Pursuant to Article 6 of the Law on Agriculture and Rural Development ("Official Gazette of the Republic of Macedonia" No. 49/10, 53/11, 126/12, 15/13, 69/13, 106/13, 177/14, 25/15, 73/15, 83/15, 154/15, 11/16, 53/16, 120/16, 163/16, 74/17, 83/18, 27/19, 27/19 and "Official Gazette of the Republic of North Macedonia No. 152/19, 244/19 and 275/19), the Government of the Republic of North Macedonia at its session held on __ December 2020, adopted

REPUBLIC OF NORTH MACEDONIA
Ministry of Agriculture,
forestry and water management

# NATIONAL STRATEGY

# ON AGRICULTURE AND RURAL DEVELOPMENT

# FOR THE PERIOD 2021-2027

**December 2020**

**CONTENT**

## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| NEA | Agency for Promotion of Agricultural Development |
| FVA | Food and Veterinary Agency |
| AFSARD | Agency for Financial Support in Agriculture and Rural Development |
| GDP | Gross domestic product |
| AWU | Annual work units |
| GAEC | Good agricultural and environmental conditions |
| VAT | Value Added Tax |
| SSO | State Statistical Office |
| URAH | Unique register of agricultural holdings |
| EU | European Union |
| LRM | Legal requirements for management (part of cross-compliance) |
| AMIS | Agricultural Market Information System |
| CAP | Common Agricultural Policy (EU) |
| IACS | Integrated Administration and Control System (IACS) |
| IPA | EU Instrument for Pre-Accession Assistance |
| IPARD | The Instrument for Pre-Accession Assistance for Rural Development |
| ICT | Information and communication technology |
| COVID-19 | Corona virus disease from 2019 (short for Corona, VIrus, Disease) |
| FADN | Farm Accounting Data Network, from FADN acronym for Farm Accountancy Data Network |
| FAO | Food and Agriculture Organization of the United Nations |
| ha | hectares (10,000 square meters) |
| kg | kilogram |
| m2 | square meters |
| MAFWE | Ministry of Agriculture, Forestry and Water Economy |
| NSARD 2021-2027 | National Strategy for Agriculture and Rural Development for the period 2021-2027 |
| NVA | Net value added |
| RN Macedonia | Republic of North Macedonia (or abbreviation MKD) |
| SEUROP | European slaughterhouse carcass classification system |
| SWOT | Analysis of strengths, weaknesses, opportunities and threats |
| LPIS | Land Parcel Identification System (LPIS in English) |
| AKIS | Agricultural Knowledge and Innovation System |
| Off. Gazette of the Republic of Macedonia or RNM | Official Gazette of the Republic of Macedonia or the Republic of North Macedonia |
| t | ton |
| HS | Hydro system |
| CEFTA 2006 | Free Trade Agreement for Central European countries |

## INTRODUCTION

The National Strategy for Agriculture and Rural Development for the period 2021-2027 is the main long-term strategic document on which is based the setting and implementation of goals, policies and measures for the development of agriculture and rural areas in the Republic of North Macedonia (hereinafter R.N. Macedonia or abbreviated MKD) for the period from 2021 to 2027. The strategy is adopted in accordance with Article 6 of the Law on Agriculture and Rural Development for long-term planning of the national agricultural policy in order to achieve the legally defined sectoral development goals.

The new strategy reflects the continuity of the state interest in agriculture due to its multidimensional importance and especially for ensuring the sustainability of rural areas. The confirmation is the positive upward trend of support allocations that continues in the period after 2020, despite the negative impact caused by the global coronavirus pandemic crisis (hereinafter COVID-19).

The Strategy is the third document in a row that defines the policies that will be implemented in the next seven years in an organized and systematic approach, offering answers in dealing with current and future challenges. The participants in the sector are in the process of restructuring towards achieving greater market sustainability which takes place under intensified competitive pressure on domestic and regional markets and a fall in market prices with the impact of revenues. Agriculture is one of the most sensitive sectors to the adverse effects of climate change, and crises caused by new animal and plant diseases are becoming more frequent. Rural areas have reduced comparative attractiveness compared to cities, especially for the young working age population that migrates. Additionally, at the beginning of the new strategic period, the sector as well as the entire economy will still feel the prolonged effects of COVID-19.Hence, improving the competitiveness and income sustainability of agricultural holdings, applying environmental practices in production that lead to mitigating and adapting to climate change, and ensuring sustainable rural development are the general goals to be pursued. state-assisted sector.

