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Youth & Agriculture Report

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LIST OF ACRONYMS

Acronym	Meaning
CAP	Common Agricultural Policy
EAGF	European Agriculture Guarantee Fund
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
EEC	European Economic Community
EESC	European Economic and Social Committee
EIB	European Investment Bank
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
IPCC	Intergovernmental Panel on Climate Change's
SDA	Smart and Digital Agriculture
SME	Small and Medium Enterprise
TAPP	Temporary Agent Partnership Programme
TFEU	Treaty on the Functioning of the European Union
UAA	Utilised Agricultural Area
WITS	World Integrated Trade Solution (WITS)

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TABLE OF CONTENTS

Executive summary ... *1*
Introduction ... *2*
Agriculture: Challenges, Market's employment and economic situation ... *3*
Current and future problems in the agricultural sector ... 7
Agriculture sector in SDA Consortium Countries ... 12
Belgium ... 12
Bulgaria ... 13
Spain and Valencia Region ... 14
North Macedonia ... 14
Turkey and Eskişehir region ... 15
Digitalisation in Agriculture ... *16*
EU Policy to Digitise the Field ... 16
Youth in Agriculture ... *18*
The Role of Youth in Rural Development ... 19
Young Farmers are key in the Future CAP ... 20
Main Regulation ... 21
Good Agricultural and Environmental conditions (GAEC) ... 24
Common Agricultural Policy (CAP) ... 25
Medicinal and Aromatic Plants ... 26
The Future of Agriculture ... *28*
Statistics on Agricultural Input and Output (SAIO) ... 28
Urban Agroforestry ... 29
Digital Permaculture ... 29
Vegan Farming ... 30
Agrivoltaics ... 31
European Support and Funds for Agriculture ... *31*
Assistance and Resources for Young Farmers ... 31
European Agricultural Guarantee Fund (EAGF) ... 32
European Agricultural Fund for Rural Development (EAFRD) ... 33
Loan for Young Farmers by the European Investment Bank ... 34
European Funds for Agriculture ... 37
Horizon Europe ... 37
LIFE ... 40
Interreg ... 41
Erasmus+ ... 43
Digital Europe Programme ... 45

Executive summary

This document is part of the outputs of the Smart and Digital Agriculture 2021-1-TR01-KA220-VET-000028123 project, specifically within the E-Guide outputs. The project is funded by the Turkish National Agency under action KA220 of the Erasmus + Program.
Agriculture is not only a way of life, but also a profession. The SDA project aims to reduce unemployment and increase the employability of young people in agriculture. Therefore, the project works to encourage young people to choose agriculture as a profession and to develop their entrepreneurial spirit. The high income from the production of medicinal and aromatic plant raw materials for the detergent, cosmetic and medical sectors contributes to this.
This report aims to contextualise the current situation of agriculture based on the economic importance of the sector and the challenges it faces at European level, as well as the specific situation of the countries participating in the project: Belgium, Bulgaria, Republic of North Macedonia, Spain and Turkey.
The report also focuses on two topics of interest to the agricultural sector that are directly relevant to the objectives of the SDA project, namely the digitalisation of agriculture and the situation of young people in the sector.
On the other hand, the report gives a brief overview of European agricultural policies and European funds of interest for the development of the sector.
When interpreting the document, it should be taken into account that it has been developed throughout the project, so it contains information from the beginning of the project, after having been updated in May 2024.

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Introduction

The agricultural sector is at the heart of European policy because of its strategic importance. Agriculture is a fundamental pillar of the economy as it underpins and encompasses a wide range of sectors and actors, as well as the importance of ensuring food self-sufficiency in the EU.

The agricultural sector needs to be prepared for the challenges facing the sector in the coming years, and information on policies and opportunities in the sector is important, as is training for farmers. Farmers need the necessary knowledge and skills to be smart, efficient, and innovative in all aspects of farm management and that digitalisation is also an important tool for success in order to be more sustainable, not only environmentally but also economically and socially. Having the right skills is essential for every aspect of farm management and to adapt to ever changing farming conditions (climate change, evolving scientific data...). In addition, advances in technology and digitalisation are transforming agriculture and young farmers need to be equipped with the appropriate know-how. It should also be a prerequisite to be recognised as a young farmer by public authorities within the CAP and to have access to specific public support schemes.

The EU agricultural sector is facing a growing demographic challenge: the shortage of young farmers. This is a problem that goes beyond the sector, as it could lead to land abandonment and rural depopulation in the coming decades. Currently, only 11% of European farmers are under the age of 40. In Europe, there are more than five farmers over 65 for every farmer under 35.

The multifaceted objective of this study encompasses several critical dimensions. Firstly, it is imperative to gain an-in-depth understanding of the current landscape of the agricultural sector within the European Union and among the consortium members. A comprehensive understanding of the current context of the primary sector is crucial to the success of the project. Using objective, realistic, and statistical data, the study aims to assess the state of agriculture, with a particular focus on each consortium member's country and on young farmers. This analysis will shed light on both existing and potential future challenges that may affect the sector.

Following the comprehensive assessment of the current situation, the report will present the existing European directives and regulations relevant to the agricultural sector, both in general and with a specific focus on the regulations governing medicinal and aromatic plants. In addition, the report will examine the expected EU regulations on digitalisation and innovation in agriculture.

Subsequent sections of the study will navigate through the various forms of EU support to the agricultural sector, with a particular focus on support to young farmers. It will also outline the actions that the EU intends to take to promote the digitalisation of rural areas. Finally, the study will present the European funding lines aimed at supporting innovation projects within the primary agricultural sector, highlighting the key role of such funding in supporting transformative projects.

Agriculture: Challenges, Market's employment and economic situation

Agriculture is a primary sector activity that involves extracting or harvesting products from the earth. The term "agricultural industry" refers to the branch of agricultural production, but it should not be interpreted as implying that agriculture is industrialized or involves the processing of raw materials. In an accounting context, an industry is a branch of economic activity.

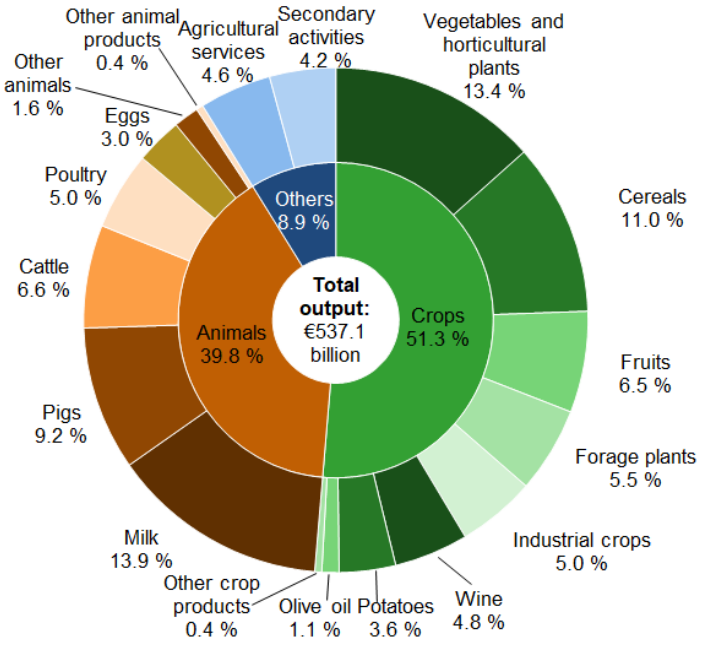
Agricultural production in the EU by millions of small farms is a significant contributor to the EU's GDP. Agriculture contributed 1,3% to the EU's GDP in 2023[1]. In other words, the EU's agricultural industry created an estimated gross value added of € 225.6 billion in 2023. The contribution is calculated as gross value added at producer prices, which is comparable to GDP at market prices, and represents the difference between the value of agricultural output and the value of input costs adjusted for taxes and subsidies on products. Understanding the structure and composition of the value of agricultural production and the various inputs used is essential for appreciating the sector's importance to the EU's economy.

In 2022, the gross value added of the EU agricultural industry was approximately €218 billion, a significant increase from €189.4 billion in 2021. This increase was mainly due to a considerable increase in the prices of agricultural products and an increase in intermediate consumption. For every euro spent on intermediate consumption, the agricultural industry added a value of 0.75 euros in 2022, showing a slight improvement from 0.73 euros in 2021, although still below the peak of 0.79 euros reached in 2017.

These data reflect the resilience and adaptation of the European agricultural sector in the face of economic difficulties and inflationary pressures caused by supply chain problems and the conflict in Ukraine. In addition, there was a 13% increase in agricultural labour productivity, suggesting an improvement in the efficiency of labour utilisation in the sector.

[1] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Performance_of_the_agricultural_sector

Output of the agricultural industry
(% of total output, EU, 2023)



Note: values at basic prices. Due to rounding, the shares do not sum to 100.0%.
Source: Eurostat (online data code: aact_eaa01)

eurostat

The total value of the EU's agricultural industry output in 2023 was EUR 537.1[2] billion, including crops, animals, agricultural services, and some goods and services that could not be separately measured. **Crops accounted for 51.3% of the total output value (EUR 275.53 billion)**, with cereals, vegetables, and horticultural plants being the most valuable crops. Animals and animal products contributed 39.8% (EUR 213.22 billion) to the total output, with milk and pigs being the primary contributors. Agricultural services (EUR 24.71billion) and secondary activities (EUR 22.56 billion) accounted for the remaining 8.8%.

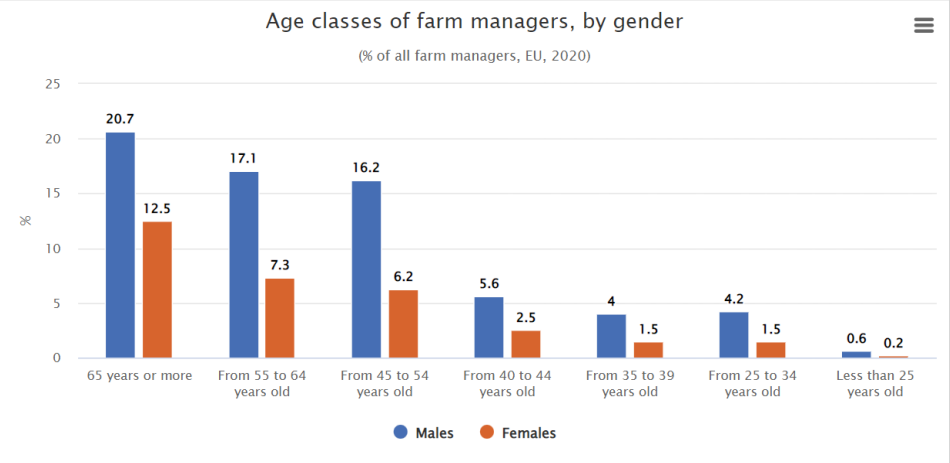
[2] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Performance_of_the_agricultural_sector#Value_of_agricultural_output

In 2023, the equivalent of **7.5 million full-time workers** was utilized as agricultural labor input in the EU. Non-salaried labor continued to dominate this input, accounting for approximately 5.3 million full-time workers, while salaried labor contributed an equivalent of 2.2 million full-time workers.

The long-established downward trend in agricultural employment persisted, albeit at a slightly slower pace, with an average annual decline of 2.7% between 2006 and 2023. In 2023, **the rate of decline further decreased to -0.8%.** Although most Member States reduced their agricultural labor input, the increase in labor utilization in Spain (+5.8%) partially offset these reductions.

Certain Member States, including Austria, Spain, Romania, Belgium, Sweden, and the Netherlands, experienced an increase in the utilization of salaried agricultural labor in 2023 compared to 2022. This rise reflected heightened hiring demands during seasonal peaks.

Furthermore, Europe's agricultural demographic continued to age, with farmers under the age of 40 managing only 10% of all farm holdings in the EU in 2023. Among them, female young farmers represented a mere 2% of this demographic[3].

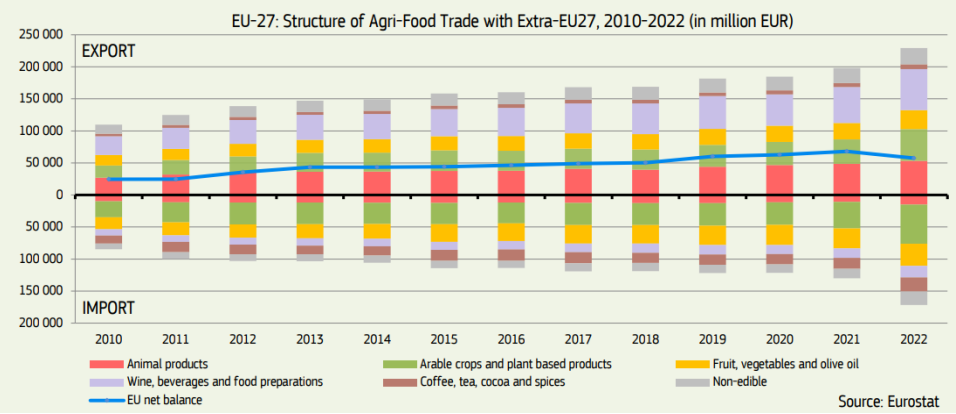


[3] https://agriculture.ec.europa.eu/common-agricultural-policy/income-support/young-farmers_en

Some key challenges facing young farmers today include:

- difficulty accessing land,
- high land prices,
- low profitability and difficult access to credit,
- difficulty for young farmers with families to access essential utilities (water, sanitation, telecommunication, broadband) and social support services (health and long-term care, educational services).

Europe is also a leading region in the export of agri-food products, although the trade balance, or the difference between exports and imports, has shown a very narrow surplus. The EU's agri-food trade balance in 2022 was EUR 58 billion, with total trade (exports + imports) at EUR 401.5 billion: exports at EUR 229.8 billion, and imports at EUR 171.8 billion. The increase in trade was due to a rise in global prices for many commodities, with imports increasing more than exports. The net trade balance decreased by EUR 10 billion, primarily due to increased prices for primary agricultural commodities such as coffee and soya meals. Cereal preparations and wine were the main export products, while wheat exports saw the steepest increase (63%[4]).



