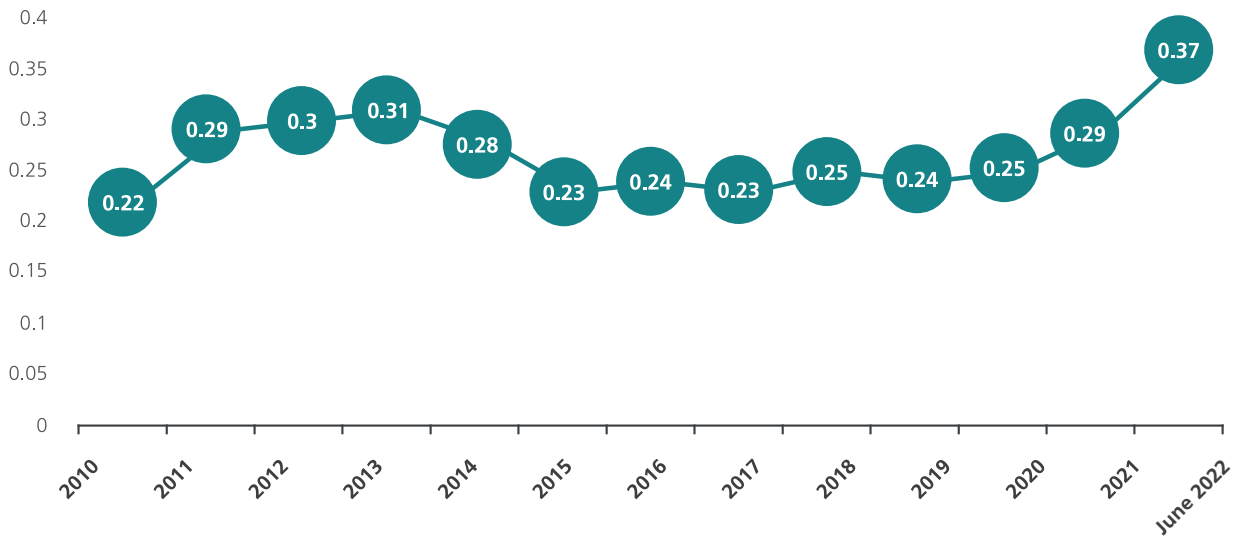
Corn is the second most important crop in Kosovo from the grain group, accounting for about 32% of the area cultivated with grain in 2021, ranking immediately after wheat. During the five-year period 2016-20, an average of 39 thousand ha were planted with corn in Kosovo, reaching an average production level of 165 thousand tons. According to the Green Report of 2021, the highest value of productivity was realized in 2016, with over 186 thousand tons of corn. During the same period, the self-sufficiency rate ranged from 71% to 77%. Similar to wheat, corn cultivation has been associated with low yields, with an average of 4.2 t/ha, which is twice lower yield compared to European Union countries (Schils et al., 2018).

[27] Taken or adapted from "Food prices continued their two-year-long upward trajectory", by Baffes, J., Temaj, K. 2022 (https://blogs.worldbank.org/opendata/food-prices-continued-their-two-year-long-upward-trajectory).

From 2016-21, the area cultivated with maize has been more uniform, with a slight decrease of the cultivated areas in 2021 compared to 2016. Although, if data from 2012 are included, there is an increase in cultivated area for 27% compared to 2021. However, this increase is insufficient because so far, the production of corn is less than the demand of the Kosovo market. The remaining part of the market demand is met by import, and in 2020 alone, over 58 thousand tons of corn were imported, which marks the highest value in the five-year period 2016-20. While compared to 2012, import in tons has almost doubled (GAP, 2021).

In comparison to wheat, the price of corn has been associated with fewer fluctuations in the period 2010-21. The figure below shows the average corn price values from 2010 to June 2022, and we can notice that corn prices per kg have increased steadily from 2019 and are currently (June 2022) at the highest level seen in this time series. In 2022, the average price of corn in grains was 0.37 EUR/kg (January-June 2022), which marks an increase of 23% compared to the same period in 2020. Factors that have influenced corn price fluctuations are the same ones as in the case wheat. But it is worth pointing out that in corn, the price increases are not the same (to the same degree) as in wheat. This comes as a consequence of the large demand for wheat flour. On the other hand, the demand for wheat flour in the local market is much greater in comparison to corn and its by-products. Corn is mainly used as feed for livestock and much less for flour for human consumption.

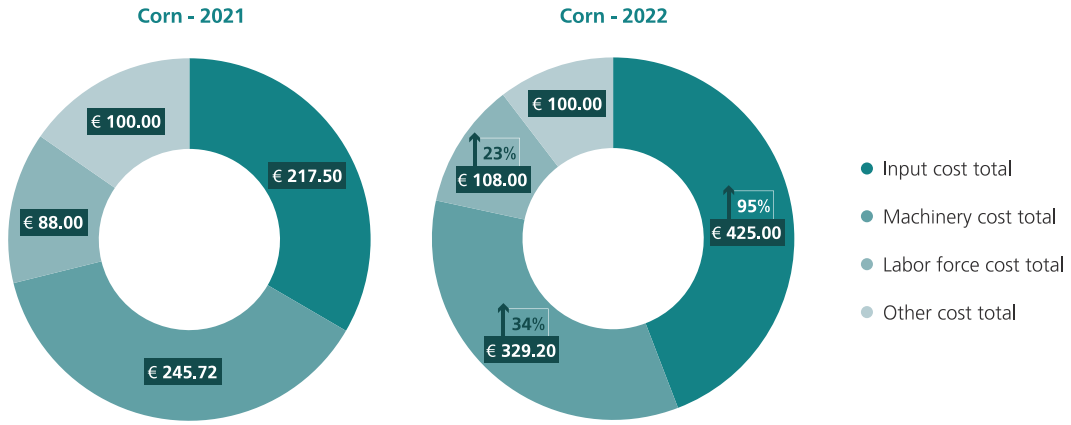
Figure 7:
Average annual price of wheat, 2010-2022 (June), (€/kg)



Source: Author using KAS Data

In corn, the cost of production in 2022 has increased by 48% compared to 2021 (see Figure 8 below).

Figure 8:
Comparison of the cost of corn production for 2021 and 2022, (€/ha)



Vegetables

In Kosovo over the period 2015-21, about 19 thousand ha of vegetable crops per year have been cultivated on average (KAS, 2022). Vegetables were cultivated in open field, greenhouses and in gardens. Among the crops with the largest surface area were potatoes, peppers, beans, onions and tomatoes, followed by other vegetable crops. The degree of self-sufficiency ranges from the lowest for tomato about 60%, about 85% for pepper, bean and onion, while the potato exceeds 100% and is one of the rare products that meets the degree of self-sufficiency with local production. Potatoes, onions and beans are found in the local market almost all year round, while tomatoes and peppers are seasonal vegetables. As seasonal vegetables, their production has also affected the price fluctuations to be seasonal as well. In the period (June-August) when local products go on the market in larger quantities, the price of vegetables falls sharply. In the rest of the year the vegetable sector mainly depends on imports and therefore prices increase. A more emphasized price increase was observed in the group of vegetables which are most preferred foods for the citizens and have a broad basis for internal consumption, starting from peppers, tomatoes and onions, followed by beans and potatoes which also find multiple uses in the local cuisine.

Pepper

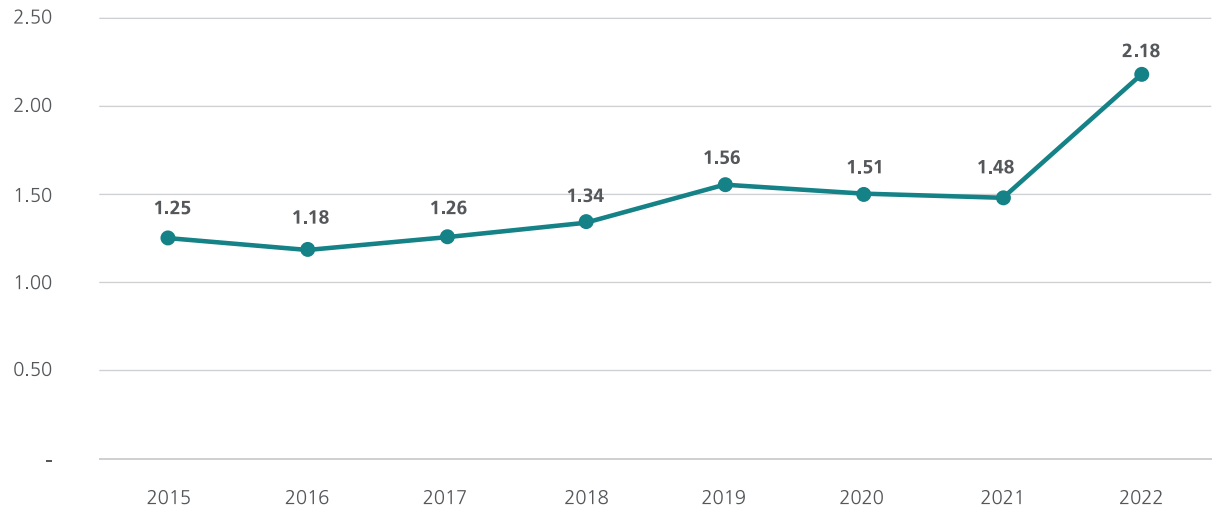
Pepper is one of the vegetable crops widely cultivated in Kosovo, as a result of favorable climatic conditions. In the last decade, the area cultivated with pepper has reached an average of 3 thousand ha, and the producers decide on the size of the cultivated area mainly based on the previous season (past year). In 2021, 3,686 ha of peppers were grown, with a total production reaching 72,928 tons (KAS, 2022). According to MAFRD (2021), total local production in the period 2015-21 covered on average 85% of domestic needs and the remainder was covered by import.

Pepper is a seasonal crop[28]. As a result, the largest import in quantity of pepper is during the months of March-June, while with the beginning of June the import quantity begins to fall, which is a result of local production. From July, Kosovo begins to export a quantity of peppers, and the largest quantity is exported during the month of September when local production is the largest in quantity. The local pepper usually is present in the market starting with June (in greenhouses) and thus continues until July, when open field production begins and continues until October, depending on the weather conditions allowing for such a cycle.

Seasonal production coupled with hyper-production in that period of the year has caused over the years a price fluctuation of pepper culture. Prices of pepper, depending on the season differ relatively much, thus during 2015-22 the average price of pepper has moved from 1.18€/kg to 2.18€/kg (see Figure 9 below). Over the 7-year period (2015-21), prices for different types of pepper did not show any major fluctuations.

[28] Based on interviews with farmers (local growers) of the pepper, the cultivation of the pepper as a monoculture is increasing the presence of diseases during production, which directly affects the quality of the local pepper;

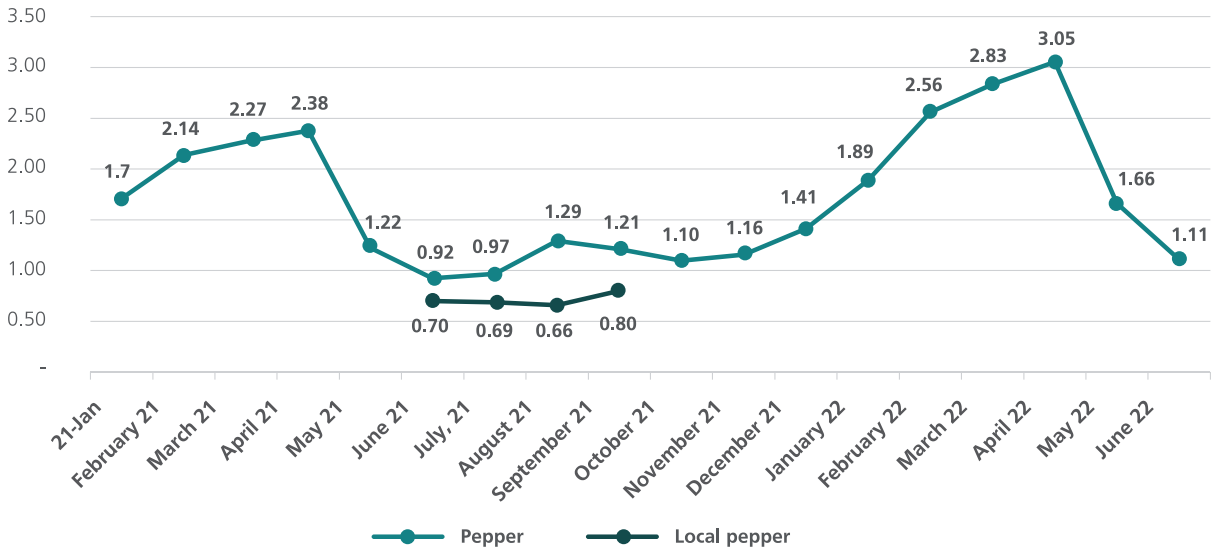
Figure 9:
Average annual price of pepper, 2015- 2022 (June), (€/kg)



Source: Author using KAS Data

However, since 2021, larger price movements have started to be observed throughout the year. In this period, the average within the year was 1.48€/kg[29]. **Figure 10**, shows the movement of prices of peppers within the year, respectively during the period January 2021- June 2022. The price of peppers on the market falls in the period when local peppers dominate the market (June-October), while in the period when import dominates (January-May) the price increases.