These three strategic goals and the nine more detailed specific goals will be achieved through the measures and instruments of the national agricultural policy, which according to Article 3 of the Law on Agriculture and Rural Development are: direct payments, regulation and support of agricultural markets and rural development. Additionally, the goals will be realized through the policies for sustainable management of natural resources, food safety, as well as the policies for advancing knowledge and innovation in agriculture.

The preparation of the strategy was based on a broad institutional, analytical and participatory process, harmonized with the latest European Commission regulations governing the relevant area of agricultural and rural policy for the period 2021-2027, primarily the draft regulation of the European Parliament and the Council (2018) 392 final - 2018/0216 (COD)[1] which adopts the rules for preparation of the Strategic Plans of the Member States for the next period, as well as of the other sectoral policies that are part of the Common Agricultural Policy (hereinafter

[1] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL 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 Regulation (EU) No 1305/2013 of the European Parliament and of the Council and Regulation (EU) No 1307/2013 of the European Parliament and of the Council

CAP) of the European Union (hereinafter EU). The process was conducted in several phases and included the following activities:

- Analysis of the implementation of the national strategy and trends in the past strategic period 2014-2020, analysis of the current situation and analysis of strengths and weaknesses, opportunities and threats (hereinafter SWOT analysis),
- Identifying needs and assessing priorities based on findings from analyzes and stakeholder consultations and
- Selection of appropriate policy interventions to address identified needs.

The Ministry of Agriculture, Forestry and Water Economy (hereinafter MAFWE) conducted a number of direct consultations with the participants in the sector, primarily organized within the permanent sub-sectoral groups and other formal bodies, with competent state administration bodies, international institutions and other relevant stakeholders, which in the recent period, due to the crisis with COVID-19, were implemented through virtual meeting platforms. In the process of consultations with the stakeholders in the sector, over 357 persons were directly involved in over 30 meetings and additional electronic correspondence was realized. The overview of the conducted consultations with the stakeholders as part of the preparation of the NSARD 2021-2027 is given in Annex 2. Finally, from December 14-23, the final draft of the strategy was publicly shared on the MAFWE website in order to enable discussions and comments by all interested stakeholders. Most of the proposals in the consultation process are properly embedded in the proposed policy solutions of the strategy.

The preparation of the strategy involved the relevant Macedonian expert public, primarily from the Faculty of Agricultural Sciences and Food in Skopje, supported by the Ministry and the Permanent Working Group for Regional and Rural Development in Southeast Europe.[2], an international expert provided by the EU Delegation in Skopje and expertise from the Food and Agriculture Organization of the United Nations (hereinafter FAO) and the United Nations Body for Gender Equality and the Empowerment of Women (UN Women).

The National Strategy for Agriculture and Rural Development for the period 2021-2027 is harmonized with the other strategic and planning documents in the fields of agriculture, food safety and forestry. The last two areas are regulated in more detail by separate strategic documents, while the national strategy ensures mutual harmonization of goals, policies and measures.

According to the law, the implementation of the National Strategy for Agriculture and Rural Development is realized through the five-year National Program for Agricultural Development and Rural Development, the Program for pre-accession funds from the fifth component for agriculture and rural development (hereinafter IPARD) and annual financial support programs in agriculture and for financial support of rural development which will be prepared in the period of implementation of the document.

For the first time, the monitoring and evaluation of the strategy will be the subject of a comprehensive system that includes a set of indicators and targets, monitoring and reporting procedures and evaluation of achievements.

[2] (SWG), assisted by the German Society for International Cooperation (GIZ)

During the preparation of the strategy, data and indicators were mainly used, which are based on the official statistics of the State Statistical Office (hereinafter SSO), as well as data from the registers of the MAFWE and other state bodies.

The applied exchange rate of the Denar against the Euro is 1 € = 61.5 denars.