[4] EC (2022), Monitoring EU agri-food trade. European Commission, DG Agriculture and Rural Development, Bruss

From these data, it can be concluded that the agricultural sector continues to be an economic sector of great weight in the EU economy, accounting for 55% of the income of the primary industry. It can also be observed that the percentage of people working in the sector continues to decline unstoppably, a little slower in 2021, but still unstoppable, while the trade balance between imports and exports remains very tight[5].

Regarding the average wage for farmers, the most recent data shows that the average farm income in the EU increased between 2007 and 2018 to €35,300 per farm and €22,500 per annual working unit. However, there are notable differences in farm income based on factors such as farming type, gender, age, and level of training of farm holders and managers.

Farms run by women had lower income per annual working unit than those run by men, and the income gap was observed in all types of farming, with the biggest gap seen in dairy and field crops. **Farms run by managers aged 40 or younger and those over 60 had the lowest income on average**. Farms run by managers with basic or full agricultural training had higher income per annual working unit than those with only practical experience across most EU countries, farming types, and farm sizes[6].

Current and future problems in the agricultural sector

After analysing the context of agriculture in the various countries participating in the consortium, the question remains as to what problems are currently affecting the agriculture sector and what are the problems for the future. **It is important for young farmers to be aware of the present and future problems in their sector so that they can get a realistic view of the situation and act wisely.**

The resilience of the EU's agricultural sector has been put to the test over the past two years. In addition to trade disruptions and rising commodity prices caused by the post-COVID-19 recovery, Russia's invasion of Ukraine led to even higher input and energy prices. As a result, food inflation soared, and trade was further disrupted. Additionally, climate change is leading to more frequent and adverse and extreme weather events and outbreaks of animal diseases[7].

Climate change is one of the factors that has most affected agriculture in the EU. The adverse effects of climate change in Europe are already evident, with extreme weather events like heatwaves causing economic losses in the agriculture sector. Although longer growing seasons and improved crop conditions might have some positive effects, they will be overshadowed by the increase in extreme events negatively affecting agriculture. Extreme weather events refer to unusually severe weather or climate conditions that surpass specific thresholds and can cause significant damage to local communities, agriculture, and natural ecosystems. Recent years have seen a range of extreme weather events, including spring frost, hot and dry weather, and drought, each impacting different regions and crops in distinct ways. However, with climate change, these extreme weather events are becoming more frequent, longer-lasting, and more intense.

The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report indicates that the intensity and frequency of hot extremes across Europe are projected to increase significantly. The report suggests it is 'very likely' (more than 90% probability) to 'virtually certain' (more than 99% probability) that hot extremes will increase significantly with projected average temperature

[5] https://agriculture.ec.europa.eu/system/files/2023-05/agrifood-extra-eu27_en.pdf
[6] EC (2021) EU Farms Economics Overview. DIRECTORATE-GENERAL FOR AGRICULTURE AND RURAL DEVELOPMENT
[7] https://agriculture.ec.europa.eu/news/eu-agricultural-outlook-2022-32-production-growth-major-agricultural-sectors-slow-down-2022-12-08_en

increases of 1.5 to 4 degrees Celsius. Climate change not only affects the average temperature but also contributes to greater temperature variability.

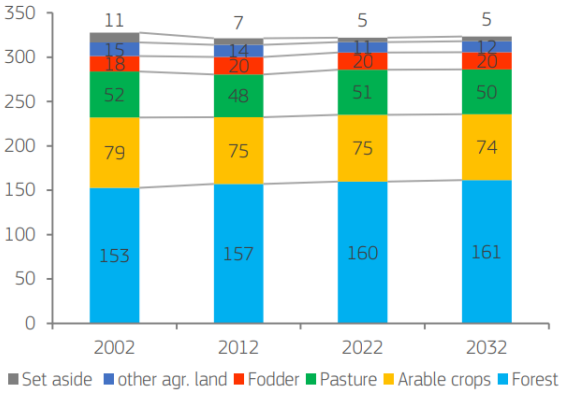
These findings underscore the urgent need for adaptation and mitigation strategies to address the impacts of climate change and extreme weather events. It is crucial to develop measures to protect communities, agriculture, and ecosystems from the detrimental effects of these events and to work towards reducing greenhouse gas emissions to mitigate further climate change.

In the short term, the European Commission's report "EU AGRICULTURAL OUTLOOK: FOR MARKETS, INCOME AND ENVIRONMENT 2022 – 2032" has analysed the agricultural sector in the near future. EU production of arable crops is expected to decrease slightly in the medium term. In particular, the yields of cereal crops and sugar beet are no longer expected to increase but rather to stagnate over the coming decade, mostly driven by the growing impact of climate change and the economic constraints on the use of agricultural inputs that cannot be compensated by other yield enhancing factors (such as precision farming or soil improvement). It is expected that the EU will nevertheless maintain its position as an exporter of wheat. Conversely, the production of pulses and soya beans are expected to increase significantly, albeit from a lower level. This is not least due to the economic and political incentives for a change in farming practices (crop rotation) and increasing demand for organic soya beans for the growing organic dairy herd, as well as a growing demand for labelled soya products (GM-free, rainforest free) and an increasing move towards more plant-based diets.

According to projections, the total utilised agricultural area (UAA) in the European Union (EU) is expected to remain stable at 162.0 million hectares by 2032, similar to the level in 2022. However, due to stricter requirements outlined in the new Common Agricultural Policy (CAP), fallow land is anticipated to increase slightly to 5.4 million hectares by 2032 compared to 5.1 million hectares in the period of 2020-2022.

Meanwhile, the proportion of forested areas in the EU continues to grow steadily. Forests play a vital role in storing carbon and provide various important ecosystem services. Additionally, there is a rising demand for renewable materials, and the prices of wood and paper are increasing, which enhances the economic value of forests. As a result, the total forest area is projected to reach 161.4 million hectares by 2032, up from 159.8 million hectares in 2022.

GRAPH 2.1 EU agricultural and forest area (million ha)



By the year 2032[8], it is anticipated that the demand for animal feed in the European Union (EU) will decrease by approximately 4.7%. This decline can be attributed primarily to the reduced production of pigmeat, beef, and milk within the EU. Additionally, there is an expected decrease in crop-based feed due to a shift towards grass-based production systems and the implementation of more efficient feed conversion ratios, likely enhanced through genetic improvements and the adoption of more targeted and efficient feeding systems.

Although there will be a decline in pigmeat, beef, and milk production, the growth of the poultry and egg sector is expected to partially compensate for this decrease. Furthermore, EU countries with lower productivity levels are gradually closing the gap with countries that have more intensive and efficient production systems, albeit at a slower pace than in the past.

The projected increase in organic milk production within the EU will contribute to a higher proportion of feed proteins derived from grass.

The decline in animal feed demand in the EU will have implications for the consumption of low-protein and high-protein feed. Over the period from 2022 to 2032, the use of low-protein feed (containing less than 15% protein, excluding grass) is projected to decrease by 5.4%. This decline is mainly due to a reduction in cereal utilization in feed. Similarly, the utilization of high-protein feed (with over 30% protein content), which includes oilmeals, fish meals, and skimmed milk powder, is expected to decrease by 4.8% by 2032.

Several factors contribute to this decline, including decreased crushing within the EU resulting in lower availability of oilmeals, environmental and climate concerns related to the import of soya meals for feed, and relatively high prices. On the other hand, the increased availability of protein crops within the EU may enhance the use of medium-protein feed (with protein content ranging from 15% to 30%), which is projected to increase by 1.1% compared to 2022.

[8] https://agriculture.ec.europa.eu/system/files/2023-04/agricultural-outlook-2022-report_en_0.pdf

Regarding the more distant future of agriculture in Europe in relation to climate change, a report by the European Environment Agency (EEA) highlights the projected climate change problems faced by European agriculture and the need for adaptation. The report also examines EU policies and programs addressing climate change adaptation and provides examples of successful adaptation actions. The EEA assessment aligns with key messages from the Intergovernmental Panel on Climate Change (IPCC) report on climate change and land.

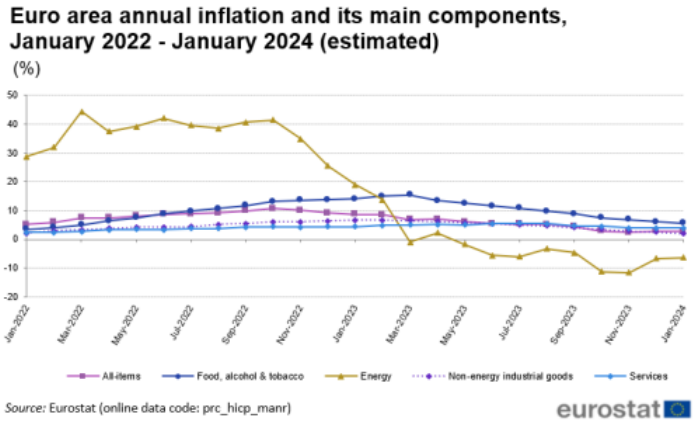
Climate change has led to reduced harvests, increased production costs, and affected the price, quantity, and quality of farmed products in parts of Europe, particularly in the south. While crop conditions may improve in northern Europe, productivity in southern Europe is projected to decline significantly by 2050, with yields of non-irrigated crops like wheat, corn, and sugar beet estimated to decrease by up to 50%. This could lead to a substantial drop in farm income by 2050, varying regionally.

Under a high-end emission scenario, farmland values in southern Europe are projected to decrease by over 80% by 2100, potentially resulting in land abandonment. Trade patterns will also be affected, impacting agricultural income. Although food security in the EU is not threatened, the increasing global demand for food could put pressure on food prices in the coming decades, according to the report.

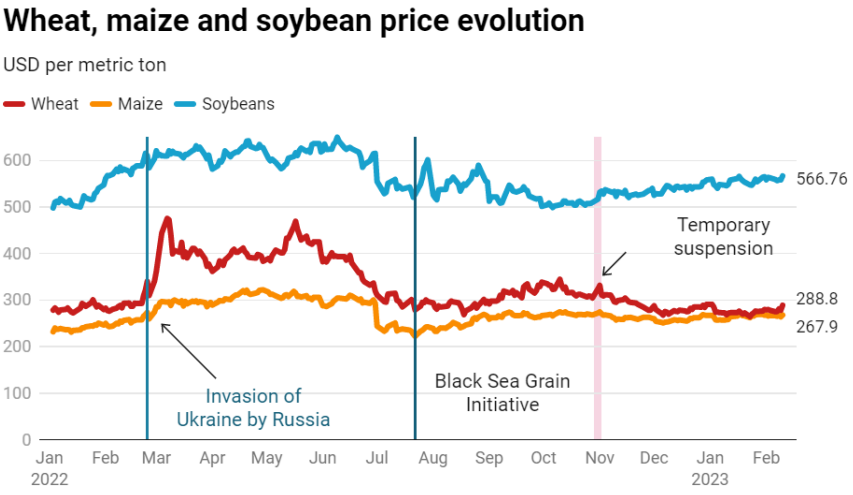
Hans Bruyninckx, EEA Executive director, emphasizes the need for greater adaptation efforts within the agricultural sector and calls for EU policies that facilitate and expedite the transition. Despite some progress, more action is required at the farm level, and future policies should be designed to support and accelerate the sector's adaptation to climate change[9].

Another factor that is currently putting the agricultural sector on the ropes is the War in Ukraine. The war has led to an increase in the production costs of farms. Firstly, because it has increased the cost of electricity. It is a fact that electricity costs have risen following the disruption of gas imports from Russia. In the context of the future of agriculture in Europe, particularly considering climate change in the long term, production costs have risen, triggering inflation across Europe[10].

[9] https://www.eea.europa.eu/highlights/climate-change-threatens-future-of#:~:text=Climate%20impacts%20have%20led%20to,crop%20productivity%20in%20southern%20Europe.
[10] https://www.eeas.europa.eu/eeas/war-ukraine-and-its-implications-eu_en



Secondly, Ukraine, a significant agricultural producer, has seen its exports of key products like corn or wheat severely disrupted, especially at the beginning of the conflict, totally cancelled. This has made feed more expensive for livestock farms and triggered additional costs[11].



Future prices (+30 days) quoted in Chicago

The third issue affecting agriculture is the organizational structure of its producers. Commissioner Wojciechowski stated that "*to achieve a truly resilient food system, we must address the issues that*

[11] https://blog.iica.int/blog/ucrania-un-ano-despues-repercusiones-en-seguridad-alimentaria-mundial

continue to plague our farming communities, such as the ***decline in family farms and the increase in the average age of farmers***"

After this analysis, **young participants will have a comprehensive understanding** of how Climate Change, the war in Ukraine and the structural situation of farmers have affected the present state of agriculture. They have also appreciated what the future holds for the field through statistical data. **This will allow you to analyze the current market and make the best decisions for your future.**

Agriculture sector in SDA Consortium Countries

Belgium

In Belgium, agriculture contributes 0.9% of GDP, compared to 1.34% in the 1990s, and now accounts for only 5.4% of exports.

As of 2023, the agricultural sector in Belgium continues to face challenges, particularly in terms of decreasing farm numbers and employment. Both Flanders and Wallonia have been experiencing a steady decline in the number of farms, with an average annual reduction of 3.5%. Employment in agricultural activities has seen a significant decrease, plummeting by 65% over recent years.

In 2023, the agricultural workforce in Flemish agriculture stood at approximately 42,000 individuals, reflecting a continued downward trend. This workforce contributes to around 0.8% of the region's gross value added. The majority of farms (64.9%) are situated in Flanders, while the remaining 35.1% are in Wallonia.

Belgium maintains a high density of livestock, with 2.7 heads per hectare. As of 2023, the country housed approximately 2.3 million head of cattle, 5.8 million pigs, and 47.5 million birds. The Belgian dairy industry processed around 4.9 billion liters of milk in 2021, marking a steady increase compared to previous years.

The agricultural sector in Belgium has experienced a 62% decrease in workers between 1980 and 2016, resulting from a decline in the number of farms and increased mechanization. However, due to environmental and energy challenges, the agricultural sector is expected to regain a crucial role. The growing success of organic farming in Belgium demonstrates the ability of the Belgian agriculture to adapt to societal changes.