Figure 10:
Average monthly price of pepper, period 2021 (January) – 2022 (June), (€/kg)



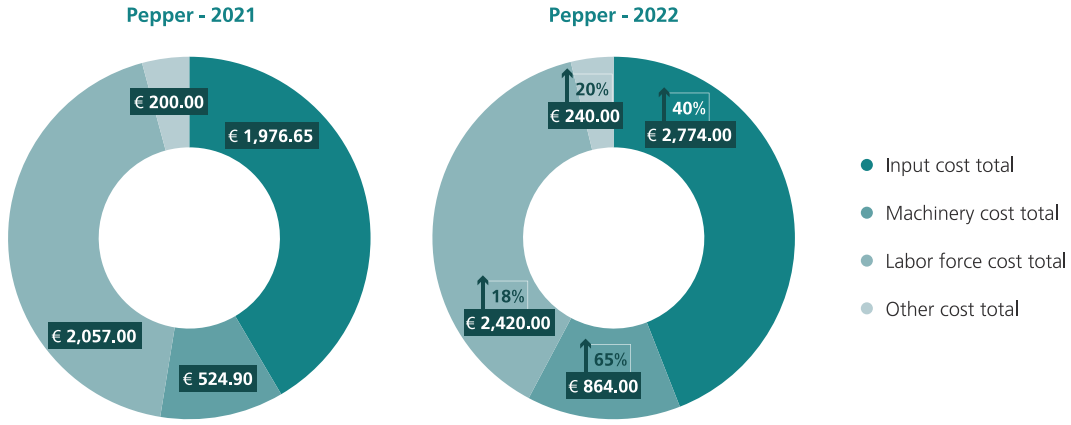
Source: Author using KAS Data

Significant price increase is noticed in 2022, namely in the first month of 2022 when citizens paid 23.17% more for pepper, compared to the same period of 2021. **The increase in the price of agricultural inputs with special emphasis on chemical and preparatory fertilizers for protection against diseases and pests, seeds and oil are the key factors that have influenced the increase of the price for pepper**. Also, the non-functioning of the value chain in local production has affected the season of local production and caused an import dependency for most of the year.

As for the cost production, the cost production of pepper in 2022 has increased by 32%, compared to 2021 (see Figure 11 below).

[29] KAS Data (https://askdata.rks-gov.net/pxweb/sq/ASKdata/

Figure 11:
Comparison of the cost of pepper production for 2021 and 2022, (€/ha)

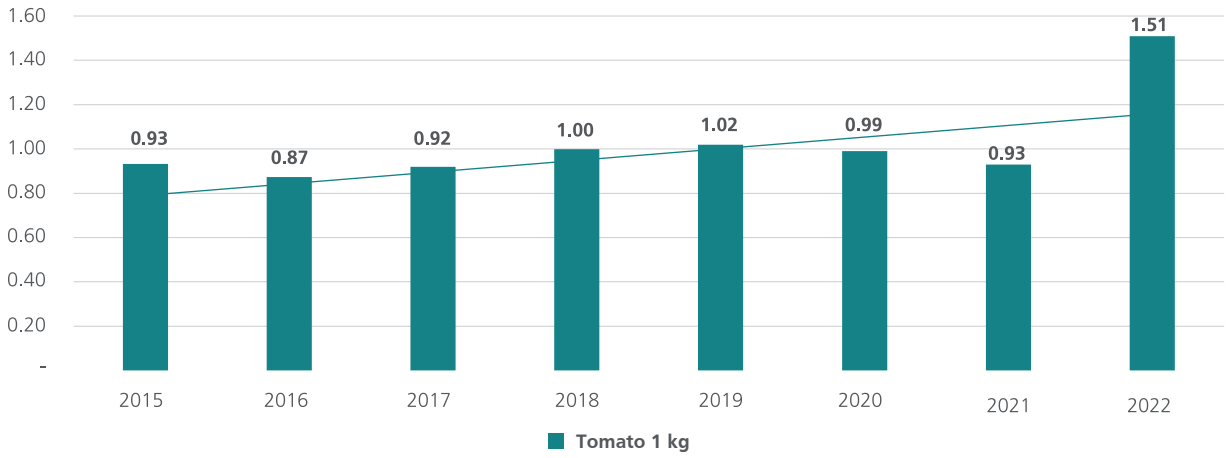


Tomato

Traditionally tomato has been grown in Kosovo. In recent years intensive tomato production is oriented towards growing in closed premises - greenhouses. Of the total area planted with vegetables in 2021, tomato accounts for 8% (KAS, 2022). According to MAFRD (2021), the local tomato production for the period 2015-22 is estimated to cover about 60% of the self-sufficiency rate. To meet local needs for consumption tomatoes are constantly imported. The largest quantity of locally produced and imported tomatoes is used for human consumption, while a very small quantity is used for processing. The tomato market in Kosovo is characterized by a large demand, therefore placing the tomato in the market is not a problem for its growers, but the presence of imported tomatoes even during the season when local tomato is present in the market is one of the main problems for local producers[30].

In relation to the price of tomato, **Figure 12** shows the average retail prices.

Figure 12:
Average annual price of tomatoes, 2015- 2022 (June), (€/kg)

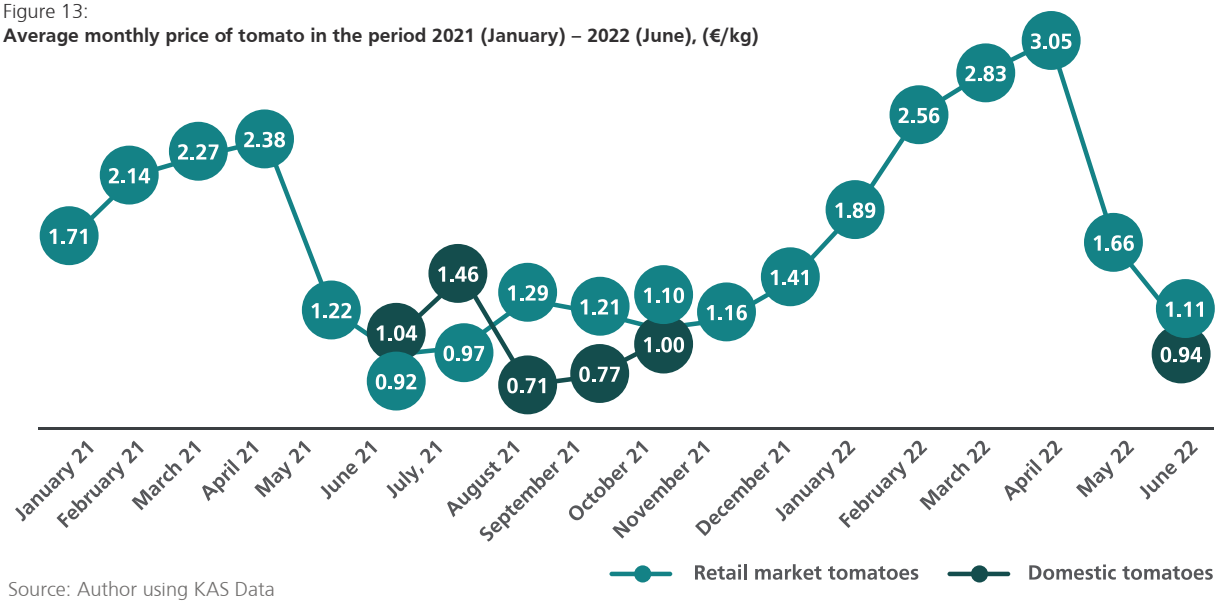


Source: Author using KAS Data

The above figure shows that during 2015-21 the price of tomatoes has not had major fluctuations. A similarly sharp price increase, as in for pepper is observed for tomato in 2022. In this period, namely in the first half of 2022, the price of tomato has increased by 23% compared to the same period of 2021 (see Figure 13).

[30] In addition, in one of the qualitative interviews, the quality of the local tomato was mentioned as an issue that requires addressing, because the imported tomato in most cases is of higher quality.

Figure 13:
Average monthly price of tomato in the period 2021 (January) – 2022 (June), (€/kg)



Source: Author using KAS Data

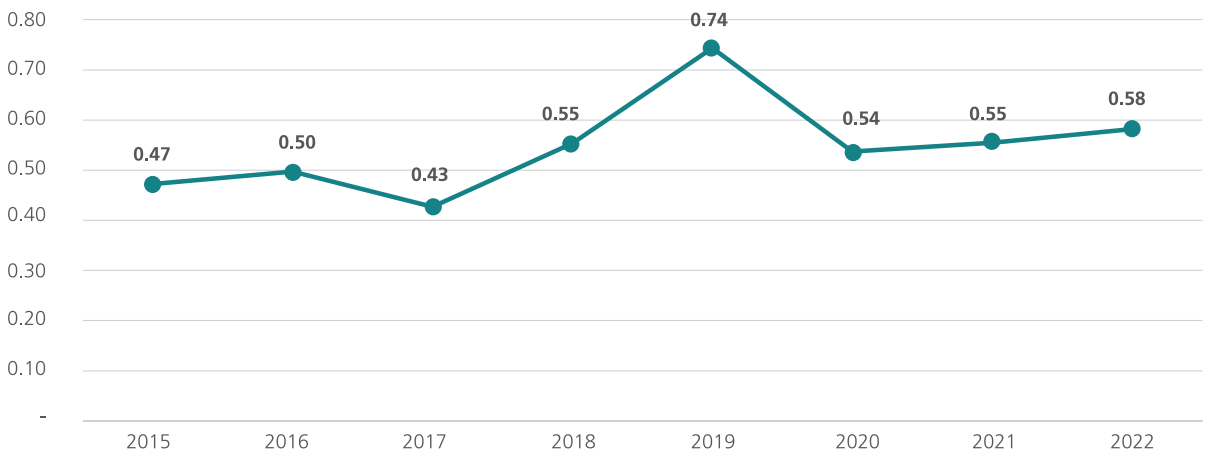
Despite the appropriate climatic and geographical conditions for this crop, the increase in the price of agricultural inputs, oil and other protective preparations are factors that have affected the price of tomato. However, in addition to these factors, there are some other external factors that have affected the current state of the tomato market. Lack of competitiveness against the countries of the region, low yield per surface unit, high percentage of open field cultivation and gardens, lack of a developed value chain for further placing and processing of tomatoes, quality and seasonal hyper-production are factors that also affect the high price of tomato in the market, with particular emphasis on the period when there is no local production. In addition, interviews with local farmers and other stakeholders of the sector show that the quality of the local tomato is lower compared to imported tomato, which directly affects the price of trading on the local market.