## SECTION I. CONDITION AND IDENTIFIED NEEDS IN AGRICULTURE AND RURAL ENVIRONMENTS

Part I of the strategy presents the situation and identified needs in the agricultural sector (at the general and sub-sectoral level), in the rural areas of the country and in the management of natural resources related to agriculture and forestry.

The review of the situation is organized in order to provide insight into the competitiveness of the agricultural sector and the economic sustainability of agricultural holdings, the application of environmental practices in production, the impact and adaptation to climate change and the level of sustainable development of rural areas. For these three main areas, a SWOT analysis was conducted, which is presented in Annex 1 to the strategy, and an analysis of the situation was made.

The text also analyzes the impact assessment of the implemented interventions on the national agricultural policy in the past strategic period 2014-2020.

Conducted analyzes and consultations with stakeholders in the sectors helped to identify the needs shifted in this area.

### I.1 Economic performance of the agricultural sector, situation in rural areas and sustainability of agricultural income

#### The agricultural sector in macroeconomic terms

In the past strategic period, agriculture, together with hunting, forestry and fishing has achieved a total increase in gross value added of 4.5%. The sector has a continuous annual increase in the value of 871.4 million euros in 2014 to 910.9 million in 2019, except in 2017 due to the impact of weather conditions. On the other hand, the relative share of the agricultural sector in the gross value added decreased from 10.2% to 8.1% due to the higher value added realized in the other more propulsive economic activities. Together with the processing industry (including beverages and tobacco), the share in the Gross Domestic Product (hereinafter GDP) reaches 12%, ie it is on the third place after the industry and services.

From a regional point of view[3], The Southeast and Pelagonija planning region stand out as regions with the most significant share in the creation of gross value added in agricultural production, 29% and 21%, respectively. The other planning regions have a more modest share

[3] in accordance with the Strategy for balanced development 2020-2023.

in the creation of the gross value added in the agricultural production of the country, of which the Northeast region has the smallest share of only 4% in the creation of the gross value added.

Table No. 1 Main indicators for agriculture and rural areas for the period 2014-2019

| Indicator | | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|
| **Gross Domestic Product (GDP) at current prices** | million denars | 527,631 | 558,954 | 594,795 | 618,106 | 660,878 | 689,425 |
| | millions euros | 8,562 | 9,072 | 9,657 | 10,038 | 10,744 | 11,209 |
| **Gross Value Added (BDV) of agriculture at current prices** | million | 871.4 | 882.5 | 885.8 | 790.3 | 901.9 | 902.1 |
| | GDP share,% | 10.2 | 9.7 | 9.1 | 7.9 | 8.5 | 8.0 |
| **BDV of processing industry, millions of euros** | | 243.8 | 241.9 | 274.8 | 286.1 | 313.7 | |
| **GDP of agriculture and processing industry in GDP** | | 13.0 | 12.3 | 11.9 | 10.7 | 11.4 | |
| **Value of agricultural production at current prices in millions of denars** | | 78,707 | 80,254 | 79,881 | 71.162 | | |
| **Employees** | total in MKD | 762,506 | 776,746 | 788,919 | 812,321 | 813.291 | |
| | in Agriculture, Forestry and Fisheries (FDA) * | 183,239 | 182,843 | 179,135 | 178,249 | 177.780 | |
| | participation of FDA in total number% | 24.0% | 23.5% | 22.7% | 21.9% | 21.9% | |
| **Trade in agri-food products, millions of euros** | export | 486.2 | 486.7 | 530.52 | 536.2 | 545.5 | 624.5 |
| | import | 649.0 | 700.6 | 718.0 | 759.8 | 792.1 | 837.1 |
| | trade balance | -162.8 | -231.9 | 187.5 | -223.6 | -246.6 | -212.6 |
| **Annual working units (AWU), in thousands** | total number | 146 | 153 | 150 | 138 | 151 | |
| | unpaid | 62 | 63 | 61 | 47 | 60 | |
| | paid | 84 | 90 | 89 | 91 | 92 | |
| **Average annual gross salary in denars** | at MKD level | 31,325 | 32,171 | 32,821 | 33,687 | 35,626 | 37.263 |
| | in agriculture | 22,917 | 22,976 | 24,514 | 25,545 | 27,782 | 29,351 |
| | agriculture in MKD salary% | 73.2% | 71.4% | 74.7% | 75.8% | 78.0% | 78.8% |
| **Net value added at current prices (NVANVA), millions of denars** | | 46,699 | 47,620 | 47,032 | 40,817 | 48,576 | |
| **Agricultural workforce in annual work units (AWU)** | | 145,891 | 152,856 | 149,954 | 137,844 | 151,472 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **NVANVA / AWU, per day / AWU** | | 320,095 | 311,535 | 313,643 | 296,114 | 320,692 | |
| **Total arable area, 000 ha** | | 1,263 | 1,264 | 1,267 | 1,266 | 1,264 | 1.265 |
| **NVANVA / ha, per day / ha** | | 36,970 | 37,662 | 37.117 | 32,241 | 38,426 | |
| **Product subsidies, at prices from the previous year in millions of denars.** | | 5,713 | 5,720 | 5,659 | 6,292 | 6,324 | |
| **Share of subsidies in NVANVA,%** | | 12% | 12% | 12% | 15% | 13% | |
| **Investments in fixed assets, in millions of denars** | in FDA | 3,442 | 3,923 | 3,419 | 2,909 | 3,776 | 4,067 |
| | in the food industry | 1,911 | 1,856 | 1,960 | 1,664 | 1,634 | |
| **Depreciation of fixed assets in agriculture at prices from the previous year, millions of denars** | | 3,868 | 4,162 | 4,315 | 3,955 | 4,646 | |