Only a small percentage of the Belgian population works in agriculture, by 2023 the country continues to witness a decline in the proportion of its population engaged in agriculture. Over the past three decades, there has been a slight decrease in the number of workers per farm (from 1.63 workers in 1980 to 1.2 workers in 2022). However, the proportion of non-family labor in the agricultural sector has been increasing[12]. **Of that small percentage, an aging population with few young people entering the sector can be found; in 2022, 55% were over 55 years old, and only 6% were under 35 years old[13].**

In terms of demographics, the agricultural workforce in Belgium remains predominantly older**, with 55% of workers being over 55 years old in 2022, while only 6% were under 35 years old.**

12 https://statbel.fgov.be/sites/default/files/files/documents/landbouw/FR_kerncijfers_landbouw_2020_v19_avec_couverture_pour_web.pdf

13 https://www.rtl.be/actu/comment-se-porte-lagriculture-en-belgique-decouvrez-les-chiffres-de-ce-secteur/2022-07-29/article/487480

The average monthly salary for farmers in Belgium has seen a significant increase since 2017, reaching €3,500 in 2023. There are gender disparities in average salaries, agricultural women is €3187, and for men, it is €3423[14].

Furthermore, salary discrepancies are also influenced by years of experience. An individual starting out in the agricultural and horticultural sector can expect an average salary of €2,500 per month, while those with 20 years of experience typically earn around €3,900 per month. After 30 years in the industry, the average salary increases to €4,500 gross per month.

Bulgaria

In Bulgaria, agriculture contributes 3.51% to GDP, compared to 17.75% in the 1990s. The sector has suffered a decline which is due to several factors such as: Bulgaria's transition to a market economy after the fall of the communist regime in 1989, during this communist regime, agriculture was a highly subsidized and state-protected industry. There are also other factors that can lead to this decline, such as: lack of investment and modernization of the agricultural sector, emigration of rural workers to cities and abroad.[15]

In 2022, data from the Bulgarian National Statistical Institute indicated that approximately 190,800 people were employed in agriculture in Bulgaria. However, this number may not include all people working in agriculture, as some may not be formally employed or may not have been counted by surveys. It is important to note that agriculture remains an important sector in the Bulgarian economy, although its contribution to PIB has declined in recent decades. Many people in Bulgaria still depend on agriculture for their livelihood and for the supply of food for the local and export market.

Between **2007 and 2020, about 30 percent of agricultural workers were over 65 years old.** With regard to the gender ratio, the sector is dominated by men: 72 percent compared to 28 percent women[16]. Agriculture in Bulgaria is predominantly managed by individuals over 60 years of age, who are the major landholders. **The Bulgarian State has been trying for years to change this situation through various policies that do not end up bearing fruit, in fact, the State has considered those under 40 years of age as young people to access state policies[17].**

In 2023, Bulgaria's exports of agricultural and food products continued to play a significant role in the country's economy. These exports were valued at approximately EUR 5.2 billion, comprising about 12.5% of all Bulgarian exports.

The latest estimates suggest the total value of Bulgaria's imports of agricultural and food products in 2022 was around USD 3.1 billion (approximately EUR 2.8 billion). This figure is based on market forecasts and might differ slightly from official NSI data once released. The main imported products are wheat, corn, dairy products, meat, fruits and vegetables.

According to data from the Bulgarian National Statistical Institute, the average monthly salary in the agricultural and forestry sector in Bulgaria in the third quarter of 2021 was around BGN 840 (approximately EUR 428). The low wages compared to other European countries such as France lie in the inability of Bulgarian agriculture to guarantee a permanent seasonal commitment, therefore, there is a shortage of labour, together with the low percentage that the agricultural entrepreneur

[14] https://www.jobat.be/fr/art/combien-gagne-t-on-le-secteur-agricole-et-horticole#:~:text=En%20moyenne%2C%20vous%20gagnez%203.359,le%20Barom%C3%A8tre%20des%20salaires%20Jobat
[15] https://agriculture.ec.europa.eu/cap-my-country/cap-strategic-plans/bulgaria_en
[16] https://agrozona.bg/rabotnitsite-v-bg-zemedelieto-nedostatachni-i-zastaryavashti-vseki-treti-e-nad-65-godini/
[17] https://agri.bg/novini/novoto-pokolenie-v-selskoto-stopanstvo-strashnata-istina

dedicates to cover the production costs of the employee, only 15% of the total cost of production. compared to 30% in France.

It is important to note that wages can vary significantly depending on the type of work and the region of the country. In general, the average wage in Bulgaria is lower than in many other EU countries, and the agricultural sector is no exception. However, the cost of living in Bulgaria is also significantly lower than in many other EU countries, which can affect the purchasing power of agricultural workers[18].

Spain and Valencia Region

In Spain, agriculture contributes 9.20% to GDP, compared to 15.4% in the 1990s, and currently represents 11% of exports, amounting to EUR 60.118 billion.

The agricultural sector in Spain experienced a decrease in workers between 1980 and 2017 due to the reduction in the number of farms and increased mechanization. However, due to environmental and energy challenges, the agricultural sector is expected to regain a crucial role. A latest study carried out in 2019 shows an increase in the number of workers, reaching the highest numbers in the last 10 years, with more than 740,000 workers in the agricultural sector.

Only a small percentage of the Spanish population works in agriculture and, in the last three decades, there has been a slight increase in the number of workers per farm (from 3.97 workers in 1980 to 4.2 workers in 2016). However, the share of non-family labour in the agricultural sector has been increasing. **And of that small percentage, the population is very old with few young people dedicating themselves to it, as in 2019, only 12% were under 30 years old.**

The average salary of farmers is €1352.70 per month, with a significant increase since 2017. Both male and female agricultural workers earn the same average salary of €1352.70.

Specifically, in the Valencian Community, agriculture contributes 12.20% to GDP, compared to 17.56% in the 1990s.

Regarding the average salary of farmers in the Valencian Community, it is €1,757.40 per month, experiencing a significant increase from 2017 onwards. The average salary for agricultural women is €1,757.40 and that for men is €1,757.40.

North Macedonia

According to World Bank data, the contribution of agriculture to North Macedonia's GDP in 2020 was 9.1%. It is worth mentioning that this figure has been decreasing in the last decades due to the increase in other sectors of the country's economy.

The decline in the contribution of agriculture to PIB in North Macedonia is mainly due to the transformation of the country's economy in the last decades, with a greater emphasis on the industrial and service sector. The Macedonian economy has been undergoing a transition from a centrally planned economy to a market economy.

As a result, investment in non-agricultural sectors has increased, leading to a higher contribution of the industrial and services sector to the country's PIB. In addition, the migration of people from rural areas to cities has also decreased the size of the rural population and the number of people working in agriculture.

[18] https://www.bta.bg/bg/news/economy/378974-zaplashtaneto-na-truda-v-zemedelieto-e-po-nisko-ot-ostanalite-sektori-na-ikonomi

According to the Food and Agriculture Organization of the United Nations (FAO) data for 2020, the total number of workers employed in the agricultural sector in the Republic of North Macedonia was approximately 151,000 people.

It should be noted that this number has decreased in recent years due to the economic transition mentioned above, with more people migrating to cities in search of work in other sectors. Nevertheless, agriculture continues to be an important source of employment in the country, especially in rural areas where the economy still relies heavily on agricultural production.

One of the biggest problems in the agricultural sector is the ageing of the workforce - also pointed out in the latest government strategy for the development of agriculture. Thus, in 2016, only 4% of farm holders were young people under the age of 35. The majority, i.e. 62%, were over 55 years old[12]. It is important to note that in recent years there has been an increase in the number of young people leaving rural areas of North Macedonia in search of better opportunities in the cities, which has led to a decrease in the number of young workers in the agricultural sector. At the same time, some government programs and non-governmental organizations are trying to encourage young people's interest in agriculture and support their participation in this sector.

According to the World Bank data for the year 2019, exports of agricultural products from the Republic of North Macedonia amounted to about USD 537 million, which accounted for about 8% of the country's total exports that year. As for imports of agricultural products, about USD 811 million were recorded in 2019, which accounted for about 7% of the country's total imports.

The average salary of Macedonia in the agricultural industry is from 350 to 440 euros. Among the professions in this industry are different salary averages, the average that receives a zootechnician 440 €, agronomist-420 €, tractor driver earns 390 €.

Turkey and Eskişehir region

Agriculture has historically been an important sector in Turkey's economy. According to the latest available data from the World Bank, in 2022, the agriculture, forestry and fisheries sector contributed approximately 5.8% of Turkey's Gross Domestic Product (GDP).

It is important to keep in mind that this number may change over time and will depend on many different factors, such as the evolution of the agricultural sector and other economic sectors in Turkey.

According to a 2020 report by the Food and Agriculture Organization of the United Nations (FAO), it is estimated that in Turkey, **about 25% of the working population is employed in the agricultural sector, and a large proportion of them are expected to be youth.**

In addition, FAO has also identified that youth in Turkey are showing an increasing interest in agriculture, and there are several government and non-governmental organization programs that are working to engage more youth in agriculture and improve their capacity to work in the sector.

In the case of these young people, the rate of unpaid family workers is high. Women, children and young people continue to be the largest group of workers in agriculture. The level of vocational and general education of workers in the Turkish labor market is very low.

According to data from the Turkish Statistical Institute (TurkStat), the youth unemployment rate **(among 15-24 year olds) in Turkey was 19.25% in 2022**. This youth unemployment rate can vary depending on many factors, such as the general economic situation in the country, the education and training of young people, and the supply and demand for labour in different economic sectors, including agriculture. In Turkey, the agricultural sector is an important source of employment and is expected to employ a large proportion of young people.

According to World Integrated Trade Solution (WITS), Turkey's exports of agricultural products reached an estimated US$23.7 billion in 2022. Some of the main agricultural products exported by Turkey include fruits and vegetables, nuts, oilseeds, dairy products and cereals. As for imports related to the agricultural industry, WITS data suggests that Turkey imported agricultural products worth around US$22.1 billion in 2022. Some of the main agricultural products imported by Turkey include oilseeds, fruits and vegetables, cereals, dairy products and sugar. It is important to keep in mind that these numbers can change over time and can be influenced by a variety of factors, such as changes in commodity prices, international trade agreements, and the trade policies of Turkey and other countries.

The average wage of a worker in the agricultural industry in Turkey can vary significantly depending on several factors, such as geographical region, type of crop and experience of the worker. According to data from the Turkish Statistical Institute (TurkStat), in March 2021, the average monthly wage in the agricultural industry in Turkey was around 2,726 Turkish Liras (approximately USD 322).

Wages can vary widely depending on location, type of work, and worker experience.

Digitalisation in Agriculture

Digitalisation is a cornerstone of the European Commision's priorities[19]. Digital and data technologies have the potential to revolutionise agriculture by enabling farmers to work more precisely, efficiently, and sustainably. Data-driven insights can enhance decision-making and practices, boosting environmental performance and making farming more attractive to younger generations. These technologies also offer greater transparency for consumers and create opportunities to renew business models and value chains[20].

To ensure that digitalisation is inclusive and accessible for all, policymakers, industry leaders, and technology providers are collaborating to promote the benefits of digitalisation and support farmers with training, resources, and incentives to adopt new technologies. This collaborative effort aims to help the European agricultural sector fully embrace the digital age, improving the sustainability and profitability of farming operations while addressing critical issues such as food security and climate change[21].

EU Policy to Digitise the Field

The European Union aims to achieve precision agriculture that is sustainable and efficient in all its member countries, in order to avoid large differences across the Union.

[19] *Digitalisation of agriculture and rural areas in the EU*. (2023, December 7). European Commission. https://agriculture.ec.europa.eu/sustainability/digitalisation_en

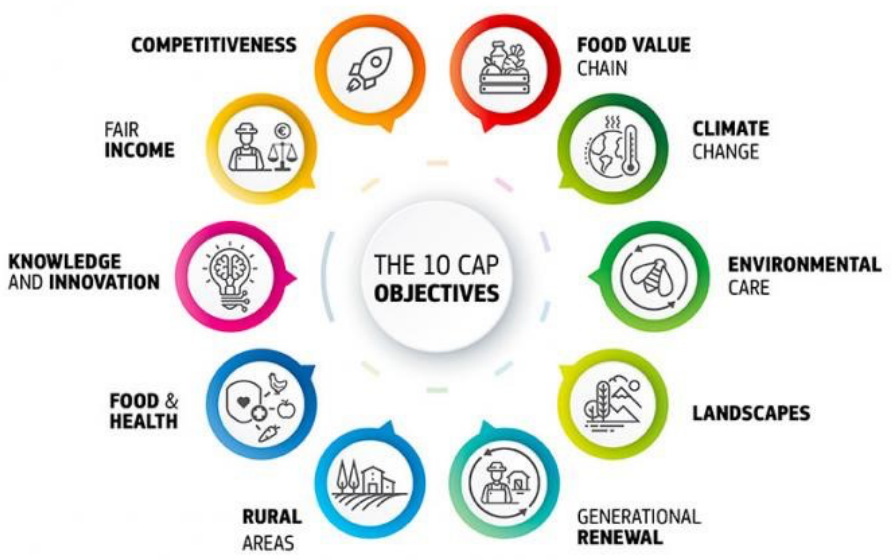
[20] Digital transformation in agriculture and rural areas. (n.d.). In *European Commission* (ISBN 978-92-65-03236-7). European Commission. "https://agriculture.ec.europa.eu/document/download/4a31711f-3235-4b8a-9f58-9cfa67bdba6a_en?filename=factsheet-agriresearch-digital-transformation_en.pdf"https://agriculture.ec.europa.eu/document/download/4a31711f-3235-4b8a-9f58-9cfa67bdba6a_en?filename=factsheet-agriresearch-digital-transformation_en.pdf

[21] *The digitalisation of the European agricultural sector*. (2024, January 31). European Commission. "https://digital-strategy.ec.europa.eu/en/policies/digitalisation-agriculture"https://digital-strategy.ec.europa.eu/en/policies/digitalisation-agriculture

To this end, the "Horizon 2020" **Action Plan was launched**, through which research and innovation (R+i) activities related to the agricultural sector have been financed with more than 200 million euros. Its two main objectives were investment in robotics, in order to develop the "Robotics Digital Innovation Hub" system and the agroBofood, Romi and Panteón projects, all of them to promote the introduction of robotic technologies in the agri-food sector; and investment in digital platforms and IoT areas, which focused on researching and developing the IoF2020, Atlas, Demeter and SmartAgriHubs initiatives, which aimed to improve food security, productivity and strengthen competitiveness in Europe through the introduction of IoT technology in the agricultural sector, as well as support sustainable agriculture and food production systems, and bring new business opportunities to agriculture and the wider agri-food economy.