Onion

Kosovo has a tradition in onion cultivation for many years now. In Kosovo, onion production manages to meet about 85% of local consumption needs. Data from the past seven years show that onion productivity has reached an average of 1,300 ha, with an average yield of 15 tons/ha. The impossibility of meeting local demand shows that in Kosovo there is a need to increase the cultivated surface or at best increase the yield with onion per unit area in order to at least meet the local demand.

On the Kosovo market, onion is present almost all year round. The average retail price during 2015 - June 2022 ranged from 0.47 to 0.58€/kg, except for 2019 when it reached the highest price - 0.74€/kg. The figure below shows the average annual price of onion from 2015 to 2022.

Figure 14:
Average annual price of onion, 2015- 2022 (June), (€/kg)



Source: Author using KAS Data

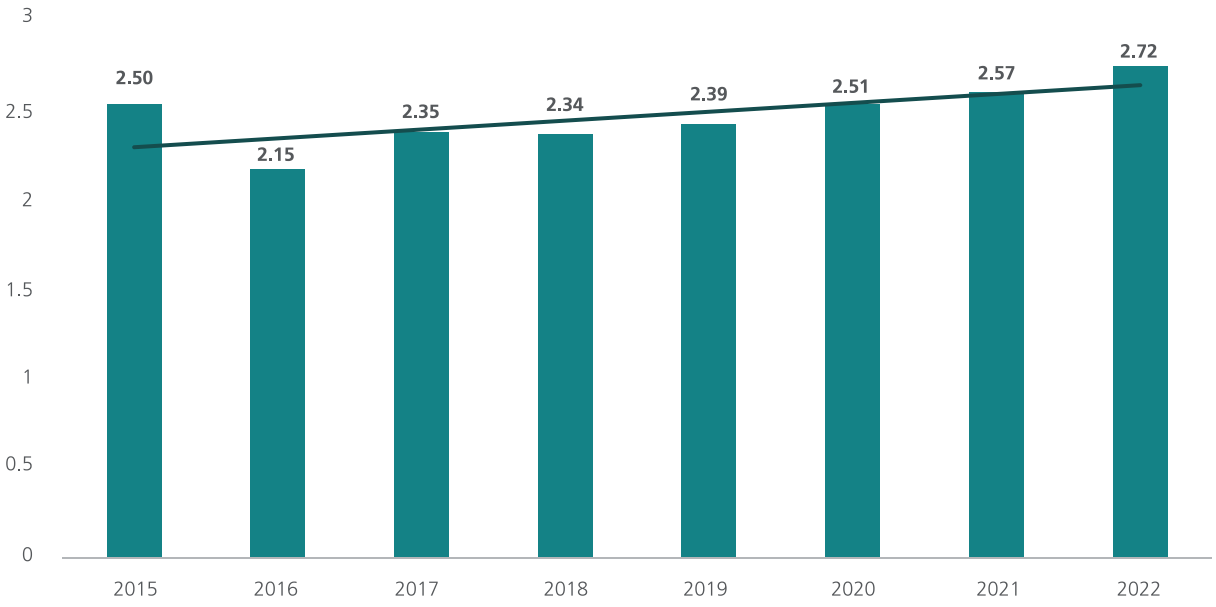
The price of onion from 2020 has shown a trend of minimum growth. Similar to other vegetable crops, **the increase in the cost of production (CP) has affected the price of onions**. However, there is no explanation why the price of onion has not fluctuated with the prices of other vegetables. However, this maya be because onion is a product that is easily found in the countries of the region and is not characterized by high prices.

Beans

Similar to the vegetables mentioned above, beans have a long tradition of cultivation, mainly due to its widespread use in the country. The area planted in 2021 was about 2,900 ha with a total yield of 5,349 tons. During 2015-21, local production has managed to meet about 85% of local consumption needs, while the remaining 15% is covered by import. Beans is one of the crops for which there is constant demand in the local market throughout the year, but in Kosovo, the highest consumption is in the winter season.

The average retail price in 2015-21 did not have a sharp fluctuation, and 2.15€/kg, was the lowest price recorded in 2016, while the price amounted to 2.57€/kg in 2017 (see Figure 15 below). The same trend in prices has been observed also in previous years. In the first half of 2022, compared to the same period of 2021, the price difference was only 6%.

Figure 15:
Average annual price of beans, 2015- 2022 (June), (€/kg)



Source: Author using KAS Data

In the first six months of 2022, a trend of continuous beans price rise is noticed. Beans in Kosovo is grown partially, often planted as a mixed crop with another crop, mainly corn. This form of cultivation requires great manpower for harvesting and has resulted in low yields due to biological competition of the two plants[31]. The low yield per unit area of beans has a major impact on the price of local beans. In addition, the enormous increase in the price of agricultural inputs does have an impact, despite the fact that planting with a combined crop lowers the use of fertilizers and protective preparations.

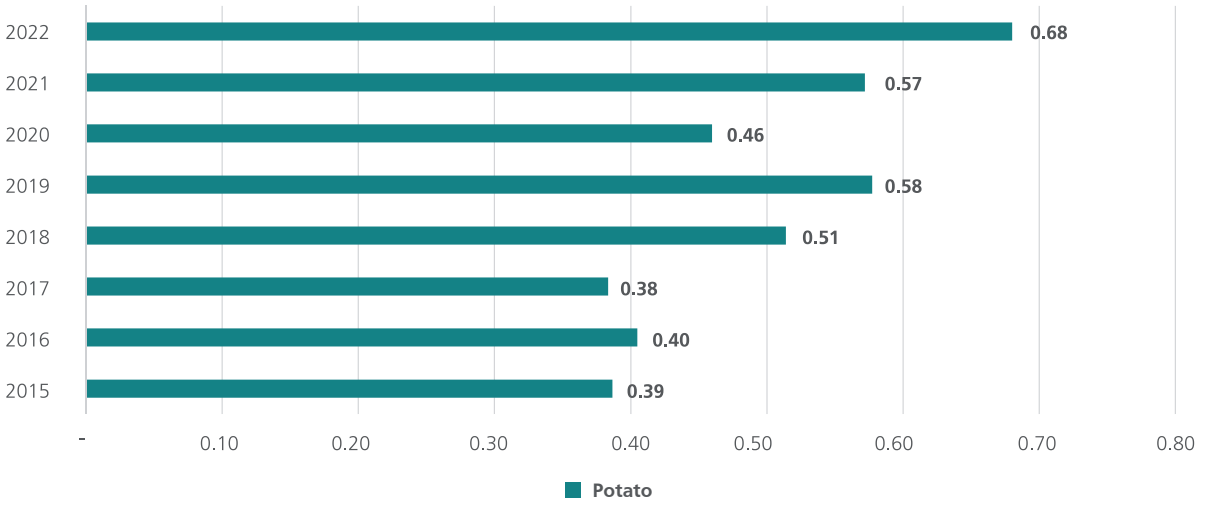
Potato

In Kosovo there are adequate conditions for potato cultivation and as such it is a very important crop, and the average cultivation for the period 2015-21 was about 3,800 ha, with an average yield of over 20t/ha. According to data from the MAFRD Green Report, potato **is one of the few crops in Kosovo (except the group of plants with berries) that exceeds the 100% self-sufficiency rate** (MAFRD, 2021). The degree of self-sufficiency would be achieved even with smaller cultivated areas, but the majority of small producers with the aim of lowering the cost of production, plant potato seed from their own production. Consequently, this is one of the main reasons that the average yield at the country level remains quite low, compared to the genetic potential for the production of quality potato seeds.

The Figure below presents the average potato price over the last seven years, including until June of 2022.

[31] Biological competition means when plants compete with each other for nutrients.

Figure 16:
Average annual price of potato, 2015-2022 (June), (€/kg)



Source: Author using KAS Data

If we analyze the market price, we notice that during the period 2015-17, there was no fluctuation of the potato price. The year 2019 had the highest price of 0.58€/kg, while the first half of 2022 shows a record price for potato, which compared to the same period of 2021, is for 22% higher. Given the fact that potato falls in the category of crops that require greater amounts of chemical fertilizers and protective preparate during vegetation, **the increase in the price of inputs is a key trigger for the increase of potato price**. Also, this price increase comes despite the fact that it is a locally produced crop that entirely covers domestic consumption.

Fruit trees and vineyards

Close to 10 thousand and 200 ha was the surface planted with fruit trees in 2021 in Kosovo. The area planted with fruit trees and vineyards in 2021 compared to 2012, shows an increase, which is recorded in fruit trees for 43% and 8% for vineyards.

Table 1:
Surface with fruit trees and vineyards in the period 2012-21, (ha)

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Change 2012/ 21 in %
Fruit Trees (Area in ha)	7,071	8,342	6,921	7,998	5,668	6,422	7,922	9,479	10,265	10,144	**43%**
Fruit Trees (Area in ha)	3,220	3,159	3,201	3,068	3,117	3,199	3,272	3,367	3,437	3,471	**8%**

Source: Author using KAS Data from the Survey of Household Economies Agricultural Economies

However, similar to other sub-sectors of plant productivity, fruit trees and vineyards are characterized by low yields (in comparison to EU countries). In the period 2012-21, from year to year, there is a yield volatility. According to the Green Report 2021, the yield of fruit trees and vineyards is a reflection of the climate changes that occurred in the country over the past years.

Although more than 30 types of fruit trees are cultivated in Kosovo, apple, grapes, plum, raspberry and walnut[32] trees are the main fruit trees of the cultivated area (they are the dominant fruit trees with an area of over 1000 ha). The vineyards are cultivated with table grapes with top varieties such as (Muscat Hamburg, Italian Muscat, and Afuz Ali.), and wine grapes such as (Vranç -Vranac, Prokupa - Prokupac, and Game).

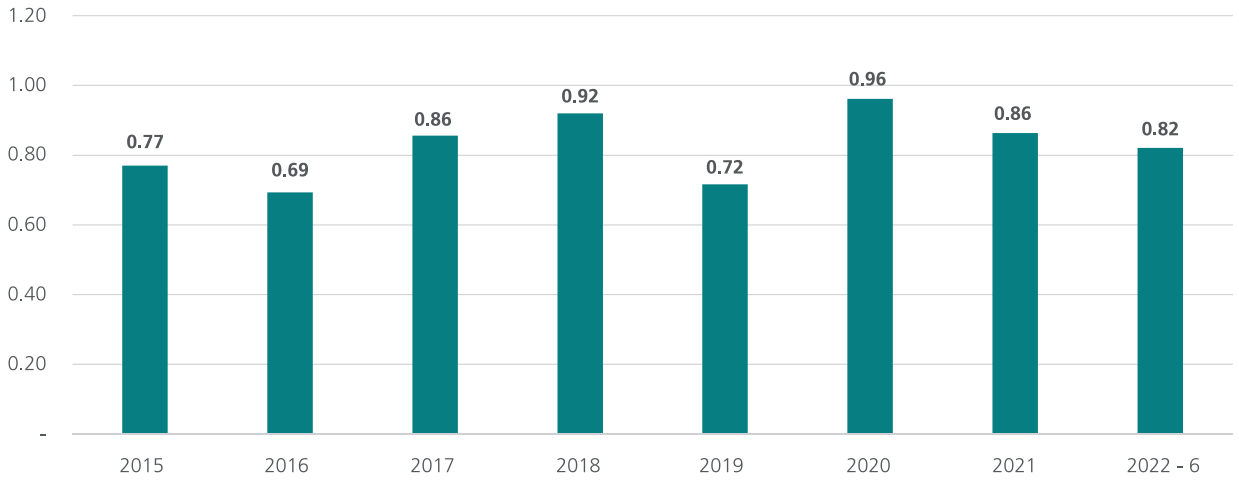
According to data published by KAS, only in fruit trees a decrease of (-9.3%) of Harmonized Index of Consumer Price (HICP) was noticed during 2021. The next part describes in more details about the crop of grapes and apple.

[32] The walnut planted areas were mainly established after 2016, and most of the orchards have not yet achieved full production.