Source: SSO - Makstat and various publications (Annual Report, Economic Accounts in Agriculture, Structural Surveys)

Regarding the dynamics of the gross agricultural product for the period 2014-2017, there is a noticeable decline of 10% primarily due to the decrease in the realized value of production in the years with a pronounced negative weather impact which particularly reflected on crop production (by - 14% ). Additionally, the impact of the unfavorable movements in market prices is evident, which show a decrease in several key products, such as cereals and tomatoes by 11%, fruit by 9% and milk by 5%. The prices of other livestock products remained relatively stable and with a slight increase (1% - 3%), and an increase was registered in viticulture and winemaking by 8%. The fall in the prices of major agricultural products could not be offset by the increase in physical production of most agricultural products which had a significant impact on the incomes of agricultural holdings.

The key economic indicators for the sector and rural areas for the period 2014-2019 are given in Table no.1.

**Conditions for agriculture and land use**

The territory of RS Macedonia is mostly mountainous (79%), and the rest are lowlands (19%) and natural lakes (2%). Agricultural land with 1.26 million ha (in 2019) covers half of the total area, while 44% is land under forests. About 60% of the agricultural land belongs to pastures and the rest with an area of 520 thousand hectares is arable agricultural land which is the basis for agricultural production.

Agricultural production, especially of an intensive nature such as gardening and viticulture, takes place in the southern parts of the country under the influence of the Mediterranean climate, along the valleys along the largest rivers and the surrounding hilly terrains that have fertile soil composed of sediments. In the areas with continental climate there are conditions

for production of cereals and fruit growing, while in the mountainous regions the predominant activity is the livestock production of traditional type.

Table 2. Overview of agricultural land for the period 2014-2019, in hectares

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| **Agricultural area from which** | 1,263,155 | 1,264,408 | 1,267,134 | 1,266,008 | 1,264,139 | 1,264,578 |
| **Pastures** | 751,086 | 750,359 | 749,772 | 748,413 | 744,667 | 743,991 |
| **Total arable area from which** | 511,579 | 513,564 | 516,644 | 516,870 | 518,740 | 519,848 |
| **Plows and gardens** | 413,249 | 415,004 | 417,456 | 416,709 | 418,140 | 418,823 |
| **Orchards** | 15,309 | 15,856 | 16,138 | 16,546 | 16,827 | 16,784 |
| **Vineyards** | 23.061 | 23,240 | 23,613 | 23,703 | 24,088 | 24,468 |
| **Meadows** | 59,960 | 59,464 | 59,437 | 59,912 | 59,685 | 59,773 |

Source: SSO

Most of the arable land or 81% (419 thousand ha) is occupied by arable land and gardens, perennial plantations - orchards and vineyards participate with about 8%, and the remaining about 11% are meadows. According to SSO data, irrigation systems cover about a quarter of arable agricultural land (123 thousand ha) of which about 80 thousand hectares are irrigated. The effective irrigated area according to MAFWE is smaller and is 24,303 hectares in 2019.