Today, the European Union continues with its goal of achieving competitive and sustainable agriculture based on research, innovation and capacity building in the agri-food sector, through artificial intelligence, IoT, robotics, and digital platforms.

The new Common Agricultural Policy (2023-2027) revolves around 10 objectives, including



digitalisation, knowledge and innovation in the sector.

To this end, the EU has new initiatives (most of them with an implementation deadline of 2026), among which are the following:

- Horizon Europe: one of the objectives of this research and innovation programme is the development of a sustainable food system, with projects and funds allocated to achieve this.

- ScaleAgData: seeks to achieve a framework of competitiveness and sustainability in the European agricultural sector.
- CrackSense: aims to establish programs that enhance the technological capabilities of the sector, monitor production, and improve efficiency.
- AgriDataValor: aims to establish an innovative and multi-technological platform in the sector.
- Digital European Programme: establish a common European agricultural data space enabling the exchange and analysis of data to foster innovation, digital transformation and optimise the use of natural resources.

This is not the end of the list of initiatives that the EU has toimprove the digitalization of its agricultural system, but one particular initiative worth mentioning aims to implement Artificial Intelligence in the sector: European Testing and Experimentation Facilities for Agri-Food Innovation (TEF).

To make all this possible, the EU is providing investments to help farmers boost their digital skills.

In turn, the European Parliament has also expressed its opinion to this effect in the European Parliament **resolution of 8th of March of 2022 on the role of cohesion policy in promoting innovative and smart transformation and regional connectivity in the field of ICT (2021/2101(INI)**, which establishes, inter alia, whereas the ongoing digital transition and the green transition must go hand in hand, and whereas in general the European regions most in need of a sustainable transition correspond to those regions with high levels of poverty and exclusion, so decisive measures and investments are needed to relaunch economic activity, promote sustainable development, green transition, digital transformation, and implement the policy principles of the European Pillar of Social Rights, with a view to improving Europe's competitiveness.

In addition to the mentioned initiatives, there are several opinions from the European Economic and Social Committee supporting the digitalization of the agricultural sector, such as the opinion on 'Digitalization and Sustainability – Current Situation and Need to Intervene from a Civil Society Perspective'. Also, it is noted that the European Committee of the Regions has addressed this issue, as seen in the opinion of the European Committee of the Regions – A long-term vision for rural areas in the EU. This opinion emphasizes that the rapid and cost-effective uptake of renewable energy and its infrastructure and technologies required by the Green Deal can only happen with the support of rural areas.

Youth in Agriculture

As highlighted in the recent reform of the Common Agriculture Policy, one of the primary challenges for the agricultural sector is generational renewal. In 2020, only 6.5% of farmers were under the age of 35, indicating an ageing EU agriculture sector. This trend affects the dynamism of rural areas, the achievement of sustainability goals, and the ability to produce food while preserving the unique identity of our regions and landscapes[22]. Additionally, the gender gap exacerbates the age gap, with women managing 30% of farms—42% of these women are over 65 years old, while only 4.2% are under 35. To these data is added the percentage of farms in Europe owned by young farmers, which is 11%[23].

[22] https://ec.europa.eu/eurostat/statistics-explained/index.php?oldid=431368

[23] https://agriculture.ec.europa.eu/common-agricultural-policy/income-support/young-farmers_en

Young individuals aiming to establish a business in this sector face significant barriers to entrepreneurship and inadequate living conditions.

With the aim of reversing this situation, the new CAP provides Member States with solutions to support generational renewal and gender equality, including increased support for young farmers. Member States must allocate at least 3% of direct payments to young farmers. A total of EUR 8.5 billion in public spending has been allocated to help young farmers establish themselves, invest, and maintain their businesses or activities during their initial years. These strategies aim to support around 380,000 new young farmers in becoming self-established between 2023 and 2027[24].

The Role of Youth in Rural Development

The role of youth in rural development is of utmost importance. Their active participation is essential to build a cohesive and sustainable future in Europe's rural areas. Ensuring equal opportunities and full participation of young people, both in rural and urban areas, is crucial. To achieve this, detailed tools are needed to collect data on the rural youth population and their needs, thus facilitating the implementation of targeted policies and investments.

To make rural areas more attractive, it is crucial to have accessible public and commercial services, quality employment, quality education, digital and physical infrastructure, public transport, leisure activities and youth associations. Programmes such as the **Rural Pact, Erasmus+, the European Solidarity Corps and LEADER/CLLD** are essential to empower young people and encourage their participation in rural development. In addition, it is important to promote inclusive governance models involving youth organisations, civil society and policy makers.

In this sense, agriculture plays a fundamental role in rural development and job creation around Europe. This is why there is currently a great deal of activity on the part of the European institutions to improve the quality of these territories and to stop the rural exodus to large cities. One of the measures adopted was the creation of the Rural Observatory[25]. The Rural Observatory focuses on generating knowledge and enhancing the collection and distribution of data related to EU rural areas. It provides pertinent statistics, indicators, and analyses based on data from various sources and at the most suitable territorial levels, encompassing economic, social, and environmental dimensions. Similarly, the EESC, in its opinion "The role of youth in rural development[26]" (footnote) of 2023, placed particular emphasis on the need for and benefits of decentralised institutions to better serve local populations and meet their needs.

Promoting quality employment opportunities and supporting entrepreneurship is vital, especially in sectors such as agriculture, the social economy and cooperatives. Young people must have access to land and credit, and there is a need to support the renovation of housing and the reclamation of abandoned land. Ensuring access to high quality education and training is essential for their personal and professional development. Actively participating in decision-making is crucial for their integration and contribution to local communities.

Investing in IT infrastructure and high-speed broadband connections is necessary to ensure connectivity and access to digital resources. New forms of participation through technology and social networks should be recognised and promoted. Promoting cross-sectoral approaches in the development of youth policies is essential to reduce inequalities between rural and urban areas. Member States should develop measures that include a youth perspective and promote entrepreneurship and diverse employment opportunities.

[24] https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/role-youth-rural-development
[25] https://observatory.rural-vision.europa.eu/?lng=en&ctx=RUROBS
[26] See reference 21.

It is important to pay special attention to young people not in education or employment, women, people with disabilities and marginalised communities. Providing meeting spaces and financial support to facilitate access to land and housing is crucial. In addition, collective bargaining and social dialogue must be strengthened to improve working conditions and ensure fair competition. Creating a land bank would facilitate young farmers' access to currently abandoned arable land.

The active participation of young people is crucial for sustainable development and social cohesion in rural areas. Implementing these recommendations will make rural areas more attractive to young people, thus promoting a more balanced and prosperous future for the whole of European society.

In fact, the EU Youth Strategy[27] contains a target dedicated to rural youth, further highlighting the importance of young people in rural development. This target, which is number 6, sets out the following objectives:

- ensure that adequate infrastructure is available in rural areas, including utilities, data connectivity and housing opportunities for young people;
- ensure the creation of sustainable and high quality jobs in rural areas, accessible to young people;
- promote the decentralisation of activities involving young people, empowering them to contribute to local communities;
- ensure that young people in rural areas are actively involved in decision-making processes;
- ensuring equal access to high quality education, training and mentoring for young people in rural areas; and
- to give a positive image of rural areas and ensure the protection and promotion of rural traditions.

Young Farmers are key in the Future CAP

The document titled "Generational Renewal in the EU farms of the Future[28]", published by the European Parliament, emphasizes the critical role of financial support in attracting young people to the agricultural sector. While not explicitly mentioning specific funding mechanisms such as the European Agricultural Fund for Rural Development (EAFRD) or the European Investment Bank (EIB), the report underscores the necessity of financial instruments to address the challenges faced by young farmers.

The report highlights several key areas where financial support could be instrumental:

Loan Guarantees and Subsidized Interest Rates: The document emphasizes the difficulty young farmers face in accessing traditional loans due to limited collateral and lack of credit history. It suggests that loan guarantees offered by public institutions or subsidized interest rates could significantly ease the financial burden for young farmers entering the agricultural sector.

Grants and Subsidies: The report highlights the potential benefits of establishing targeted grant and subsidy programs specifically for young farmers. These programs could provide financial assistance for various needs, such as land acquisition, purchasing essential equipment, or covering initial operational costs.

The report acknowledges the need for further research to determine the most effective allocation and design of financial support mechanisms. It suggests exploring various models, including direct grants, matching funds, or income support programs tailored to the specific needs of young farmers in different regions across the EU.

[27] https://youth.europa.eu/strategy_en
[28] https://www.europarl.europa.eu/doceo/document/A-9-2023-0283_EN.pdf

In conclusion, the European Parliament report underscores the importance of financial support as a crucial policy tool to promote generational renewal in EU agriculture. While the document itself does not delve into specific funding mechanisms, it lays the groundwork for further exploration and implementation of financial instruments that can incentivize young people to enter this vital sector.

Main Regulation

This section will examine the main directives that affect the day-to-day life of agriculture and explore what is known as the Common Agricultural Policy. **It is important for young farmers to be aware of the various European regulations to be able to carry out their farming in accordance with European policies, avoid penalties or unintended consequences, and for those countries that export their products to EU members.**

The first directive addressed is Directive 2009/128/EC[29] of the European Parliament and of the Council of 21 October 2009[30],establishing a framework for Community action to achieve the **sustainable use of pesticides.** This directive is constantly subject to regulatory changes, particularly updates to the list of prohibited or permitted plant protection products.

It establishes a framework to promote the responsible and sustainable use of pesticides in agriculture and to reduce the risks associated with their use. The main features and articles of this directive include:

- Objective: The main objective of the directive is to ensure the sustainable use of pesticides in the European Union, protect human health and the environment, and encourage the use of alternative methods of pest control.
- Risk reduction: The aim is to minimise the risks and negative effects of pesticides on human health and the environment through the adoption of appropriate risk management practices.
- Integrated Pest Management: The directive promotes the adoption of integrated pest management approaches, which include the use of biological, physical and cultural methods to control pests, minimizing the need for chemical pesticides.
- Information and training: The regulations establish the obligation to provide adequate information and training to professionals who use pesticides, to ensure the safe and responsible use of these products.
- Certification of professional users: Requirements are established for the certification of professional users of pesticides, ensuring that they possess the necessary knowledge to use them safely and effectively.
- Promotion of research and innovation: The directive promotes research and development of alternative pest control methods, as well as innovation in the production and use of safer and more sustainable pesticides.
- Cooperation between Member States: It establishes the obligation of Member States to cooperate with each other, exchanging information and good practices to promote the sustainable use of pesticides.

[29] https://eur-lex.europa.eu/legal-content/ES/TXT/?uri=celex%3A32009L0128
[30] https://eur-lex.europa.eu/eli/reg/2009/1107/oj

- National Action Plans: Member States should develop and implement national action plans to promote the sustainable use of pesticides, setting specific targets and measures tailored to their particular situation.
- Meafgonitoring and reporting: Member States are obliged to collect data on pesticide use and its impact, as well as to prepare regular reports on these issues.

In summary, Directive 2009/128/EC aims to promote the sustainable use of pesticides, reduce risks to human health and the environment, encourage the adoption of alternative pest control methods and ensure responsible management of these products in European agriculture.

Secondly, Council Directive 2000/29/EC of 8 May 2000[31] on protective measures against **the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community. It lays down protective measures against the introduction and spread of organisms harmful to plants and plant products in the Community. The main features and articles of this directive are summarized below:**

- Objective: The Directive aims to protect agriculture, the environment and human health, to prevent the introduction of harmful organisms and to control their spread within the Community.
- Definitions: The regulation defines key terms related to harmful organisms, such as quarantine pests, regulated pests, hosts, and plant propagating material.
- Prohibition of introduction: The introduction into the Community of harmful organisms and plant products containing them is prohibited, unless the established phytosanitary requirements are met.
- Phytosanitary requirements: The directive lays down phytosanitary requirements for the import and movement of plants and plant products, including phytosanitary certificates and treatment and conditioning measures.
- Lists of harmful organisms: Lists of harmful organisms are established, classified as quarantine pests, regulated pests and pests subject to special control measures.
- Inspections and controls: Member States should carry out phytosanitary inspections and controls at points of entry and within the Community to ensure compliance with protective measures.
- Emergency measures: The directive allows for the adoption of emergency measures to control the spread of harmful organisms, including quarantine, eradication and pest control.
- Cooperation between Member States: Cooperation and exchange of information between Member States for the detection, notification and management of harmful organisms is promoted.
- Operator's responsibility: Operators of plants and plant products are responsible for ensuring compliance with phytosanitary measures and preventing the spread of harmful organisms.
- Penalties and enforcement measures: Penalties and enforcement measures are established in the event of non-compliance with phytosanitary provisions by operators.

[31] https://eur-lex.europa.eu/eli/dir/2000/29/oj

Directive 2000/29/EC aims to prevent the introduction and spread of organisms harmful to plants and plant products in the Community, through the implementation of phytosanitary requirements, inspections, emergency measures and cooperation between Member States. This regulation seeks to protect agriculture, the environment and human health by establishing measures to control and manage harmful organisms in the EU.