Apple

Apple is the main fruit tree of the cultivated surface, with about 30% of the total fruit tree cultivated area for 2022, or 3,083 ha. The apple yield has not changed in recent years (2016-21) and has reached an average of 11-12 tons/ha[33]. The self-sufficiency rate with apple is estimated to be over 75% in recent years, while the rest is covered by imports. Over the years (2016-21), the import of apple did not suffer any changes, on average about 11 thousand tons have been imported. This fruit is characterized by a high price volatility. However, in contrast to other crops belonging to the production from plants in which we have noticed a price increase, with particular emphasis in the last two years, for **apple the opposite has been observed**. It means that in the last two years the apple has been associated with a price decrease. In 2021, the price of apple was 10% cheaper compared to 2020. This trend was also followed in the first half of 2022, when the apple price was 7.6% cheaper, compared to the same period from the previous year (see Figure 17 below).

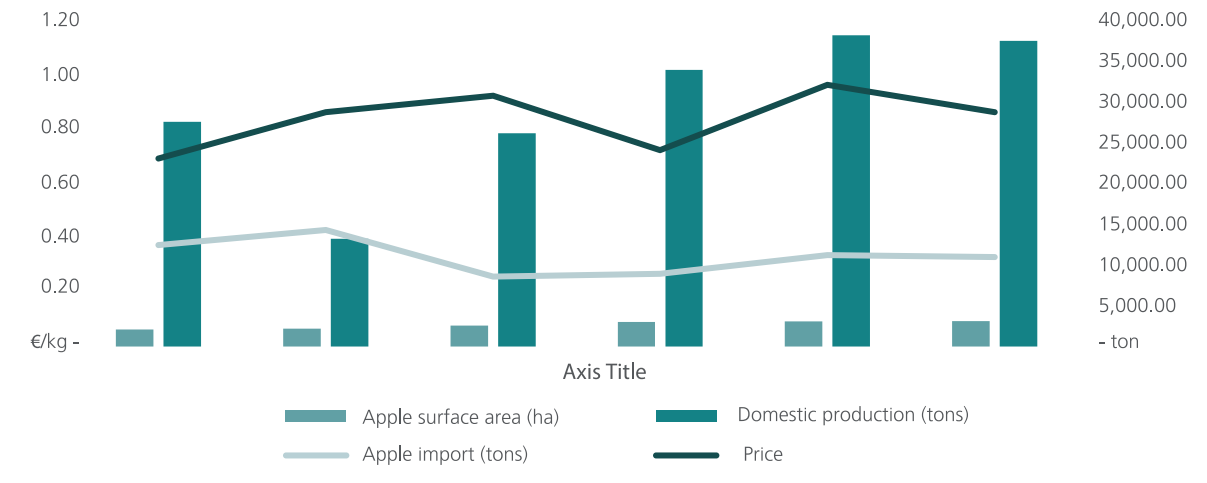
Figure 17:
Average annual apple price 2015 – 22 (June), (€/kg)



Source: Author using KAS Data

The area of apple cultivation, local production and import of apple according to the analysis presented in Figure 18, does not show a correlation with each other in relation to the market price. In 2021 and compared to 2020, the area of apple orchards was increased by 0.5%, while local production decreased by 1.76%, similar to the 2% of import.

Figure 18:
Surface area, production, import and price of apple 2016 – 21



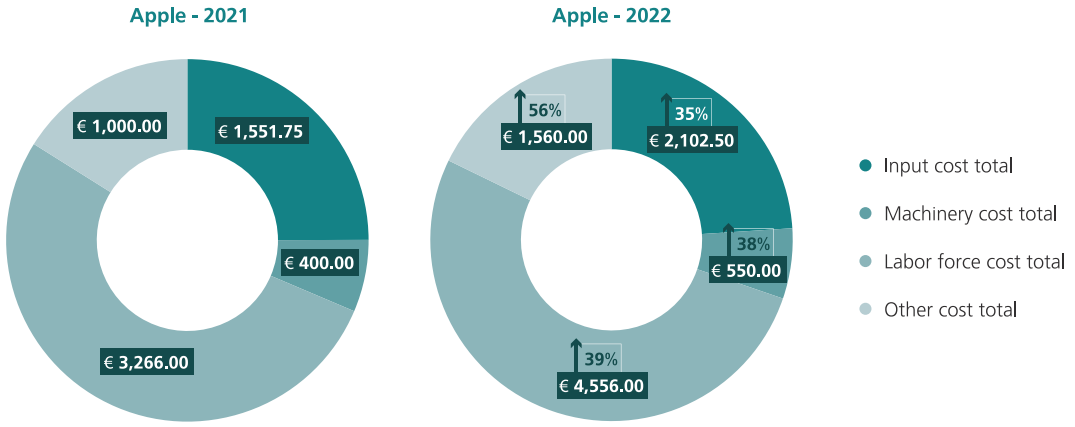
Source: Author using KAS Data

[33] Except in 2017, where due to late spring frosts, there was a loss of about 50% of yield.

Apple is a multi-year crop and the level of use of agricultural inputs is lower compared to one-year crops (e.g., vegetables). Also, agrotechnical measures applied for the maintenance of the apple orchard are less costly, compared to one-year crops. Although, the overall level of agricultural inputs for apple tree (fruit trees, in general) cultivation is smaller compared to the rest of plant products, this does not justify a price decrease in a period when the price of agricultural inputs shows a continuous rise.

For apple, the cost of production in 2022 has increased by 48% compared to 2021 (see Figure 19 below).

Figure 19:
Comparison of the cost of apple production for 2021 and 2022, (€/ha)

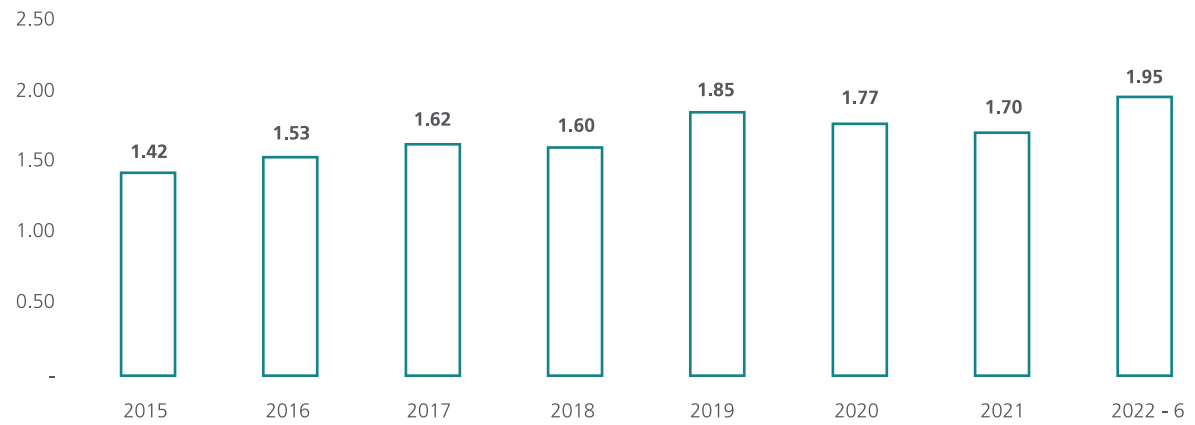


Grapes (vineyards)

Nearly two-thirds of vineyard areas are intended for cultivation of wine grapes, while the rest for table grapes. In 2021, 2,533 ha or 73% were intended for wine grapes, while the remaining 27%, namely 938 ha, were intended for table grapes. The productivity of table grapes varies from year to year, mainly due to climate conditions. It is important to mention that during a 6-year period from 2016-21, yields have shown improvements, with average yields ranging from 5.2 to 7.2 tons/ha[34]. In 2021, table grapes level of self-sufficiency reached over 70%[35], while the rest was covered by import, with about 30%.

The average annual consumption price of grapes for the years 2015-21 has fluctuated from the lowest of 1.42€ to 1.85€ per 1 kg of grapes.

Figure 20:
Average annual price of grapes 2015 – 21, (€/kg)



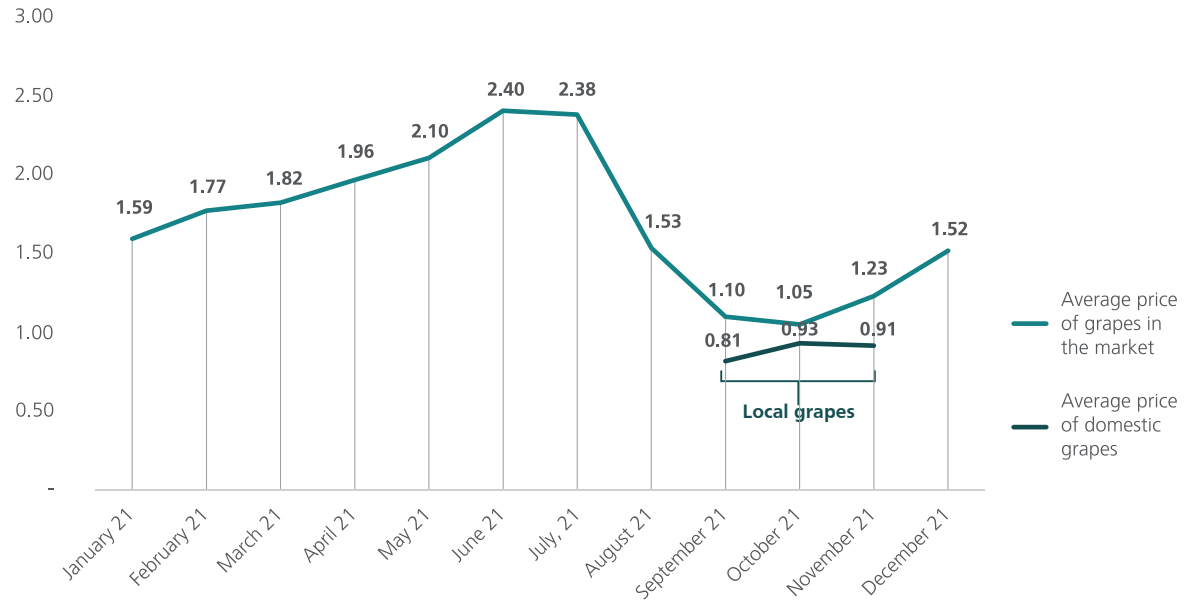
Source: Author using KAS Data

[34] Except for 2017, when due to late spring frosts, the loss was of about 50% of the yield;

[35] **While in wine grapes**, wine production ranges from 9.1 million liters to 11.8 million liters. This quantity of production, covers **local consumption needs** for up to 4.5 million liters, **and a large portion of it is exported**.

Similar to apple, grapes also had a decrease in price, in the last two years. **Grapes was close to 4% cheaper in 2021, compared to the price from 2020**. The local grapes harvest season starts at the end of August and depending on the climate conditions in the country, lasts until the end of October or beginning of November. The price of grapes is the lowest during this season of the year.

Figure 21:
Average price of local grapes and market grapes for 2021, (€/kg)



Source: Author using KAS Data

Despite the fact that in recent years the self-sufficiency rate of local production has reached about 70%, the **price of local grapes in 2021 was 92% cheaper compared to the average annual price of grapes in the retail market (0.89€/kg of local grapes compared to 1.70€/kg which is the average market price during the year)**.[36]Seasonal hyper-production and lack of value chain with particular emphasis on warehouses for the storage of grapes (in order to be placed on the market when there is a shortage of local production) is the main cause of trading local production at almost 100% cheaper price compared to the average market price in the period when there is no local production.

Grapes prices start rising from December to July, when there is shortage of local production. The highest prices are in April, May, June and July. Import **dependency for** most of the year is the same as in the vast majority of crops of plant productivity **and it turns out to be the main factor which determines the price**.

Livestock Farming

Livestock farming is the most intensive branch of agricultural production and is of multiple importance to both, producers and consumers. Livestock production is the basis for the intensive increase of agricultural production (plant productivity).

Table 2:
Livestock fund in 2021

Cattle	Sheep and Goats	Pigs	Single hoof animals	Poultry	Number of beehives
260,528	341,393	47,384	1,864	2,788,435	219,077

Source: KAS - Household Agricultural Economy Survey 2021

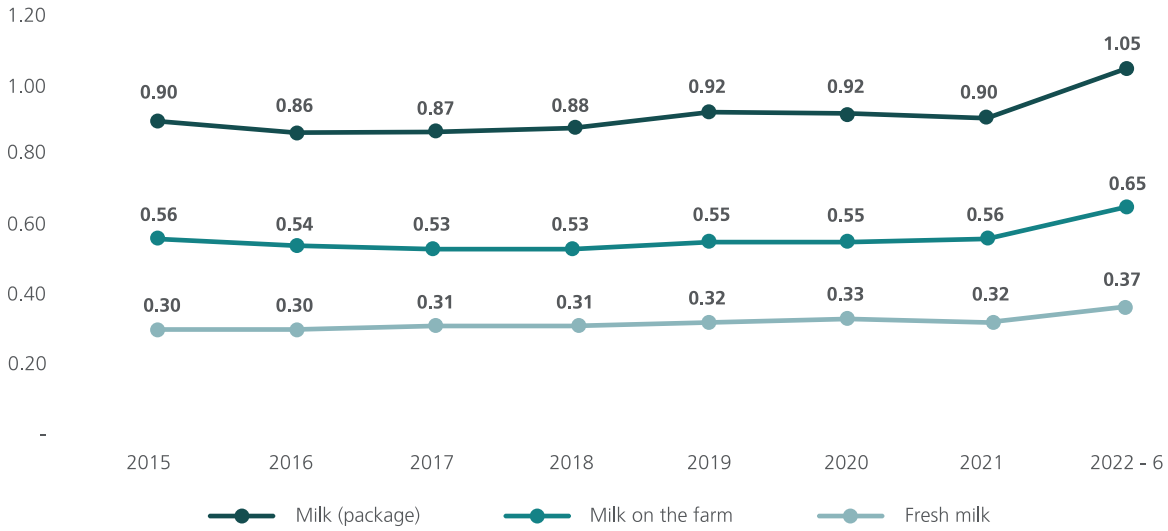
[36] Similar to wine grapes, only in 2022, it was estimated that over 500 ha of grapes were not harvested as a result of lack of wine cellar capacities;

Milk

Bovines are the most important category in the context of livestock farming, while cow's milk production is the most important sub-sector in livestock productivity by the number of farmers involved in this activity and the value of production. According to the AEB (2022), the number of dairy cows in Kosovo in 2021 reached 132,076 heads, of which more than 332 million liters of milk were produced.

The self-sufficiency rate for milk according to the Green Report for 2021 based on the livestock fund is estimated to cover about 80% of the local market demand. The figure below shows milk price over the period from 2015-22, including three main types of milk marketed in our country – carton box milk (Combibloc), fresh (pasteurized) milk and farm milk.

Figure 22:
Average annual milk price, 2015-2022 (June), (€/l)



Source: Author using KAS Data

Based on the prices shown in the figure above, we note that during 2015-21, there were no major changes in the price of milk produced on the farm. The same trend has also accompanied the retail market for packaged (combibloc) and fresh (pasteurized) milk. In the first half of 2022, the price of milk increased, with an average value of 0.37€ per liter as farm milk price, and 0.65€ per liter of fresh (pasteurized) milk and 1.05€ per liter of sterilized milk (UHT[37] / Combibloc).

The combination of factors such as agricultural inputs[38] and sectoral problems, among which are the large number of small farms and the reduction in the number of livestock, namely dairy cows, low production yields and high cost of production, are the key factors that have caused for the milk price to rise by 15% in the value chain.

Poultry farming (Eggs)

Poultry farming is of particular importance in the sector of productivity in Kosovo, immediately after livestock farming. In this line, one of the most important sub-sectors in poultry farming, especially when taking into the account the number of farmers involved in this activity and the value of production, is the egg laying hens sub-sector. In Kosovo, the number of agricultural economies with more than 2,000 egg laying hens is about 170 (with intensive production), and the total inventory of egg laying hens in these economies amounts to over 850 thousand, while the rest of 1.1 million of egg laying hens are on family farms.

[37] Ultra-High Temperature

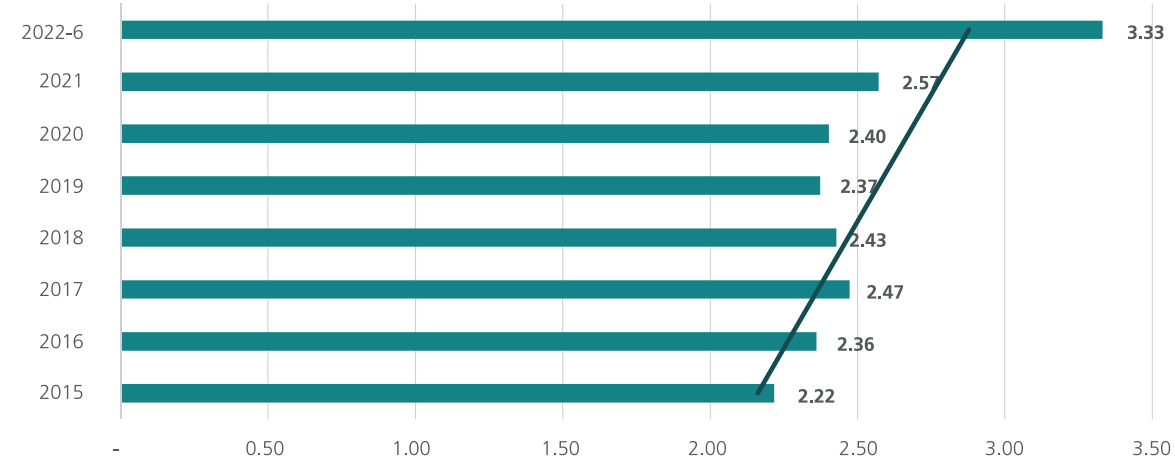
[38] I The index from the second quarter of inputs in 2022 has increased for (45,5%) for Input 1, compared to the same period of 2021. The Index for Input 2 has an increase of (11.1%) compared to the same period of 2021. The general input index (Input 1 + Input 2) has increased for (28.3%) compared to the same period of 2021.

The products that make up the basis for the Index of the price of inputs are divided into two main groups: goods and services actually consumed in agriculture (Input 1) and goods and services that contribute to investments in agriculture (Input 2). Within the group of goods and services currently consumed in agriculture, prices are grouped according to the following groups: seeds and planting material, energy; oils, fertilizers and soil improvers, plant protection products and pesticides, veterinary expenses, animal feed materials, maintenance of materials, maintenance of buildings, as well as other goods and services.

As for the goods and services that contribute to agricultural investments, prices are collected for materials (machinery and other equipment), buildings and other (non-resident farm buildings, works other than land improvement). Taken or adapted from "Agricultural Inputs Price Index TM2 2022 (2015=100)", by ASK, 2022 (https://ask.rks-gov.net/media/6946/index-i- %C3% A7mimit-t%C3% AB-inputs-n%C3%AB-bujq%C3%AB-si-tm2-2022.pdf).

The average consumption of eggs per capita is estimated to be 206 eggs/year and we can say that eggs are among rare products that meet almost all local needs (consumption) in Kosovo, about 99% (MAFRD, 2022). Over the period of 5 years (2016-20), egg production on average amounted to about 350 million eggs, while in 2020, egg production results in a total production of 366 million eggs. While in the same period (year), about 4.9 million eggs worth €438.5 thousand were imported, mainly from North Macedonia, which accounts for half of the total egg imports in Kosovo, followed by Albania with 38.6%, Bulgaria with 11% and other countries such as Austria, France, the Netherlands and Italy with less than 1%, in total. However, even though the market in Kosovo is not dependent on the import of eggs, over the years there have been some fluctuations, that were observed more in the last three years, starting from 2020. In the period 2015-21, the average price was 2.40€/30 eggs, with the lowest price being recorded in 2015 (2.22€), while the highest in 2021 (2.57€). We have the largest increase in the price of eggs in the period January-June 2022, when compared to the same period of the previous year, the increase is 32.2% (see Figure 23).

Figure 23:
Egg price for the period 2015- 2022 (June), (€/30 pcs)



Source: Author using KAS Data

As shown in the figure above, egg price stability was disrupted in the first quarter of 2022. Even in this subsector, the rise in the price of inputs is the main cause that triggered this immediate fluctuation in the price of eggs. The concentrate (made of corn-based cereals, sunflower and soya seed shells, vitamins and other minerals) is the nutritional basis for the egg laying hens. **The increase in the price of cereals** on the local market and global markets have had an immediate effect on **the increase in the price of eggs due to the increase in the cost of production** in farms with egg laying hens. This is also confirmed through conversations with some farmers/egg producers, confirming a big increase in price of the inputs they use, especially the concentrate.

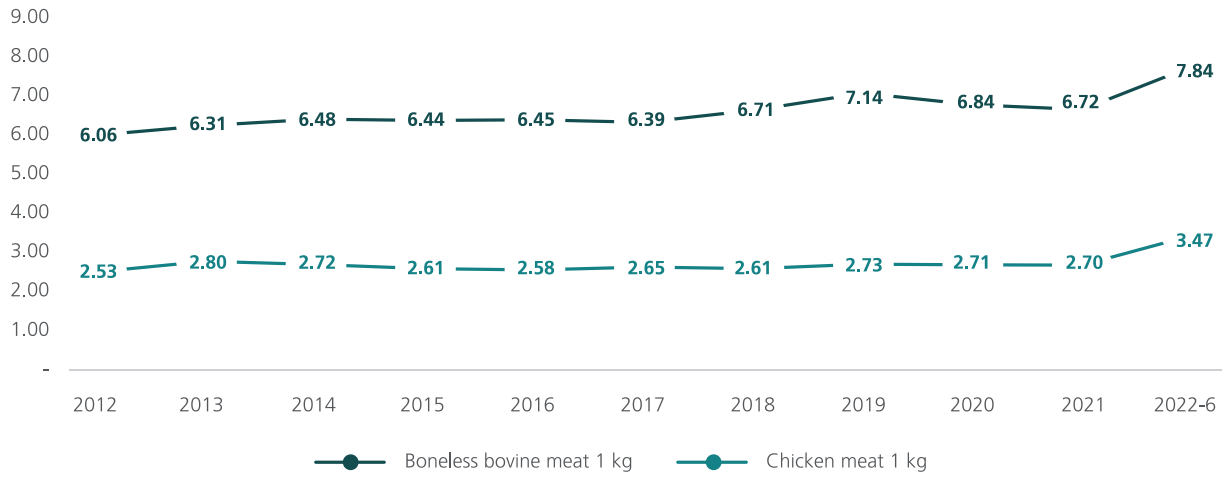
Meat of bovine animals and chicken

The local production of meat is primarily a secondary activity, considering that livestock production is focused on milk production, while poultry farming is focused on egg production. Specialized farms with this type of production are much smaller in number, compared to the country's needs for this very important agricultural product for the food diet. With current productivity Kosovo manages to cover about 50% of the needs for consumption with bovine meat and only about 7% with chicken meat (MAFRD, 2021). As a consequence of this situation, we have a significant amount of import of meat (bovine and chicken) and its products from both, the countries in the region and the EU and other countries[39]. Consumption price for boneless bovine meat and chicken meat has been stable over the period from 2015-21, as shown in Figure 24. In 2019, a slight increase of 6% in the price of boneless bovine meat is observed in relation to the previous year. There is no fact that determines the reason why this price was increased in 2019, because according to the data published by KAS[40] , ratio between production, import and consumption was within the norms, and the previous years.

[39] The import of chicken in 2020 was about 34,884 tons, of which 29% was imported from Brazil, 22% from the United States of America, 11% from the United Kingdom, 9% from Poland, 6% from Germany and the remaining 23% from other countries (MAFRD, 2021).

[40] KAS – Survey of Agricultural Economies (2018, 2019).