A third piece of legislation of vital importance is Council Directive 86/278/EEC of 12 June 1986[32] on the protection of the environment, and in particular of soils, when **sewage sludge is used in agriculture.** A directive that has undergone numerous regulatory changes, the latest being in January 2022, Regulation (EU) 2019/1010 of the European Parliament and of the Council of 5 June 2019[33] on the adaptation of reporting obligations in the field of environmental law and amending Regulations (EC) No 166/2006[34] and (EU) No 995/2010[35] of the European Parliament and of the Council, Directives 2002/49/EC,[36] 2004/35/EC,[37] 2007/2/EC[38], 2009/147/EC[39] and 2010/63/EU[40] of the European Parliament and of the Council, Council Regulations (EC) No 338/97[41] and (EC) No 2173/2005[42], and Council Directive 86/278/EEC. Its objective is to protect the environment and, especially, the soil, in the use of sewage sludge in agriculture. The main features and articles of this directive are summarized below:

- Objective: The directive seeks to regulate the use of sewage sludge in agriculture in order to protect the environment and soils, avoiding the negative effects of its application.
- Definitions: The regulation defines key terms related to sewage sludge, such as activated sludge, digested sludge, and other products obtained from wastewater treatment.
- Restrictions and requirements: The directive lays down restrictions and requirements for the use of sewage sludge in agriculture, including quality criteria and limits for the presence of pollutants.
- Utilization plans: Member States should draw up plans for the use of sewage sludge, which should include measures to ensure safe and controlled use, as well as to avoid contamination of soil and groundwater.
- Control and monitoring: The directive establishes the obligation for Member States to carry out regular control and monitoring of the use of sewage sludge, in order to verify compliance with the requirements and assess environmental impacts.
- Labelling and registration: Sewage sludge used in agriculture is required to be labelled, indicating its origin and characteristics, as well as keeping a record of the quantities used.
- Obligations of Member States: Member States have a responsibility to take the necessary measures to ensure the correct use of sewage sludge, including the imposition of penalties in case of non-compliance.
- Exchange of information: The directive encourages the exchange of information and cooperation between Member States on he use of sewage sludge, with the aim of promoting best practices and shared experience.

[32] https://eur-lex.europa.eu/eli/dir/1986/278/oj
[33] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R1010
[34] https://eur-lex.europa.eu/legal-content/ES/ALL/?uri=CELEX%3A32006R0166
[35] https://eur-lex.europa.eu/legal-content/ES/ALL/?uri=CELEX%3A32010R0995
[36] https://eur-lex.europa.eu/legal-content/ES/TXT/?uri=celex%3A32002L0049
[37] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32004L0035&qid=1716798200981
[38] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32007L0002&qid=1716798240084
[39] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0147&qid=1716798311187
[40] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010L0063&qid=1716798362461
[41] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A31997R0338
[42] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32005R2173

In summary, Directive 86/278/EEC aims to protect the environment and soils in the use of sewage sludge in agriculture by imposing restrictions, requirements and controls. This regulation seeks to ensure a safe and controlled use of sludge, avoiding pollution and negative impacts on the environment, and encouraging the exchange of information between Member States.

There is also Council Directive 91/676/EEC of 12 December 1991[43] on the protection of waters against pollution caused by nitrates from agricultural sources. Main objectives are to establish the necessary measures to prevent and correct the pollution of inland and coastal waters caused by nitrates of agricultural origin and to act preventively against new pollution of this kind. Codes of good agricultural practice are developed to progressively reduce nitrate pollution and establish a general level of protection of the water environment against nitrate pollution. Codes of good practice, which farmers may implement on a voluntary basis, must contain the issues set out in Annex II A to the Directive.

Good Agricultural and Environmental conditions (GAEC)

Good agricultural and environmental conditions, or GAEC, are a set of European Union (EU) standards (detailed in Annex II of Council Regulation No 1306/2013[44]) that are defined at a national or regional level. They aim to achieve sustainability in agriculture. The maintenance of land in good agricultural and environmental conditions is directly related to a few key issues, including:

- minimum level of maintenance
- protection and management of water
- soil erosion
- soil organic matter
- soil structure

These standards must be met by European farmers receiving direct payments or some of the rural development payments.

Further to this, the Special Committee on Agriculture gave its approval to the amendments proposed by the European Commission to the GAEC standards.

The GAECs represent a set of nine standards designed to benefit the environment and the climate. These standards apply to farmers who receive support under the CAP. One of the key changes is the introduction of a general provision that allows member states – on a temporary and targeted basis – to grant derogations from specific conditionality requirements in the event of unforeseen climate conditions preventing farmers from complying with them. Member states will be required to inform the Commission on an annual basis regarding any derogations granted.

Furthermore, specific exemptions from certain GAEC standards have been introduced. These include:

- Regarding GAEC 6 on soil cover during sensitive periods, member states will be permitted to determine which soils to protect and during which season based on national and regional specifics.
- With regards to GAEC 7 on crop rotation, while crop rotation will remain the primary approach, member states will have the option to utilize crop diversification in lieu of it. This alternative option is less onerous for farmers, especially those in regions prone to droughts or heavy rainfall.
- An additional option for GAEC 8 farmers is only obliged to maintain existing landscape features and can now choose, at their own initiative, to keep land fallow or to create new landscape features through eco-schemes.

[43] https://eur-lex.europa.eu/eli/dir/1991/676/oj
[44] https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32013R1306

Given that 65% of CAP beneficiaries account for only 10% of agricultural land, the proposed change will have an impactful reduction in the administrative burden for both farmers and national administrations, while maintaining environmental goals.[45]

Common Agricultural Policy (CAP)

Last but not least, a reference should be made to the **Common Agricultural Policy (CAP).**

The CAP also addresses specific agricultural sectors, such as wine, olive oil, dairy products, among others. These sectors receive financial support and support schemes are put in place to ensure their viability and competitiveness. However, the CAP has faced criticism due to its focus on intensive production and its impacts on the environment. In response to these concerns, reforms have been implemented in the CAP to promote more sustainable agricultural practices and protect the environment. In addition, there have been discussions on the fair distribution of direct payments between Member States and farmers, with calls for greater fairness in the distribution of funds.

The new CAP has entered into force for the period 2023 and 2027 through Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021[46] establishing rules on support for strategic plans to be drawn up by Member States under the common agricultural policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) and repealing Regulations (EU). The new Common Agricultural Policy has been built around ten key objectives, from which each country will develope their own policies and strategies. These objectives are:

1. to ensure a fair income for farmers.
2. To increase competitiveness.
3. to improve the position of farmers in the food chain.
4. climate change action.
5. Environmental care.
6. to preserve landscapes and biodiversity.
7. to support generational renewal.
8. vibrant rural areas.
9. to protect food and health quality.
10. fostering knowledge and innovation.

With the new CAP, changes will be made to the current cross-compliance and greening systems to reflect more ambitious environmental objectives and contribute to the objectives of the European Green Deal. For example, the introduction of eco-schemes, which will provide greater incentives to develop agricultural practices beneficial to the climate and the environment, in addition to the classic support for farmers and young farmers (art.6.2 Regulation 2021/2115. Likewise, the new CAP aims to *"attract and support young farmers and new farmers and facilitate sustainable business development in rural areas" (art.6.1.g Regulation 2021/2125).*

The CAP outlines several strategies for attracting and supporting young farmers. The strategies largely include financial aid. The CSO Regulation obliges Member States to dedicate at least 3% of their initial envelope for direct payments before any transfers to this objective. Member States are then free to decide how to use the funding. Most Member States envisage a combined support. This can

[45] *Council of the European Union.* (2024, *March* 26). Support for farmers: Council endorses targeted review of the common agricultural policy [*Press release*].
[46] https://eur-lex.europa.eu/eli/reg/2021/2115/oj

include complementary income support in the form of a yearly payment per hectare linked to the size of the farm, or a lump sum per farm. Many Strategic Plans will also aid young farmers in setting up a start-up through a lump-sum grant. Young farmers can also get higher support rates for investment.

Aside from financial incentives to attract and support young farmers, some Member States also focus on providing training and knowledge in support of, for example, generational renewal.

Mapping and analysis of CAP strategic plans - Publications Office of the EU (europa.eu) Chapter 9, page 587-649

Mapping and analysis of CAP strategic plans - Publications Office of the EU (europa.eu), (Summary of the document in the first link)

Medicinal and Aromatic Plants

At this point, a brief overview of the most significant European legislation in the field of medicinal and aromatic plants will be provided.

Firstly, **Directive 2004/24/EC of the European Parliament and of the Council of 31st of March of 2004[47] amending Directive 2001/83/EC[48] on the Community code relating to medicinal products for human use.** This directive establishes a Community code for traditional herbal medicines which, despite having a long tradition and still being used in the Member States, did not meet the requirements for European marketing authorisation. For this reason, a special simplified registration procedure is established for these traditional medicines, thus preventing both the existence of discrimination and distortions of competition between the different manufacturers, as well as the damage that could be caused to public health. In addition, the Committee for Herbal Medicinal Products of the European Medicines Agency is established for these registration and authorisation functions.

This is **followed by Commission Directive 2003/63/EC of 25th of June of 2003[49], amending Directive 2001/83/EC of the European Parliament and of the Council, on the Community code relating to medicinal products for human use. For medicinal products with specific characteristics, a simplified dossier submission is foreseen, as it cannot comply with all the standardised requirements of the marketing authorisation dossier. Among these medicinal products with special characteristics are herbal medicines, including medicinal plants, which must include the geographical origin of the medicinal plant and its cultivation, harvesting, drying and storage conditions (see Part III of Annex I).**

Also noteworthy is **Regulation (EC) No 726/2004 of the European Parliament and of the Council of 31st of March of 2004[50], laying down Union procedures for the authorisation and supervision of medicinal products for human use and establishing the European Medicines Agency.** This Regulation creates the European Medicines Agency, which, with regard to medicinal plants, will be responsible for the process of harmonising procedures relating to these products, integrating them into the European regulatory framework.

[47] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:136:0085:0090:en:PDF
[48] https://eur-lex.europa.eu/legal-content/es/ALL/?uri=CELEX%3A32001L0083
[49] https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32003L0063
[50] https://eur-lex.europa.eu/eli/reg/2004/726/oj

Also **Commission Regulation (EU) 2019/977 of 13th of June of 2019[51], amending Annexes II and IV to Regulation (EC) No 396/2005 of the European Parliament and of the Council[52]:** this Regulation imposes maximum residues on certain residues (aclonifene, Beauveria bassiana strain PPRI 5339, Clonostachys rosea strain J1446, phenpyrazamine, mefentrifluconazole and penconazole) used when growing food in order to comply with food regulations, Its consumption is therefore safe for EU citizens; **and Commission Regulation (EC) No 1444/2002 of 24th of July of 2002[53], amending Decision 2000/115/EC[54] laying down definitions of characteristics, the list of agricultural products, derogations from definitions and regions and constituencies in relation to surveys on the structure of agricultural holdings.** In Annex I, regarding agricultural holdings, there is a section called "Arable Land" where D/34 is found, which includes the list of plants categorized as "Medicinal, Aromatic Plants, and Spices."

Finally, it is necessary to take into account Council **Regulation (EC) No 1217/2009 of 30th of November of 2009[55] establishing a network of agricultural accounting information on farm incomes and economics in the European Union. To meet the needs of the Common Agricultural Policy (CAP), an EU Agricultural Accounting Information Network is set up for the collection of agricultural accounting information. This Regulation has been amended from time to time on certain occasions: Commission Implementing Regulation (EU) 2019/1975 of 31st of October of 2019[56] and Commission Implementing Regulation (EU) 2015/220[57]; and Commission Delegated Regulation (EU) 2015/2446 of 28th of July of 2015[58], supplementing Regulation (EU) No 952/2013 of the European Parliament and of the Council with detailed rules for the application of certain provisions of the Union Customs Code[59], Chapter 12 of** Part II of Annex 22-11 mentions medicinal plants and Annex 22-04 mentions aromatic plants.

Building upon Council Regulation (EC) No 1217/2009, which established a network for collecting agricultural accounting information on farm incomes and economics, the Common Agricultural Policy (CAP) relies on this data to inform its decisions.

The CAP itself is undergoing reform to place greater emphasis on environmental sustainability and performance-based support for farmers. To align with these evolving needs, the European Commission proposed a revision to Council Regulation 1217/2009, in 2022. This revision aims to convert the Farm Accountancy Data Network (FADN) established by the Regulation into a Farm Sustainability Data Network. The new network would broaden its scope to collect data on farm sustainability practices alongside traditional income and economic information.

This shift reflects the growing importance of sustainable agriculture within the CAP. By monitoring sustainability metrics, the Farm Sustainability Data Network can provide valuable insights to policymakers and stakeholders. The collected data can be used to assess progress towards

[51] https://eur-lex.europa.eu/eli/reg/2019/977/oj#:~:text=Commission%20Regulation%20(EU)%202019%2F,strain%20J1446%2C%20fenpyrazamine%2C%20mefentrifluconazole%20and

[52] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32005R0396#:~:text=Regulation%20(EC)%20No%20396%2F,EEC%20Text%20with%20EEA%20relevance.

[53] https://eur-lex.europa.eu/eli/reg/2002/1444/oj/?uri=CELEX:32002R1444

[54] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32000D0115

[55] https://eur-lex.europa.eu/eli/reg/2009/1217/oj

[56] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R1975

[57] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32015R0220

[58] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015R2446

[59] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R0952

environmental goals, track the effectiveness of sustainability measures within the CAP, and inform future policy decisions.