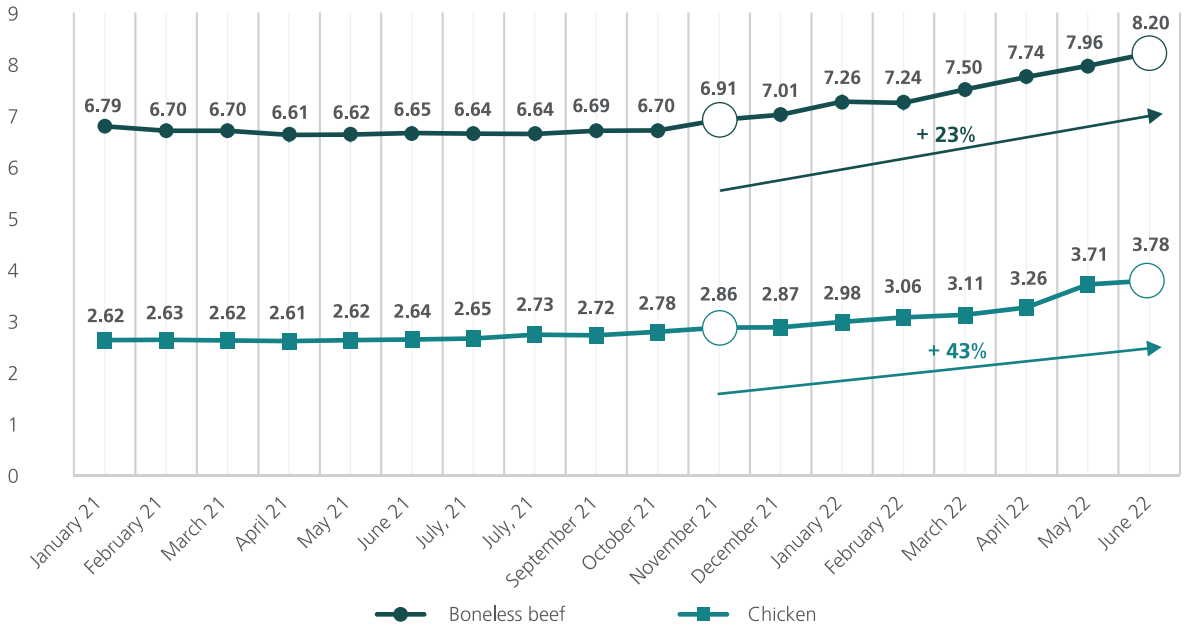
Figure 24:
Average annual price of bovine meat and chicken meat, period 2015-22 (June), (€/kg)



Source: Author using KAS Data

But if we analyze the figure below, we notice the first increase in price for boneless bovine meat and chicken meat that started in November 2021 and then the increase trend continued on monthly basis. The price of boneless bovine meat is 23% higher in June 2022, compared to the same month of the previous year - 2021. In the same period, the price of chicken meat has risen by 43%.

Figure 25:
Average monthly price of bovine meat and chicken meat, period January 2021- June 2022, (€/kg)



Source: Author using KAS Data

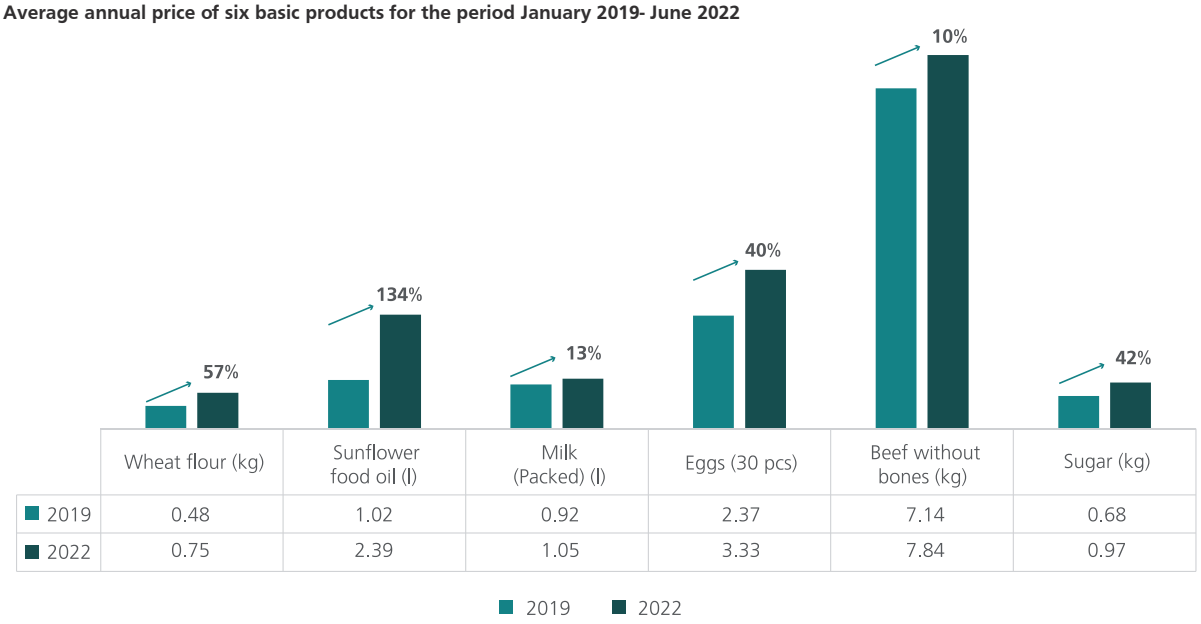
The increase in the price of chicken meat and boneless bovine meat marks the difference of about 20%. This change has an explanation because for growing of chicken breed for meat (broiler), 100% of the feed consists of concentrate, while for the growing of bovines for meat, as a nutritional basis combination of feed of plant origin is used (corn silage, alfalfa, hay and straw) and to a lesser extent the high-cost concentrate is used. So, **the feeding mode also has a direct impact on the cost of production on the farm and the selling price on the market.**

In general, in meat products, the increase in the price of cereals has affected the increase in the price of meat[41]

Basic Basket (Market basket)

Flour, oil, milk, eggs, meat and sugar which are basic basket products in every home. Recently, in the consumers' basket in the country, these products are being sold at significantly higher prices. According to data published by KAS[42] these products have seen a large increase in the period from 2019 – June 2022[43] (comparison for the period before and after COVID-19 pandemic).

Figure 26:
Average annual price of six basic products for the period January 2019- June 2022



	Wheat flour (kg)	Sunflower food oil (l)	Milk (Packed) (l)	Eggs (30 pcs)	Beef without bones (kg)	Sugar (kg)
2019	0.48	1.02	0.92	2.37	7.14	0.68
2022	0.75	2.39	1.05	3.33	7.84	0.97

Source: Author using KAS Data

According to the data presented in Figure 25, cooking oil has the largest change in price with 134% higher for the compared time-period, followed by flour with 57%, and so on.

Livestock products such as meat by 10% and milk by 13% have had a smaller increase in price, compared to other basic basket products.

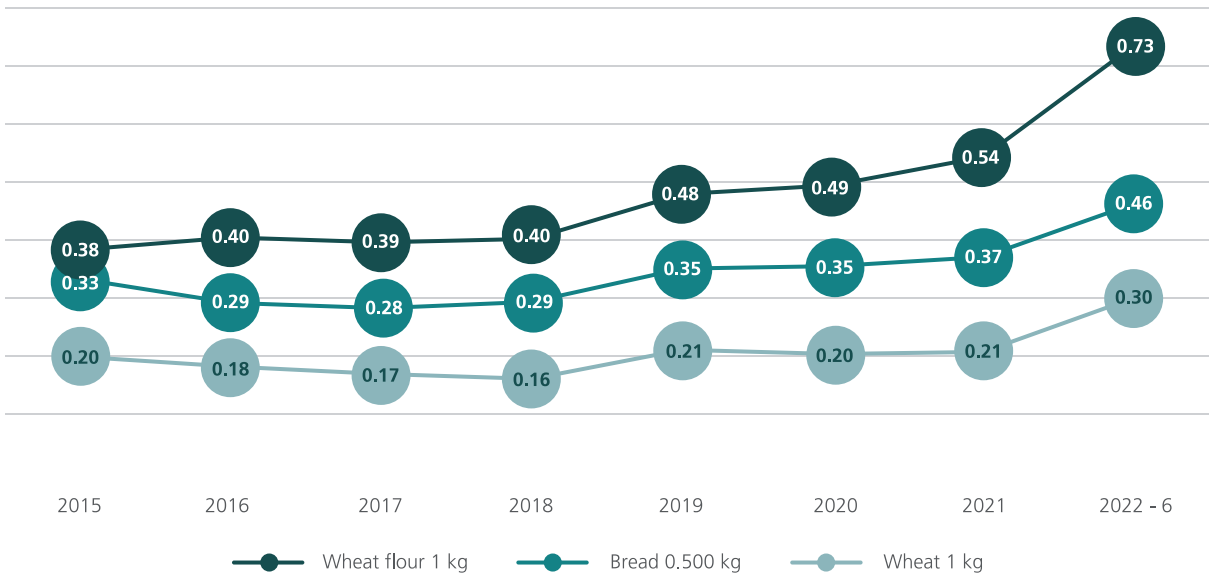
With the exception of eggs[44], other basket products are largely import-dependent (20-100%). The domino effect of price increases on international markets for basic products has directly affected the price increases for by-products which are derivatives of basic products.

Flour and bread are products of great importance in the basic basket of products for citizens of Kosovo. The price of flour and bread has increased uniformly with the increase in the price of wheat. According to the data from KAS (HCPI), from 2015 to June 2022, there are three periods with a marked an increase in price for wheat, flour and bread. Fourth quarter of 2018 (4Q 2018), fourth quarter 2021 (4Q 2021) and first half of 2022. From 2015 to the 4Q period of 2018, no significant change was observed in the price of wheat, flour and bread, and prices in this period ranged from 0.16 – 0.20€/kg for wheat, 0.38-0.40€/kg for flour and 0.29-0.33€ for bread (0.500 kg) (see Figure below).

Wheat → Flour → Bread

[41] Taken or adapted from "Why meat is becoming more expensive - and what alternatives we might need", by Daniel B., 2022 (https://www.thenationalnews.com/health/2022/09/05/why-meat-is-becoming-more-expensive-and-what-alternatives-we-might-need/).
[42] KAS Data (https://askdata.rks-gov.net/pxweb/sq/ASKdata/).
[43] In the period January-June 2022, the prices of basic basket products are trending upwards on a monthly basis.
[44] 98-99% of local production covers consumption;

Figure 27:
Price of wheat, flour and bread during the years 2015 - June (2022), (€)



Source: Author using KAS Data

The price of wheat in 2019 has increased by 31.5% compared to 2018, flour by 19.3%, while the price of bread by 19.7%.

In the period 2019-20 there was no significant volatility of the price of wheat, flour and bread. The second price increase comes in 2021, with a 2% increase in the price of wheat, 10% of flour and 4.4% of bread compared to 2020. In June 2022, the price for one kg[45] of wheat reached €0.30, flour €0.73/kg, while the price of bread 0.500 kg was €0.46. The latter prices represent the highest prices for this time-period (2012-June 2022), where specifically **in the first half of 2022 compared to the same period of 2021, they reached the following values: a higher price of 66% for wheat, 52% for flour and 30.5% for bread, with a tendency for a continuous increase.**

[45] Local wheat;

CONCLUSIONS AND RECOMMENDATIONS

In the first half of 2022, the level of inflation reached the highest point in Kosovo. The annual inflation rate measured in June 2022 compared to June 2021 was 14.1%. The inflation rate of basic food products is multiple times higher than the average annual inflation. All of these give an indication of significant increases of the prices of basic products throughout 2022, with expectations to remain the same even in the medium-term period, based on global market developments. The indications for significant increases of the prices of basic agricultural and livestock products throughout 2022, are clear.