The Future of Agriculture

Statistics on Agricultural Input and Output (SAIO)

The new regulation on statistics on agricultural input and output (SAIO)[60] will come into effect on 1 January 2025. It consolidates and streamlines several existing and separate regulations and European Statistical System Committee (ESS) agreements, replacing them.
The SAIO regulation introduces reforms to the collection of input and output statistics, expanding the scope of data collection and making the dissemination of datasets mandatory for some previously voluntary categories.
The ESS agreements that will be replaced are:
- ESS agreement on agricultural land prices and rents: approved in its 38th meeting on 12 October 2018 and covers the collection of statistics on agricultural land prices and rents. This data is used for good management and subsequent monitoring of the CAP, as well as for the purpose of feeding the National Accounts.
- ESS agreement on annual crop statistics and additional crop variables and early estimates: approved in its 25th meeting in May 2015. At the 42nd meeting in February 2020, the agreement was amended to include an Additional Crop Variables and Early Estimates section. The objective of this agreement is to enhance the existing Gentlemen's Agreements on the voluntary collection of additional crop variables and early estimates.
- ESS agreement on crop balance data on main cereals and oilseeds: approved in its 34th meeting on 22 September 2017. Crop Balances (CB) represent a key instrument for monitoring food security and the functioning of crop product markets. Given the growing political priority accorded to food security issues since the price spike of 2007-2008 and 2010, the CB are becoming increasingly important. The data on the main cereals and oilseeds is needed by DG AGRI for the efficient management and monitoring of the EU's CAP and for market analysis. The content of the ESS Agreement meets the needs of DG AGRI.
- ESS agreement on statistics on eggs for consumption: approved in its 35th meeting on 16 November 2017. The agreement aims to facilitate the effective management and monitoring of the European CAP, as well as market surveillance. The ESS Agreement's contents align with DG AGRI's minimum requirements. Additionally, the agreement covers statistical data on gross nutrient balances and organic production.
- ESS agreement on statistics for gross nutrient balances: approved in its 35th meeting on 16 November 2017. The Gross Nutrient Balance (GNB) is an essential statistic for many agri-environment-related policies and provides an insight into the relationship between agricultural activities and environmental impact. It is designed to provide an indicator of the potential for surplus or deficit of two important soil and plant nutrients (nitrogen and phosphorus) in agricultural systems. In terms of data, the ESS Agreement addresses the needs regarding the GNB for the purpose

[60] https://eur-lex.europa.eu/EN/legal-content/summary/statistics-on-the-inputs-and-outputs-of-agricultural-activities.html

of monitoring the Common Agricultural Policy, Sustainable Development Goals, the Nitrates Directive (91/676/EC) and the Water Framework Directive (2000/60/EC).
- ESS agreement on organic production statistics: approved in its 42nd meeting on 12 February 2020. Its purpose is to ensure that harmonised high-quality statistics on organic production are available. The statistics in this agreement are the relevant statistical information necessary for the implementation and follow-up of EU legislation on organic production. The data can also be a useful tool for producers, market operators and policymakers. Furthermore, the data on organic production is required by the Directorate General for DG AGRI for market monitoring and for the monitoring and evaluation of the CAP. The content of the ESS Agreement aligns with the minimum needs of the European Commission and its stakeholders.

Urban Agroforestry

The EU Commission defines agroforestry as a land use system where trees are grown on the same land as agriculture. In this way, woody perennials are deliberately integrated with crops and/or animals. The aim is not to establish a remaining forest stand. The trees may be arranged in a number of ways, including as single stems, in rows or in groups. Grazing may also take place inside the parcels (silvoarable agroforestry, silvopastoralism, grazed or intercropped orchards) or on the edges between parcels (hedges, tree lines). The spatial arrangements and temporal sequences in which the various components are implemented can be diverse, and the ecological and economic interactions between them are valuable.
The implementation of agroforestry practices in urban areas presents a solution to several problems:
- Helps to protect and sustain agricultural productive capacity;
- Increases agricultural productivity and can lead to a more efficient capture of resources, such as solar radiation or water, and reduces the need for external inputs, such as fertilisers or pesticides.
- Diversification of farm products provides an opportunity to increase economic profits through the generation of annual and periodic revenues from multiple outputs, while reducing the risks associated with producing a single commodity.
- Promotes the restoration of soil and water quality, reducing wind erosion and preventing damage due to flooding.
- Reduces vulnerability to high temperatures.
- Enhances biodiversity, acts as a natural pest control, enhances pollination, and maintains land for future generations.
It also provides recreational opportunities that benefit the general public and enhance the landscape's diversity and attractiveness.
- Increases carbon sequestration in permanent/annual crop production, soils and landscape, thus contrasting climate change.
- Creates green jobs and new skills.
- Can be implemented inclusively and justly with the local community.
Furthermore, the alignment with new technologies, such as the production of bioenergy, could attract the interest of the youth and promote an interest in agriculture among young people.[61] [62]

Digital Permaculture

Permaculture can be defined as a design methodology for landscapes. It aims to engineer sustainable agriculture systems. The rise of digital farm management has become a key component of sustainable

[61] https://climate-adapt.eea.europa.eu/en/metadata/adaptation-options/agro-forestry-and-crop-diversification
[62] https://openknowledge.fao.org/server/api/core/bitstreams/9c27d98b-8071-4ee7-8fc4-e0b430f8a8dc/content

living strategies around the world. While the idea of managing permaculture farms digitally may seem unconventional at first glance, digital tools provide permaculturists with an effective framework for recordkeeping, budgeting, input management, productivity tracking, and farm planning.
Permaculture aligns with the principles of sustainability, with the goal of reducing energy expenditure, labour hours, and water usage on the farm. As with conventional farming, strong resource planning and accounting software is essential for efficient and sustainable agriculture. Open-API integration allows seamless integration of such software, which is necessary for effective management. Given the complexity and diversity of species in permaculture farms, crop-agnostic tools are ideal for season planning. Further insights into crop health can be gained through localized and customizable databases of pests and diseases, which can be used to inform actionable strategies for the farm.[63] [64]

Vegan Farming

Sustainability is a significant consideration for customers and industry leaders alike. Consumers are increasingly aware of the impact of their purchases on the environment. Many are seeking ways to reduce their contributions to environmental problems.
EU farmers will benefit from changing consumer habits towards plant-based foods. However, this will bring challenges. Food and agriculture policies need to adapt to ensure farmers can benefit from these opportunities.
The following benefits can be achieved:
- Multiuse land: A significant portion of the land within the intensive zone serves a multi-use purpose. This land is used to cultivate a variety of crops, including wheat, barley, oats and rice, with sheep and cattle grazing alternately.
- Reducing GHG emissions
- Sequestering CO2 in soil and vegetation
- Providing native habitat for endangered species
- Increasing biodiversity
- Reducing erosion and soil loss
- Reducing salinity
- Improving water quality
- Nitrogen fixation or nutrient mining.

The potential of biochar as a charcoal derived from plant material such as short-rotation woody crops for improving soil fertility and capturing carbon emissions is an area of growing interest.
There is considerable potential for growth and application of alternative approaches to farming and gardening, including vegan agriculture. However, to realise this potential, innovators and managers are needed who can combine the best business principles and ethical responsibility to expand the scope for animal-free agriculture in line with the evolving needs of the global market.
Where land is suitable, this could result in a transition to plant-based production. In certain instances, land may be repurposed for renewable energy production, natural reforestation to capture carbon, commercial forestry or biodiversity benefits.
Support should be extended to farmers and land managers to facilitate change, ensuring that those who work on the land and the rural communities they support are not left behind.[65] [66]

[63] https://digital-strategy.ec.europa.eu/en/policies/future-farming
[64] https://www.agrivi.com/blog/permaculture-principles-and-digital-farm-management/
[65] https://online.eou.edu/resources/article/veganic-farming-importance-of-sustainable-agriculture/
[66] https://veganaustralia.org.au/research-article/impact-of-a-vegan-agricultural-system-on-land-use/#reusingland

Agrivoltaics

The energy transition to sources of clean energy generation also presents a valuable opportunity to mitigate the effects of the climate crisis on agriculture, safeguard biodiversity and create new avenues for the active involvement of local communities and businesses. Agrivoltaics is an innovative approach that enables the simultaneous generation of solar energy and the practice of agriculture, is a particularly promising new frontier for renewable energy.
It encompasses renewable energy sources, sustainable use of land, and protection of biodiversity. By fostering the creation of shared value with the local area and communities within which the plants are located, agrivoltaics is a sustainable solution that can contribute to the growth of a company.
Agrivoltaics installations offer several benefits, including:
- Optimising the use of land, allowing it to be used for both farming and power generation.
- Using a renewable and eco-friendly energy source to reduce the emission of polluting gases derived from the primary sector.
- Minimising the environmental impact of human activity and protecting biodiversity.
- Protecting crops located underneath solar panels by reducing evaporation, maintaining humidity and reducing the water footprint of farming.
According to data from the Fraunhofer Institute, the combined use of land in agrivoltaics can increase efficiency by up to 186%. Furthermore, the latest studies indicate that power generation using photovoltaic panels increases the value of these farms by more than 30%.
Nevertheless, solar panel shading technology offers several benefits for crops requiring cooler and moister conditions. This technology allows growers to protect crops from high temperatures, high solar irradiation and extreme weather in hotter climates.[67] [68]

European Support and Funds for Agriculture

This chapter will address the different types of support available to young farmers. Specifically, it will discuss the various aids for young farmers included in the Common Agricultural Policy and aid for the digitalization of the agricultural sector, concluding with an analysis of other European funds for projects related to environmental sustainability and innovation in agriculture.

Assistance and Resources for Young Farmers

The Common Agricultural Policy is financed through **two funds** that will be explained below: the **European Agricultural Guarantee Fund (EAGF)** and the **European Agricultural Fund for Rural Development (EAFRD)**.

To access these grants, it is necessary to meet the **definition of a farmer** provided by Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021, which establishes rules on support for strategic plans to be drawn up by Member States under the Common Agricultural

[67] https://www.enelgreenpower.com/stories/benefits-agrivoltaics
[68] https://www.repsol.com/en/energy-and-the-future/future-of-the-world/agrivoltaics/index.cshtml

Policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and the European Agricultural Fund for Rural Development (EAFRD), and repeals previous regulations. According to that regulation, a farmer "*means any natural or legal person or any group of natural or legal persons, irrespective of the legal status conferred by national law on that group and its members, whose holding is situated within the territorial scope of the Treaties, as defined in Article 52 of the Treaty on European Union, in relation to Articles 349 and 355 of the Treaty on the Functioning of the European Union (TFEU), and who pursue an agricultural activity*" *and* the **concept of 'young farmer',**with a maximum age limit of between 35 and 40 years (Art.4.6 Regulation 2021/2115).

European Agricultural Guarantee Fund (EAGF)

The European Agricultural Guarantee Fund[69] is one of the financial instruments of the European Common Agricultural Policy. The EAGF supports EU farmers through different payment schemes**, including a basic payment scheme, a payment for the use of sustainable farming methods ('direct green payments') and a payment for young farmers.**

Besides, the European Agricultural Guarantee Fund (EAGF) provides funding for various measures aimed at supporting and stabilizing agricultural markets. These measures include intervention buying, private storage aid, sector-specific supports for products like wine, fruit and vegetables, olive oil, and hops. The EAGF also implements exceptional market disturbance measures and supports the EU school fruit, vegetables, and milk scheme. These market measures are part of the common market organization (CMO), which outlines the guidelines for intervening in agricultural markets. Additionally, the EAGF finances agricultural information and promotion actions, as well as provides support to outermost regions and smaller Aegean islands through the Programme of Options Specifically Relating to Remoteness and Insularity (POSEI).

The most relevant aspects of this CAP tool are basic payments and payments for young farmers. The **basic payment** is an income support scheme for farmers engaged in agricultural activities. There are two different types of schemes, the **Basic Payment Scheme (BPS)** and the **Single Area Payment Scheme (SPS).**

The Basic Payment Scheme involves payment entitlements allocated to farmers. Each eligible hectare entitles you to a payment entitlement (although some countries in the European Union have applied limitations on the number of entitlements that could be allocated). Aid under the basic payment scheme is then granted annually to farmers who have payment entitlements at the time of the 'activation' of those entitlements. This activation is done annually by declaring the eligible hectares and the number of corresponding payment entitlements.

The actual payment is paid to active farmers on the basis of the activation of the payment entitlements they hold and is calculated on the basis of the declared eligible land.

All entitlements assigned to a farmer have the same value, but EU countries may choose to set different values from one farmer to another. In that case, the previous level of payments to each individual farmer (or the value of the entitlements they held under the previous direct payment scheme) is taken into account in order to avoid too drastic a change in their level of support.

However, one of the objectives of the new CAP is to abandon these historical references. In this way, the EU countries adopting this approach have agreed to progressively reduce the differences between the values of rights and bring these values closer to the EU average. This process is often referred to

[69] https://commission.europa.eu/funding-tenders/find-funding/eu-funding-programmes/european-agricultural-guarantee-fund-eagf_en

as 'internal convergence'. With the new CAP, those countries will have to continue to narrow the gap and must ensure that all payments are worth at least 85% by 2026.

The **Single Area Payment Scheme** is used in some countries such as Bulgaria, Czechia, Estonia, Cyprus, Latvia, Lithuania, Hungary, Poland, Romania and Slovakia. It differs from the basic payment scheme in that the support paid is based only on the eligible hectares declared by farmers and the level is the same for all hectares in a country and not on the basis of entitlements generated.

These payment schemes are managed by the States and will therefore depend on each country to process them.

It is notable that every farmer will have access to this extra aid provided by the European Union, and, together with these basic payments, **young farmers can access a complementary income** (Art. 30 Regulation 2021/2115). The **Complementary Income Support for Young Farmers (CISYF)** is regulated in Article 30 of Regulation 2021/2115.

This supplementary income support for young farmers shall be granted for a **maximum period of five years**, starting from the first year in which the aid for young farmers is applied for, and is subject to conditions laid down in the CAP legal framework. Such aid shall be granted either as a decoupled annual payment per eligible hectare or as a lump sum payment per young farmer.

Moreover, within the European Agricultural Guarantee Fund (EAGF), there are the LEADER aids. LEADER is a local development method which has been used for 30 years to engage local actors in the design and delivery of strategies, decision-making and resource allocation for the development of their rural areas.

It is implemented by around 2 800 Local Action Groups (LAGs), covering 61 % of the rural population in the EU and bringing together public, private and civil-society stakeholders in a particular area (situation as of end 2018 - EU-28). In the rural development context, LEADER is implemented under the national and regional Rural Development Programmes (RDPs) of each EU Member State, co-financed from the European Agricultural Fund for Rural Development (EAFRD)

These subsidies cover up to 50% of the project's investment cost. They can provide up to half of the necessary funds to open your business, provided it is developed in a rural environment.