Unfortunately, in Kosovo, self-sufficiency with basic basket products, main agricultural crops and livestock products is in deficit, therefore, insufficient production over the years has caused import dependency and this dependency has been accompanied by uncertainty in supply and price. Furthermore, local producers of agricultural products are considered to be price takers on international agricultural product markets and do not have any effect on global agricultural product markets. Government and policy makers should therefore be oriented in the design of agricultural policies through which efforts are made to cope with eventual crises and, above all, to find the most effective solutions in relation to new trends in the movement of prices of agricultural products. The orientation of agricultural policies in terms of increasing support in sectors and sub-sectors with comparative advantages in relation to the countries of the region and the EU and increasing production per unit area in order to increase the level of self-sufficiency based on local production is a very important factor for coping with similar crises in the future. Also, in similar cases of crises, **minor changes could be introduced to the VAT on essential goods**, only for **the period of crisis** and look at the possibilities **of issuing food parcels and/or food stamps with local products**.

Given the nature of this study, the listed conclusions are given below and broken down into specific topics, each conclusion being accompanied by one or several recommendations to address that issue/problem.

Agricultural Policy: The lack of development of agriculture despite high financial support, brings into question the effectiveness of agricultural policies drafted over ten years ago or/and the way they are distributed. The production-related subsidy (payment per area or per head/piece) has so far shown no effect on the improvement of production and the increase of the cultivating areas with agricultural crops, in general. Also, the distribution of subsidies usually takes place in the period after farmers complete the planting (sowing) process.

For certain agricultural sectors and sub-sectors, an increase in subsidies was noticed in 2020. **Subsidies have also increased significantly in next two years, 2021 and 2022. The subsidy value for the sectors and sub-sectors included in the Direct Payments (subsidies) Program for 2022 by the Ministry of Agriculture is the highest compared to previous years** (see Table 4, in Appendices). However, due to the high level of inflation of agricultural inputs and the short period of time, it is not recommended to measure the impact/effect of increased subsidies in this period. Also, it is worth mentioning that the value of subsidies for some sectors and sub-sectors have reached high values, so this fact makes it difficult to reorganize the subsidy scheme into other subsidy measures with potentially less income for farmers and may cause dissatisfaction among a group of farmers.

As regards prices, it seems that **the form of organization and distribution of agricultural policies has had no effect on the prices of trade with agricultural products.** Prices have risen on the same trend with global prices, since we are price takers.

Recommendation: Policies that support production, processing and guide production support policies in sectors where the country has comparative advantages in relation to production capacity. **Moving from area-based subsidy to yield-based subsidy is the first step towards reorganizing agricultural policies around subsidization.** This change should be realized in a period of 1-3 years in some sectors and sub-sectors, while in some other sectors and sub-sectors in a medium-term period of 3-5 years. After that, it should slowly switch to subsidizing not related to agricultural crop, or to production (decoupled direct payments). This form of support is applied in the EU member states. Therefore, for each country that strives to become a member state, the requirement is to reorganize its subsidy policy (direct payments).

With immediate effect (from 2023), direct payments (subsidies) from the area-based payment can be switched to payment for the quantity produced/sold for the following sectors and sub-sectors: wheat, sunflower, grapes intended for the processing industry, blueberry, aromatic medicinal plants and dairy cows (subsidy only for the quantity of milk by quality categories – increase of subsidy for quality and quantity of milk delivered/sold in the processing industry and removal of subsidy per heads). In the medium term (3-5 years), 90% of the sectors and sub-sectors that are supported with subsidies should go from subsidizing per unit area to subsidizing per the amount of production. In this form, the increase in production per unit area and production quality will be stimulated and it will be much easier to formalize the sector with emphasis on primary productivity, collection points, wholesale and retail traders and the processing industry. Furthermore, Kosovo is characterized by a small production area, so the support policy should be driven towards improving productivity (yield) and consequently improving competitiveness.

Recommendation: In these times of unstable economy, the cut of excise duty for oil used in agricultural activities should also be considered. Currently in Kosovo, oil is subject to excise duties in the amount of 36 cents per liter. The cut of oil excise duty for farmers will cause a decrease in the price of oil for farmers, by at least 36 cents per liter. This measure will lower the cost of production for agricultural products. The calculations show that the cut of oil excise for all agricultural arable land in Kosovo in 2021 has a cost of 9.8m euros. While, in wheat alone, this cost amounts to 4.3m euros. However, the extracted production value for wheat crop reaches a figure of 92.8m euros per year. Although, this measure would lower the cost for farmers by 4%, in addition to the financial effect, it also has a psychological effect, since this measure would stimulate farmers in carrying out all the field activities and increasing the cultivation areas.

In addition, the cut of excise duty should have an immediate effect on farmers compared to excise subsidization. The excise subsidy is done at the time when farmers have carried out the sowing of land and this poses a problem in achieving the objectives of this measure.

Recommendation: In times of crisis or unstable economic times, consideration should also be given to issuing food parcels or food stamps to citizens that are in social schemes or even those with low incomes, such as pensioners. This measure can only be applied and utilized with local food products only.

Agricultural Inputs: Inputs such as seeds, chemical fertilizers and pesticides are the main cost in the production of agricultural products on the farm. In addition, also the productivity (yield) and the quality of the agricultural product depend on the quality of the inputs used. Over the years, the agricultural sector in Kosovo, according to the stakeholders interviewed, has suffered from consequences of using uncontrolled and poor-quality inputs.

Recommendation: Full functionalization of current laboratories for necessary testing of marketed inputs such as (percentage of seed germination, percentage of active matter in fertilizers and pesticides, degree of utilization by the plant, and so on). Also, current legislation needs to be revised by removing legal gaps related to the imports, trade and use of agricultural inputs. Particular focus should be given to measures of sanction.

Value chain: Seasonal hyper-production, informality and lack of proper functioning of the value chain with particular emphasis on warehouses for storage of agricultural products (so that production is placed in the market when there is a shortage of local production) are among the main drivers of trading of local production at a price of almost 50% - 100% cheaper compared to the average market price in the period when there is no local production. Also, the non-functioning of the value chain in local production has affected the seasonal feature of local production and import dependence for most of the year.

Recommendation: Continue to support with investment grants in the field of improving and expanding the storage and processing capacities of locally produced agricultural products, which translates into increasing the value, production and quality of local agricultural products. Strengthening the capacities of the processing industry and increasing the percentage of participation of the processing industry in the percentage of GDP, is the best indicator of increasing the value of primary production.

Grain: The main crops among grain are wheat and corn, and the very same products are continuously being imported. This high import comes as a result of the low yields that have accompanied the grain in the last two decades, with a total production covering about 60% of local needs. The low yields per cultivated unit area come as a result of the quality of the inputs used (seed, chemical fertilizers and pesticides), the fragmentation of land use (cultivation divided into many plots), outdated agricultural machines, the form of cultivation management (carrying out agri-technical measures in sub-optimal form) and other external factors such as, atmospheric conditions (temperature, precipitation), and soil quality.

Recommendation: To cover local demand for the two main grain crops – wheat and corn, yields for both crops should be increased by about 30%. Increasing the cultivating area is not a proper solution due to the cost and lack of agricultural land. It is also recommended to use locally traded quality inputs, so that the 30% yield increase in wheat and corn is easily achievable.

In addition to inputs, plant turnover and carrying out agri-technical measures according to recommendations from experts of the respective field should be applied.

Vegetables: Despite suitable climatic and geographical conditions for tomato and pepper cultivation, other external factors have influenced the current market situation. The low fulfillment of consumption requirements by local producers results in a high amount of import, which at the same time affects the negative trade balance of tomato and pepper over the years. Kosovo covers the needs of the local market for tomato and pepper in the period when local products are present, but in order to meet the annual demand then import is needed. Meeting the market demand from local producers is an indication that this sector needs adequate and specific policies for its further development.

Based on the market analysis data for potato and processed potato, it can be concluded that potato stands quite well as a fresh product. However, even though the need for consumption is covered by over 100% of fresh potato production, potato continues to be imported during certain periods of the year. This is because we have a shortage of early potatoes and also a shortage of local potato seed.

Recommendation: The Ministry of Agriculture should commit to the identification and classification of regions with high potential for tomato and pepper production. It should also be invested in cultivation in standard greenhouses, which enables the presence of local production in the market almost all year round.

Creating advanced conditions for growing of tomato and pepper in the greenhouse outside the season when we have hyper-production should be seen as a target for the next years in the agricultural productivity calendar. Cultivation in heated greenhouses is not a good economic opportunity under the current conditions due to the high cost of production. However, for the cultivation of vegetables in closed premises, the use of the co-generation system (from the Kosovo Energy Corporation - KEK) for greenhouses for intensive off-season production, mainly in the areas around the municipality of Obiliq and Pristina, can be considered as an option. In general, this form of production needs additional research, especially in terms of feasibility.

Recommendation: In the case of potato, the country should be oriented on increasing the productivity of early potatoes and increasing the areas cultivated with potato seed. Knowing that Kosovo covers the market demand for consumption, it could have an all-year round production and this in turn would eliminate the need for import.

Fruit Trees: From all the data presented for the apple crop we can conclude that in Kosovo the area planted with apple trees has grown continuously, and at the same time it is one of the most cultivated crops in Kosovo. However, despite this, Kosovo continues to import apple to meet local demand. The import of apple continues even during the period when there is no shortage of local production. Although the overall level of agricultural inputs for apple tree (fruit trees) cultivation is smaller compared to the rest of plant products, it does not justify a price decrease in a period when the price of agricultural inputs shows a continuous rise.

Recommendation: In terms of meeting local demand, it is necessary to work in terms of increasing the cultivated area, yield per unit area, as well as increasing investments in terms of preserving production and extending the lifespan of local apple on the market.

If investment goes in one direction only, e.g., increasing the cultivated area, this would have an impact on increasing productivity, but it would not have any direct impact on decreasing the quantity of imports because out of season, import will still be needed. Based on the analyses made, it appears that the import is significantly smaller in the months when the local apple is present on the market, namely during the months of July, August, September and October. Support should therefore be oriented at all stages of the agri-food chain.

Vineyard: The vineyard farming is the symbol of the regionalized agricultural sector. Also, the vineyard faming is the sector that receives the highest subsidy support per cultivated area, not only in Kosovo, but in all Western Balkan countries (1,054 Euro/ha). **The subsidy in this form is not motivating for farmers to invest in qualitative inputs that increase production per unit area or even in the establishment of new vineyards**. Similar to other agricultural crops, grapes are also characterized by seasonal hyper-production and non-functioning of the value chain, especially of warehouses for the storage and processing of grapes. This link in the value chain is one of the main drivers of the commercialization of local production at a price almost 100% cheaper compared to the average market price in the period when there is no local production. Similar to apple, grapes have been characterized by a price decline in the last two years.

Recommendation: Invest in the highest quality cultivation of fresh grapes, its promotion and accompanying it with investments in the processing part, namely in wine production, in order to increase local productivity and reduce the large quantity of grape imports during its season. Similar to other crops, the subsidization of vineyards should be oriented to increase quantity rather than cultivated areas.

The establishment of new high-yielding vineyards should also be stimulated, since the vast majority of vineyards are old and characterized by low yields. Additional efforts should also be made in promoting the local products (table grapes and wine) to consumers in order to achieve a tradition of consuming as many local products as possible.

Livestock Farming: Livestock farming, in particular milk production, is a sub-sector which in recent years has been subsidized with 4 direct payment measures (grain area, cow heads, slaughter heads, and milk quality). In spite of this, import dependence still remains high, while the level of local production continues to remain low. In a similar situation is also the meat production sub-sector, where productivity continues to remain low, mainly due to high import competition and lack of sufficient food base (low plant yield).

Recommendation: To enable sustainable development of the dairy sub-sector, primary production capacities (dairy farms with cows of noble line breeds and high milk yields) should be increased initially. This increase should be accompanied by an expansion of processing capacities, mainly by investments in the modernization of technological lines and the implementation of food safety standards. Also, check into the budgetary possibilities of subsidizing up to 20% of the market value for heifers of noble line breeds that are imported from EU countries, up to 20%. This measure could stimulate local farmers to improve the breed of dairy cows and consequently increase milk yields on local farms.