In Europe, more than 90% of the territory is rural areas, yet only 56% of the population lives there. These grants aim to revitalize agricultural areas and attract new sustainable businesses to these areas, valuing each region's resources and promoting sustainable local development through the creation of small and micro-rural enterprises (with fewer than 50 or 10 workers, respectively).

European Agricultural Fund for Rural Development (EAFRD)

The European Agricultural Fund for Rural Development (EAFRD) developed in Regulation (EU) No 1305/2013[70] of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) is a funding instrument within the EU's Common Agricultural Policy (CAP) that aims to enhance the sustainability of rural areas while complementing income supports and market measures. The budget for the EAFRD from 2021 to 2027 is EUR 95.5 billion, with an additional EUR 8.1 billion allocated from the next generation EU recovery instrument to address challenges posed by COVID-19. Since 2023, rural development actions are incorporated into national CAP Strategic Plans designed by each EU member state. These plans outline how CAP funding will be used across various agricultural areas. The reformed CAP prioritizes environmental sustainability, and the EAFRD is expected to play a significant role in supporting this goal.

[70] https://eur-lex.europa.eu/legal-content/ES/TXT/?uri=celex%3A32013R1305

The EAFRD serves as a source of financial instruments such as loans, microcredit, guarantees, and equities. These instruments are available to recipients in agriculture, forestry, and rural areas undertaking financially viable projects aligned with the EAFRD's priorities. They are expected to support the agriculture and agri-food sectors in achieving the goals of the European Green Deal, new Biodiversity and Farm to Fork strategies, and the long-term vision for rural areas. Additionally, financial instruments can aid rural non-agricultural small and medium-sized enterprises (SMEs) in starting or expanding their activities.

Therefore, a means of financing is available that can enable young farmers to develop various projects, as Regulation 1305/2013 incorporates additional advantages. Thus, the financed projects promoted by this group will benefit from greater funding (art.7.3 Regulation 1305/2013), such as intangible **or intangible investments** that improve the overall performance and **sustainability** of the agricultural holding or in the transformation, marketing or development of agricultural products (art.17.1 Regulation 1305/2013) and **support for young farmers setting up on a farm for the first time** as farm owners (Art.17.5 Regulation). **This funding in the form of a grant may cover 60% to 90% of the project – as opposed to 40% for older farmers not covered by this Regulation – for tangible and intangible investments and up to €70,000 for farm and business development and for young farmers who want to start or start their agricultural operation (Annex II of the Regulation).**

Loan for Young Farmers by the European Investment Bank

The European Commission and the European Investment Bank (EIB) have launched a €1 billion loans package aimed at supporting young farmers in the European Union (EU). The package seeks to address the issue of limited access to funding faced by young farmers, as 27% of loan applications submitted by EU young farmers were rejected in 2017, compared to only 9% for other farms.

The aim is to increase the availability of finance for EU farmers, particularly young farmers. The goal is to support the younger generation in entering and sustaining careers in the agricultural sector, as 11% of European farmers are under the age of 40.[71]

[72]

The program addresses several challenges currently faced by farmers, including lower interest rates, longer repayment periods of up to 5 years, extended loan repayment periods of up to 15 years, and increased flexibility to accommodate price volatility in the agricultural sector. This flexibility may include allowing farmers a grace period during difficult periods, where they do not have to make loan repayments for a few months.

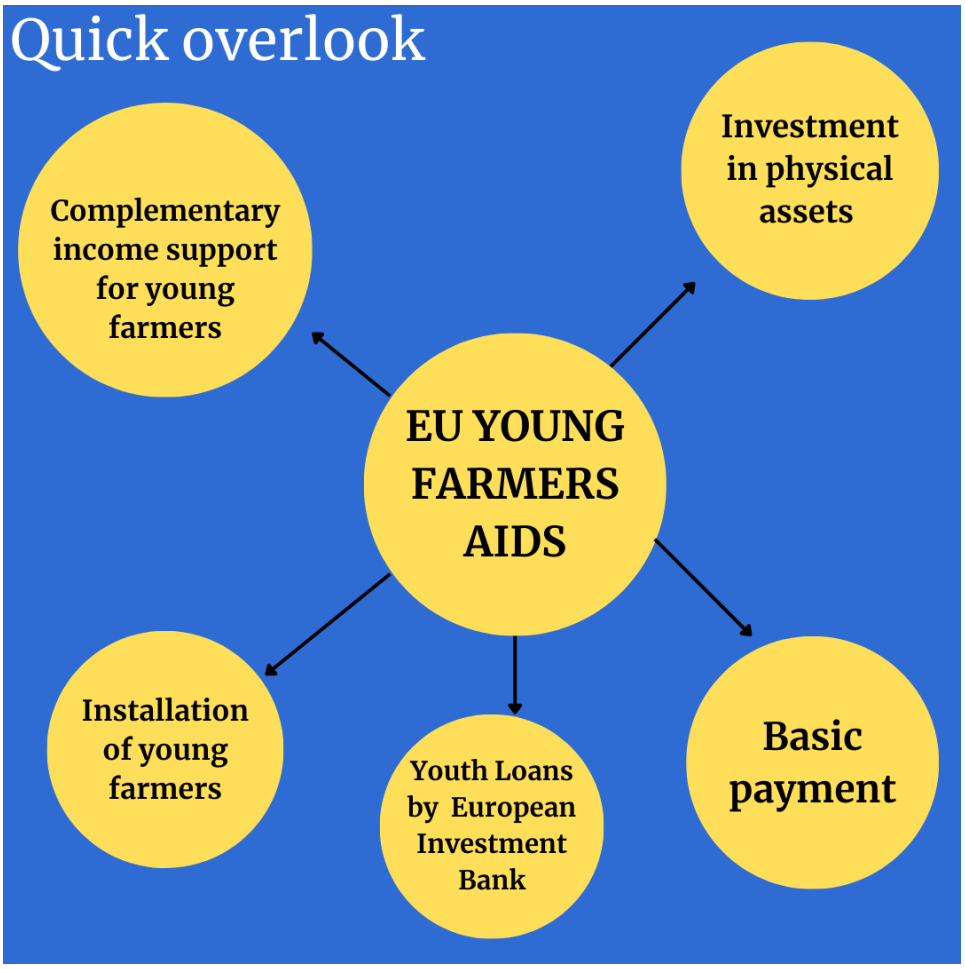
Eliminado: [73]

[71] https://ec.europa.eu/commission/presscorner/detail/en/IP_19_2294
[72] https://ec.europa.eu/commission/presscorner/detail/en/IP_19_2294

[74]

The infographic below provides a brief summary of the aid available to young farmers. There is certainly considerable institutional support from the Union for young farmers. Undoubtedly, young farmers have an extraordinary opportunity to develop their farms or enter the sector, thanks to all the economic support offered by the Union and its various mechanisms.[75]

[74] https://www.eib.org/en/infographics/how-we-can-help-young-farmers
[75] https://op.europa.eu/webpub/eca/special-reports/young-farmers-10-2017/es/



76

[76] Visual summary of the support available to the young aggregator. Own elaboration

European Funds for Agriculture

In this section, the focus will be on developing the aforementioned funds and means available to the EU to advance the digitalization of the agricultural sector. Thus, Horizon Europe, LIFE, INTERREG, Erasmus+, and the European Digital Programme will be addressed.

Horizon Europe

Horizon Europe is the Research and Innovation Framework Program of the European Union (EU) with **a budget of 95.517 billion euros** for the period 2021-2027. It focuses on areas of particular urgency and need at the EU level (European dimension) where individual actions by Member States are insufficient or less effective than transnational collaboration (European added value).[77]

Horizon Europe is a funding program that supports projects, typically in transnational collaboration, across all stages of the research-to-market process. It covers activities such as research, technological development, demonstration, and innovation, including social and non-technological innovation. Additionally, Horizon Europe implements new financing instruments like prizes, innovative public procurement actions, and capital and debt financial instruments to maximize the successful market outcomes of project results.

In general, a Horizon Europe project should:

- Provide European added value by addressing existing needs within the European Union.
- Focus exclusively on civil applications rather than military ones.
- Generally, be carried out in a transnational consortium involving at least three independent entities from three Member States or Associated Countries, with at least one from the EU. However, there are certain types of projects where individual participation is allowed. Typically, consortia have a higher number of partners depending on the project type and scope.
- Align with the specific research and innovation priorities outlined in the Work Programs and corresponding calls, which often include budget and duration recommendations (usually between 1 and 5 years).
- Adhere to ethical, safety, and environmental principles as defined by national, EU, and international legislation.

Horizon Europe aims to foster research and innovation activities that contribute to the advancement of Europe, encourage collaboration, and promote the successful transfer of project outcomes to the market.

The budget of Horizonte Europa is mostly allocated through competitive calls, meaning that not all proposed projects receive funding. The program is structured around three pillars, a cross-cutting dimension: **Excellent Science, Global Challenges and European Industrial Competitiveness and Innovative Europe.**

The **pillars that come closest** to the field of agriculture are the Global Challenges and European Industrial Competitiveness and Innovative Europe pillar.

Global Challenges and European Industrial Competitiveness has as its main objective the financing of research and the generation of new knowledge and technology to address societal challenges. In addition, it seeks to strengthen the technological capacities of European industry, especially small

[77] https://www.horizonteeuropa.es/sites/default/files/noticias/GUIA%20RAPIDA.pdf

and medium-sized enterprises (SMEs), in order to increase their competitiveness. This pillar also sets missions with ambitious targets that focus on major global challenges that have a significant impact on citizens, such as health, climate change, renewable energy, mobility, security, digital, and materials, among others.

This pillar, with €53,516 million, dedicates a total of €8,952 million to the subsection "Food, bioeconomy, natural resources, agriculture and the environment".[78]

The second pillar, **Innovative Europe,** seeks to make Europe a leading power in creating innovative markets and growing innovative small and medium-sized enterprises (SMEs) through the European Innovation Council (EIC). The EIC provides support to outstanding innovators, entrepreneurs, SMEs and scientists who have ambitions to grow internationally. In addition, the **European Institute of Innovation and Technology (EIT)** continues to promote the integration of research, higher education and entrepreneurship through Knowledge and Innovation Communities (KICs), thereby fostering collaboration and advancement in the field of innovation. It has a budget of €13,597 million.

The EIC is a pivotal European agency that has as one of its fields of action to create and grow agri-food startups to deliver new food innovations and businesses and to build a connected consumer-centric food system by developing a digital food supply network with consumers and industry as equal partners.[79]

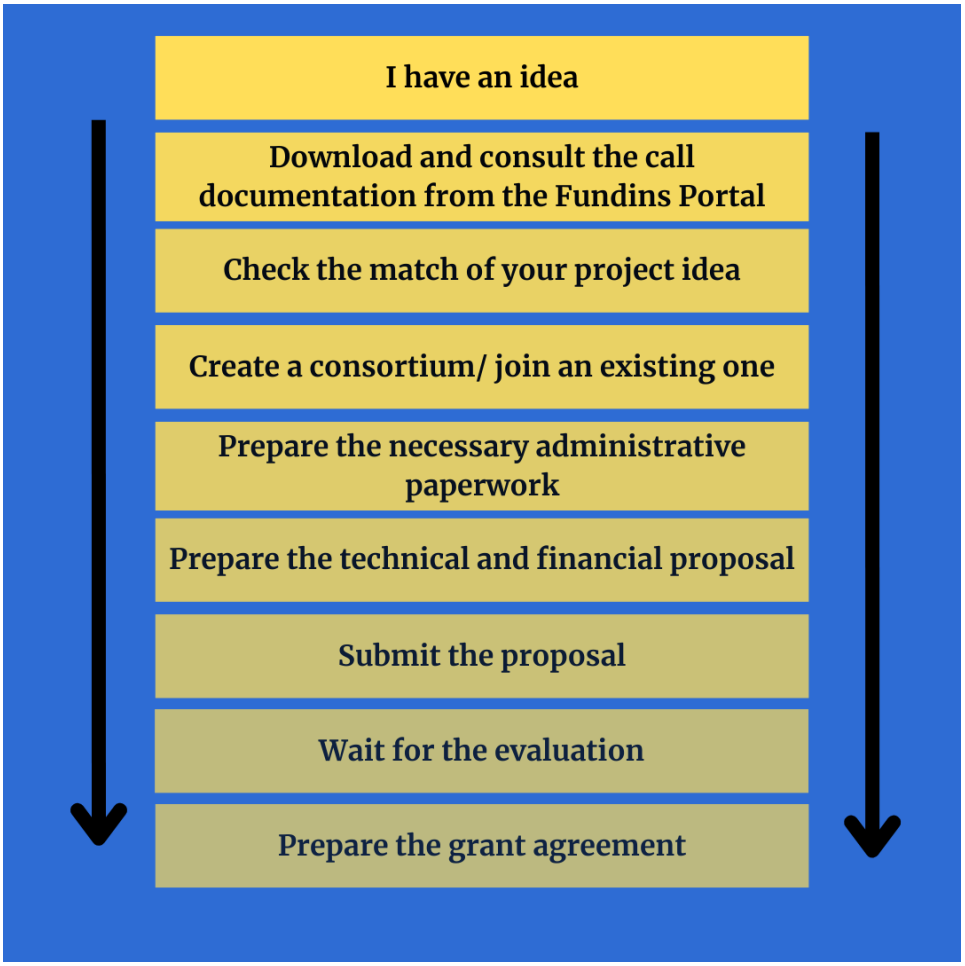
Regarding their submission, they must be submitted in response to the calls for proposals issued by the European Commission (EC) during the period 2021-2027. These calls are made through the EU Funding & Tenders Portal, which serves as a single point of entry for all interested participants.

Calls for proposals usually have specific opening and closing dates, as well as deadlines for submitting applications that are usually several months, usually around 3 months, but can vary. In some cases, calls may be open permanently and have multiple cut-off dates, in which all proposals submitted between one cut-off date, and another are evaluated.

The Work Programmes corresponding to each area of action of Horizon Europe contain and describe the specific lines and themes of their calls, to which the projects to be submitted must conform.

In addition to the calls managed by the EC or its Executive Agencies, there are other initiatives that receive funding from Horizon Europe and are managed independently through European Partnerships, which launch their own calls for proposals.

[78] https://www.horizonteeuropa.es/sites/default/files/noticias/GUIA%20RAPIDA.pdf
[79] https://eit.europa.eu/our-communities/eit-food



[80]

An **example developed** with this fund could be the Agridatavalue project.[81] It combines state-of-the-art big data and data-space technologies (BDVA/IDSA/GAIA-X) with agricultural know-how, new business models and agri-environmental policies.

[80] Steps to follow to submit a European Project. Own elaboration.
[81] https://agridatavalue.eu/

AgriDataValue considers a multi-level architecture, exploiting the key properties of data sovereignty, locality and traceability to offer a secure and reliable platform that is based on federation and decentralized processing. AgriDataValue will develop a federated, efficient, massively distributed, open-source, privacy-preserving AI-based platform to capture and manage agri-environmental data from a variety of heterogeneous data sources, enabling secure and trusted interoperability and GDPR-compliant data exchange between end users, industries and organizations.

LIFE

The LIFE Programme[82] is a European Union initiative aimed at promoting environmental protection and climate action. This programme, which spans the period from 2021 to 2027, plays a crucial role in the implementation of the European Green Deal, whose objective is to transform the EU into a fair and prosperous society with a modern, resource-efficient, and competitive economy. Additionally, it aims for zero net greenhouse gas emissions by 2050 and to decouple economic growth from resource use. LIFE also aims to protect, conserve, and improve the EU's natural capital and safeguard the health and well-being of citizens from environmental and climate-related risks and impacts.

The LIFE Programme is structured into two main areas, each with two specific sub-programs. The Environment area includes the “Nature and Biodiversity” sub-programme, designed to stop and reverse the loss of habitats and wildlife species, supporting projects that improve and protect biodiversity across all sectors. It also includes the “Circular Economy and Quality of Life” sub-programme, which fosters the transition to a circular economy and focuses on improving the quality of the EU’s natural resources, such as air, soil, and water.

On the other hand, the Climate Action area includes the “Climate Change Mitigation and Adaptation’ sub-programme, which supports the implementation of the 2030 energy and climate policy framework and the EU’s climate neutrality objective for 2050. This sub-programme also promotes the new EU strategy on climate change adaptation. Finally, the “Clean Energy Transition” sub-programme facilitates capacity building, stimulates investments, and supports the implementation of policies focused on energy efficiency and small-scale renewable energies.

The programme can have a significant impact on agriculture by promoting sustainable agricultural practices and integrating digital technologies. The modernization of agriculture through digitalization can be supported by LIFE through circular economy project, helping farmers adopt sustainable practices that reduce waste and improve resource efficiency. Furthermore, LIFE can encourage the use of advances technologies to optimize water and nutrient use, reduce greenhouse gas emissions, and enhance biodiversity. Additionally, the Clean Energy Transition sub-programme can promote the use of renewable energy in agricultural operations and support innovation in business models and services related to energy.

The LIFE Programme has a total financial allocation of 5.432 billion euros for the period 2021-2027. At least 85% of this budget will be mainly allocated to project grants. The budget breakdown of the sub-programmes is as follows: the Environment area is allocated 3.488 billion euros, of which 2.143 billion euros are for the "Nature and Biodiversity" sub-programme and 1.345 billion euros for the "Circular Economy and Quality of Life" sub-programme. The Climate Action area has a budget of 1.944 billion euros, with 947 million euros allocated to the "Climate Change Mitigation and Adaptation" sub-programme and 997 million euros for the "Clean Energy Transition" sub-programme.

[82] https://cinea.ec.europa.eu/programmes/life_en

The system for calculating the maximum funding of EU grants operates based on the allowable expenses for each recipient. Thus, the theoretical maximum funding is determined based on these parameters. It is important to note that the actual grant amount may be lower than requested, especially if the recipient has other sources of funding, such as co-financing organizations or project income.

Anticipating various types of payments and expenses provided within grant programs, initial funding comprises approximately 30% of the total amount. However, for most actions, additional initial funding is required, and the final payment is made upon project completion. Some actions may require upfront payments, while for others, such as the Temporary Agent Partnership Programme (TAPP), only the final payment is provided.

Allowable expenses include costs incurred throughout the project duration, excluding final reporting or audit opinions. These expenses must be related to project activities, not excessive, clearly identifiable, and verifiable. Types of expenses cover various categories such as personal expenses, subcontracting, expenses for purchasing goods and services. Personal expenses, for example, include wages, social security contributions, and other expenses directly related to project implementation. Subcontracting must comply with general eligibility conditions and ensure the best value for money.

Expenditures for organizing events are discussed considering various types of expenses, such as subcontracting, purchasing goods and services, as well as land acquisition. Some expenses may be classified as "direct" or "indirect" depending on their nature and purpose.

Regarding volunteer expenses, it is noted that they may be considered as "direct" or "indirect" expenses and must be specified in the corresponding annex to the grant agreement. Inadmissible expenses include, for example, VAT expenses if they are not deductible or refundable. Double financing and financing of expenses for national administration staff are also prohibited if they are already funded as part of regular administrative activities.[83]

A prime example supported by the LIFE fund is the LIFE TRIPLET project[84]. This project focuses on the digitalization of efficient fertigation management to foster sustainable agriculture. It combines advanced digital tools to monitor and manage the application of water and nutrients, thereby enhancing resource use efficiency and reducing environmental impacts. By leveraging real-time data and predictive analytics, LIFE TRIPLET aims to optimize agricultural practices, promote sustainability, and support the resilience of farming systems. This initiative collaborates with various stakeholders to ensure widespread adoption and long-term benefits for both the environment and agricultural communities.

Interreg

Interreg is a key European Union (EU) instruments that strengthens cooperation between regions and countries within the EU. As part of the EU's Cohesion Policy85, Interreg plays a vital role in promoting regional development, cohesion, and reducing economic disparities. For the 2021-2027 period, Interreg is focused on addressing current challenges like climate change, digital transformation, and social inclusion.

[83] https://youtu.be/DmN6T02Qy58

[84] LIFE 3.0 - LIFE22-CCA-ES-LIFE-TRIPLET/101113915 (europa.eu)

[85] https://ec.europa.eu/regional_policy/policy/cooperation/european-territorial_en

As mentioned, the Cohesion Policy is the reason why Interreg exists. It is a crucial initiative of the European Union, funding a vast array of projects across Europe through the European Regional Development Fund, the European Social Fund, and the Cohesion Fund. The Cohesion Policy also finances numerous Interreg cooperation projects aimed at addressing specific challenges throughout the EU.

For the 2021-2027 period, the priorities of the EU Cohesion Policy include:

- Fostering Smart Growth: Promoting innovation, digitalization, and the competitiveness of businesses and industries.
- Advancing the Green Transition: Facilitating the shift to a sustainable, low-carbon economy and enhancing environmental protection.
- Promoting Social Inclusion: Improving access to quality employment, education, and training opportunities, as well as strengthening social cohesion.
- Enhancing Territorial Development: Boosting regional development, urban-rural linkages, and cross-border cooperation.
- Developing Efficient and Sustainable Infrastructure: Investing in transport, energy and digital infrastructure to improve connectivity and sustainability.

Interreg[86], as a cooperation strategy between regions, has several levels of cooperation depending on the territory covered by them. Thus, up to 4 levels of cooperation can be distinguished throughout the European Union and beyond.

– Interreg A: Cross border, Turning Border Obstacles into Opportunities. Within this level there are up to 49 cross-border cooperation programmes, in addition to 10 IPA programmes (cooperation with EU candidate countries) and 5 NEXT programmes (cooperation with neighbouring countries and regions).

– Interreg B: Transnational Cooperation, larger scale initiatives. It promotes a better cooperation among EU countries to address common challenges.

– Interreg C: Interregional Cooperation. It extends cooperation to all EU members and beyond.

– Interreg D: Outermost Regions.

In this way, the different Interreg programs respond to 5 political objectives of the European Regional Development Fund[87], in addition to two specific Interreg objectives, which are:

1. a more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity;
2. a greener, low-carbon transitioning towards a net zero carbon economy and resilient Europe by promoting clean and fair energy transition, green and blue investment, the circular economy, climate change mitigation and adaptation, risk prevention and management, and sustainable urban mobility;
3. a more connected Europe by enhancing mobility;

[86] https://interreg.eu/
[87] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R1060

4. a more social and inclusive Europe implementing the European Pillar of Social Rights;
5. a Europe closer to citizens by fostering the sustainable and integrated development of all types of territories and local initiatives.
6. O.E Interreg 1: A better cooperation governance
7. O.E Interreg 2: A safer and more secure Europe.

Therefore, the different Interreg programmes found throughout the EU offer a wide range of opportunities to encourage the development of strategies and proposals related to the competitiveness of the agricultural sector and to improve its attractiveness for young people. This will be effective as long as the proposals are adapted to the specific objectives and territorial needs of each programme.

According to the REGULATION (EU) 2021/105988 the funding of each programme will vary according to the basis of the programme, with a maximum of 80% co-financing by the European Regional Development Fund.

The Fit For the Needs – Raise Opportunities for Underdeveloped Areas89 is a great example of an Interreg project. The project aims to enhance the employability of rural populations, particularly women and youth, through innovative agricultural practices and sustainable resources use.

The project conducted resource and potential analyses in several Serbian and North-Macedonian municipalities, engaging in consultations with local stakeholders, and defining financial and non-financial support measures. The project provided capacity-building activities and training programs to enhance local knowledge and skills, aiming to improve local policy planning and economic activities.

Erasmus+

Erasmus+ is the European programme that supports education, training, youth and sport. Through its different Key Actions and typologies of proposals, Erasmus+ offers cooperation opportunities in the fields of higher education, vocational education and training, school education (including early childhood education), adult education, youth and sport. The programme has a total budget of €26.2 billion for the period 2021-2027.

Thus, the programme is structured in 3 key actions and Jean Monnet Actions, as follows:

Key Action 1: Mobility of people. Within this key action you can find proposals aimed at:

- o Mobility of trainees and staff:
- o Youth participation activities
- o Mobility of staff in the field of sport
- o Providing the opportunity to travel in Europe (DiscoverEU).
- o Virtual exchanges in the field of higher education and youth.

[88] https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:32021R1059

[89] Fit For the Needs –Raise opportunities for underdeveloped areas - Cross-border Institution Building (cbibplus.eu)

Key Action 2: Cooperation between organisations and institutions. This is divided into three project modalities:

o Partnerships for Cooperation. These can also be small-scale.

o Partnerships for Excellence. These partnerships include

- European Universities Initiative
- Centres of Professional Excellence
- Erasmus+ Teacher Academies
- Erasmus Mundus Action

- Innovation Partnerships. They are divided into
  - Innovation Partnerships
  - Forward-looking projects.

- Finally, Key Action 2 presents a branch of capacity building projects, covering all fields targeted by the programme.
  - Key Action 3: Supporting policy development and cooperation. This Action supports policy cooperation at European Union level, contributing both to the implementation of existing policies and to the development of new ones that promote modernisationand reform in education, training, youth and sport systems across the European Union.
  - Jean Monnet Actions: Jean Monnet Actions provide opportunities in higher education and other education and training sectors. They also contribute to the dissemination of knowledge about the integration of the European Union.

The Erasmus+ programme, in addition, follows four horizontal priorities across all key actions and typologies of proposals and projects, which are:

- Inclusion and diversity
- Digital transformation
- Environment and the fight against climate change
- Participation in democratic life, common values and civic engagement

In this way, the Erasmus+ Programme enables support to agriculture and youth in many ways, opening up a very wide range of proposals aimed at improving competitiveness and digitisation in the sector. These proposals can be approached from multiple points, as long as they are aimed at training and education, be it for young people, professionals or adults. Likewise, all proposals aimed at supporting the agricultural sector must always take into account and follow at least one of the horizontal priorities of the programme. In this sense, the general lines followed by actions in favour of youth agriculture could easily follow these priorities. The Erasmus+ programme can therefore support the promotion of inclusion and diversity by attracting people from different backgrounds and perspectives, enriching the sector with new ideas and approaches, as well as boosting digital transformation by encouraging the use of advanced technologies and innovative solutions, improving agricultural efficiency and productivity. Equally, the contribution to the environment and the fight

against climate change can be achieved by promoting more sustainable agricultural practices, preparing future generations to face the environmental challenges of the future. Therefore, the Erasmus+ programme presents itself as an opportunity for the agricultural sector to attract youth by different methods, ensuring generational regeneration in the agricultural sector and its sustainability over time. [90]

An example of how the Erasmus+ programme supports the agricultural sector and its promotion among youth is the present project Smart and Digital Agriculture -2021-1-TR01-KA220-VET-000028123-, funded by the programme and framed in Key Action 2, as a partnership for cooperation.

Digital Europe Programme

This programme strategically funds 5 key areas of activity: supercomputing, artificial intelligence, cybersecurity, advanced digital skills and ensuring the wide use of digital technologies across the economy and society, including through digital innovation hubs.

The digitalisation of the industry will be implemented through digital innovation hubs, which will disseminate digital skills and provide access to technological know-how and experimentation facilities, enabling organisations to better assess the business model of digital transformation projects.

It aims to accelerate economic recovery and boost the digital transformation of EU society and economy, especially by supporting SMEs. To achieve all this, it will rely on funding from other European programmes such as the Structural Funds.

Dentro de este amplio programa, hay convocatorias dirigidas a digitalizar la agricultura, en las que se busca el apoyo a un sector agrícola más inteligente, más competitivo y atractivo para la juventud. Un ejemplo de ello es la convocatoria DIGITAL-2024-CLOUD-DATA-AI-06-AGRISPACE, destinada a desarrollar un espacio de datos seguro y de confianza que permita al sector agrario compartir y acceder a los datos de forma transparente, permitiendo aumentar su rendimiento económico y medioambiental.[91]

[90] https://erasmus-plus.ec.europa.eu/programme-guide/erasmus-programme-guide/introduction
[91] https://digital-strategy.ec.europa.eu/en/activities/get-funding-digital