Recommendation: In order to enable more sustainable development for the meat processing sub-sector, the meat industry should expand its processing capacities, modernize technological lines and implement food safety standards.

The local productivity of the meat processing industry is to be guided towards the creation of new products (product diversification) which are constantly being imported and for which there is a growing demand on the Kosovo market, as well as to monitor the preferences of consumers. Greater awareness among farmers about the possibility of using direct payments in the cattle fattening sector.

Poultry farming: From all the data used in this study, we can say that Kosovo stands quite well in terms of egg production and market coverage, with a quite satisfactory level of consumption (up to 99%). Despite the fact that the degree of self-sufficiency is almost entirely coverable, the import dependency of the main feed base (concentrate) has affected the price of eggs. However, unlike the situation with eggs, the chicken meat sector is developing, and the meeting of local demand is at a low level (7%) and thus the imports are dominating the market.

Recommendation: In the chicken meat processing sub-sector, the Government (MAFRD) should continue its support with grants for setting up farms, slaughterhouses and with subsidies for chicken meat (broilers). This should have an effect on productivity growth and even slowly replace one portion from imports.

Reference prices: The reference prices used by Kosovo Customs for fruit and vegetables should be well calculated, because they have a direct impact on the revenues of the state, but they may also have negative effects in the destabilization of the local market. This finding was mentioned during the interviews with the stakeholders, especially in interviews with retailers and importers (wholesalers), who have formalized their business.

Recommendation: Kosovo Customs should update the reference prices based on the origin of the goods and the reference prices from the country of origin. Whereas, the Kosovo Tax Administration in cooperation with Kosovo Customs should increase controls at points of sale in wholesale markets to avoid manipulations with reference prices during imports.

Data on the agricultural sector: There are data discrepancies between stakeholders (KAS, MAFRD and other stakeholders) that provide data on the prices of agricultural products. Also, the price data/statistics for agricultural products are based on the calculation of the simple price average. But, when we consider that many agricultural products have mainly seasonal character of use/consumption, we can say that in many cases the average annual prices introduced do not correspond with the real purchase/supply prices.

Recommendation: Better coordination (in particular between the MAFRD and KAS) and harmonization of these data for the future (data for the same indicator with the same measurement) is needed. The possibility of calculating prices for agricultural products based on the weighted average method should also be looked at, in order to have real price statistics available, with particular emphasis on agricultural products having seasonal use/consumption.

Agricultural insurance: Since the launch of the agricultural insurance system in Kosovo in 2019, this program has been accompanied by low interest on the part of farmers to buy insurance policies, thus causing constant difficulties in establishing a functional and stable insurance system.

Therefore, the Ministry of Agriculture, in addition to supporting the insurance premium with a 75% subsidy, should guide some additional policies leading to the establishment of a sustainable insurance system in the future.

Recommendation: For all crops with agricultural insurance coverage for specific weather risks, MAFRD should stop granting of indemnities (known as ad-hoc payments) for natural disasters to farmers that have not insured their crops. This may lead to making farmers aware of the need of having agricultural insurance.

Recommendation: Given that the measure for subsidizing of the agricultural insurance premium, initially with 50% and in the last two years – 2020 and 2021 with 75% did not bring the expected results, the MAFRD may reorganize some other direct payment measures to stimulate farmers to be provided with agricultural insurance. One measure could be organized in this form - for farmers applying for per area direct payments, and in order to be eligible for this measure, those farmers should have at least 50% (half) of the area insured for which they require support.

Another form is that per area direct payments (subsidies) for some agricultural crops may be higher for farmers who are provided with agricultural insurance. Also, measures from grant schemes can be reorganized – for example, by requiring from farmers that apply for the grant scheme to be provided with agricultural insurance for the entire monitoring period. Farmers with agricultural insurance can be rewarded with additional points during the assessment. This can be applied in the fruit trees, nut trees and berries plant sub-sector. These changes may be included in future direct payment and grant programs.

Agriculture and climate change: Climate change is today's biggest environmental challenge and agricultural productivity is closely related to climate change. It is well known that agriculture is strongly influenced by climate change and at the same time, is a major contributor to climate change. Agriculture and change of land-use account for one-fifth of total global greenhouse gas (GHG) emissions (Laborde Debucquet, 2021). This effect is greater than all forms of transport or industrial uses. The impact of climate change on agricultural productivity in Kosovo is very large. According to MAFRD data, in last 10 years, Kosovar farmers have lost about 77 million euros or about 15% of annual GDP in agriculture.

Recommendation: The MAFRD should guide and "condition" investment grants with investments in smart agricultural technologies that reduce greenhouse gas emissions, are flexible to climate change and result in increased productivity and revenues. Examples of these technologies could be: a) advanced irrigation systems; b) anti-hail protection systems; c) renewable energy in relation to agricultural (farm) business capacity; d) advanced agricultural machinery that perform with efficiency and low fuel consumption; e) production and processing equipment and other technologies with high energy efficiency. In addition to investments in technology, the Ministry of Agriculture through the Department of Advisory Services should engage in awareness raising and promotion of good agricultural practices (known as environmentally friendly practices) such as minimum plowing, controlled irrigation, use of organic fertilizers and so on. In this form, agricultural productivity would directly and indirectly impact on the level of decarbonization, as one of the most effective ways to being carbon neutral; at the lowest possible cost. Moreover, this would ensure a sustainable agricultural production for the future.

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ANNEX

Appendix 1:
Table 3: Comparison of purchasing power in the amount of 100 euros in the period from June 2021 to June 2022

100 Euro		June 2021	June 2022	
		€ 100.00	€ 100.00	
Item	**Unit**	**June 2021**	**June 2022**	**Change**
Wheat flour	Kg	192	126	- 66
Eggs	Carton - 30 eggs	52	36	- 16
Boneless bovine meat	Kg	15	12	- 3
Sugar	Kg	142	97	- 45
White bread	0.500 Kg	281	215	- 66
Chicken meat	Kg	38	26	- 11
Potato	Kg	184	147	- 37
Tomato	Kg	120	97	- 23
Beans	Kg	39	35	- 3
Sweet pepper	Kg	108	90	- 18
Apple	Kg	94	98	+ 4
Grapes	Kg	42	47	+ 5
Onion	Kg	169	154	- 15

Appendix 2:

Table 4: Comparison of some sectors and sub-sectors that are supported by direct payments for 2021 and 2022

Program for direct payments for 2022							YEAR 2021					Difference / EURO	%
Nr.	**Description**	**Value of supporting funds per unit (Euro)**	**The value of supporting tools per quantity 0.03 Euro / kg**	**Additional / special support through partial subsidy of the price of diesel, in the amount of 0.36 Euro/ liter**	**Additional / special support through partial subsidy of the amount of fertilizer, in the amount of 100 to 50 Euro/Ha**	**TOTAL**	**Value of supporting funds per unit (Euro)**	**The value of supporting tools per quantity 0.03 Euro / kg**	**Additional / special support through partial subsidy of the price of diesel, in the amount of 0.36 Euro/ liter**	**Additional / special support through partial subsidy of the amount of fertilizer, in the amount of 100 to 50 Euro/Ha**	**TOTAL**		
1	Wheat	150 €/ha	0.03 €/kg	0.36 €/liter	150 €/ha	**€ 474.00**	75 €/ha	0.03 €/kg	N/A	N/A	**€ 150.00**	**€ 324.00**	**216%**
2	Corn	175 €/ha	N/A	0.36 €/liter	100 €/ha	**€ 329.00**	150 €/ha	N/A	N/A	N/A	**€ 150.00**	**€ 179.00**	**119%**
3	Pepper	500 €/ha	N/A	0.36 €/liter	N/A	**€ 554.00**	400 €/ha	N/A	N/A	N/A	**€ 400.00**	**€ 154.00**	**39%**
4	Tomato	500 €/ha	N/A	0.36 €/liter	N/A	**€ 554.00**	400 €/ha	N/A	N/A	N/A	**€ 400.00**	**€ 154.00**	**39%**
5	Onions	500 €/ha	N/A	0.36 €/liter	N/A	**€ 554.00**	400 €/ha	N/A	N/A	N/A	**€ 400.00**	**€ 154.00**	**39%**
6	Potato	500 €/ha	N/A	0.36 €/liter	100 €/ha	**€ 654.00**	400 €/ha	N/A	N/A	N/A	**€ 400.00**	**€ 254.00**	**64%**
7	Beans	500 €/ha	N/A	0.36 €/liter	100 €/ha	**€ 654.00**	400 €/ha	N/A	N/A	N/A	**€ 400.00**	**€ 254.00**	**64%**
8	Apple	450 €/ha	N/A	0.36 €/liter	N/A	**€ 504.00**	400 €/ha	N/A	N/A	N/A	**€ 400.00**	**€ 104.00**	**26%**
9	Vineyards	1000 €/ha	N/A	0.36 €/liter	N/A	**€ 1,054.00**	1000 €/ha	N/A	N/A	N/A	**€ 1,000.00**	**€ 54.00**	**5%**
10	Dairy cow	90 €/head	N/A	N/A	N/A	**€ 90.00**	85 €/head	N/A	N/A	N/A	**€ 85.00**	**€ 5.00**	**6%**
11	Direct payment for milk according to quality categories	Extra class = 0.07 €/liter	N/A	N/A	N/A	**€ 0.07**	Extra class = 0.06 €/liter	N/A	N/A	N/A	**€ 0.06**	**€ 0.01**	**17%**
		Class I = 0.04 €/liter	N/A	N/A	N/A	**€ 0.04**	Class I = 0.04 €/liter	N/A	N/A	N/A	**€ 0.04**	**€ -**	**0%**
		Class II = 0.02 €/liter	N/A	N/A	N/A	**€ 0.02**	Class II = 0.02 €/liter	N/A	N/A	N/A	**€ 0.02**	**€ -**	**0%**
12	Direct payment for declared slaughter of cattle	€50/ slaughtered head	N/A	N/A	N/A	**€ 50.00**	€50/ slaughtered head	N/A	N/A	N/A	**€ 50.00**	**€ -**	**0%**
13	Direct payment for fattening calves	50 €/head	N/A	N/A	N/A	**€ 50.00**	10 €/head	N/A	N/A	N/A	**€ 10.00**	**€ 40.00**	**400%**
14	Direct payments for egg laying chicken / according to grading scale	2000 - 10000 = 0.50 €/egg laying chicken	N/A	N/A	N/A	**€ 0.50**	2000 - 10000 = 0.50 €/egg laying chicken	N/A	N/A	N/A	**€ 0.50**	**€ -**	**0%**
		over 10000 = 0.40 €/egg laying chicken	N/A	N/A	N/A	**€ 40.00**	over 10000 = 0.40 €/egg laying chicken	N/A	N/A	N/A	**€ 0.40**	**€ -**	**0%**

PRICES FLUCTUATION OF AGRICULTURAL PRODUCTS AND OF BASIC BASKET IN THE LAST DECADE

PRICES FLUCTUATION OF AGRICULTURAL PRODUCTS AND OF BASIC BASKET IN THE LAST DECADE

Measures to withstand inflation in uncertain economic circumstances

The lack of agricultural development despite high financial support calls into question the effectiveness of the agricultural policies developed over ten years ago and/or the manner of their distribution. Subsidy related to production (payments per area or head/piece) has so far not shown an effect in improving production and increasing the cultivated areas in general. Also, the distribution of subsidies is usually done in the period after farmers finish planting.

The value of the subsidy for the sectors and subsectors included in the program of direct payments for 2022 from the Ministry of Agriculture is the highest compared to previous years. The high value of subsidies for some sectors and sub-sectors makes it difficult to reorganize the subsidy scheme into other subsidy measures with potentially less income for farmers.

With respect to prices, the form of organization and distribution of agricultural policies did not affect the trading prices of agricultural products. Prices have increased in the same trend as global prices as domestic producers are price takers.

FRIEDRICH EBERT STIFTUNG