In the past strategic period, the total arable land has increased by 8.3 thousand hectares at the expense of reducing pastures. Within the arable land, all categories have a slight growth trend, except for the meadows, which are slightly reduced. This trend is opposite to the one registered in the previous strategic period from 2007 to 2013, when the area of arable land was in annual decline of approximately 3%, while the total area under pastures increased significantly.

More than 40% of the total arable land, approximately 240,000 hectares and 80% of the pastures or about 570,000 hectares are state-owned managed by the MAFWE and the Public Enterprise for Pasture Management. Other available land resources are cultivated by a number of family farms[4] which has a limiting effect on productivity and economic performance.

### Conditions in rural areas and characteristics of the rural economy

In rural areas, which cover about 87% of the total area of the country, live 45% of the total population. Agriculture is the most important economic activity in rural areas that affects poverty alleviation[5] and unemployment. Comparison between exclusively agricultural

[4] 178,125 according to the latest structural survey of the SSO from 2016, 172,663 according to the Single Register of Agricultural Holdings of MAFWE in August, 2020 and 86,650 according to the number of beneficiaries of direct payment measures in 2018 according to data from AFSARD.

[5] One fifth of the rural population or 24.2% live below the poverty risk rate in 2017.

households, mixed households where at least one family member is employed outside of agriculture[6] and households without agricultural activities, shows that mixed households have the highest incomes, followed by agricultural households and as the poorest are non-agricultural rural households.

For the period 2017-2019, on average 45% of the total number of employees in the country (342,474) are employed in rural areas. 19% of them are self-employed, and 12% are unpaid family labor. With a share of only 35%, the disparity of women's employment compared to men in rural areas remains significant and is higher than that in urban areas where participation is more balanced at 43%. The high percentage of rural women who are not active in the labor market stems from their engagement in the home, such as childcare, care for the elderly, and other unpaid household chores. Even when a woman's labor is paid, they earn only 33% of what men earn in the same sector.

Access to resources and opportunities for economic and social empowerment between men and women in rural areas is limited, so the number of women entrepreneurs within the total number of farmers is only 10.4%, and only 12.01% of women are landowners with low participation in the decision-making process relevant to production activities. Due to the disadvantaged position of women as a share in the labor force and in terms of family income, young women in rural areas often do not see their future in agriculture and are willing to stay in rural areas only if they are able to get another type of employment.[7].

Apart from buyers and processors of fruits and vegetables and wineries that are export-oriented, most businesses in rural areas are small companies focused on satisfying local or regional markets. Larger facilities in rural areas cover almost the entire food processing industry (with the exception of meat processing and slaughterhouses). In general, the development of industry in all regions is limited by the quality of road and business infrastructure and increasingly by the lack of skilled labor.

In rural areas there is good potential for development of rural tourism, but it is still underdeveloped (only 4% of total accommodation facilities are located in rural areas)[8]. Almost half of the territory of the country has the potential for development of attractive tourist products. The natural and cultural heritage as a potential for development of rural tourism are recognized by the local self-government units which have stated it as one of the goals in their strategies for local economic development. Crafts have also been identified as a sector that can contribute to revenue generation and jobs, especially in more isolated rural areas that are not attractive to other businesses. However, faced with industrial production, this sector has stagnated in recent years and there is a tendency for many of the traditional crafts to become extinct.

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[6] It is estimated that about 30% of farmers or members of an agricultural household are self-employed, employed in production or in the public sector. Employment or self-employment outside of agriculture is in trade, construction or services. Most rural women are employed in the textile sector.

[7] From the research "Measuring the Empowerment of Women in Agriculture with the Method Based on Surveys and Experimental Economics" 2019, UN Woman Faculty of Agricultural Sciences and Food

[8] Among the biggest obstacles for the development of tourism in rural areas is the insufficient development of tourist attractions and facilities, as well as the difficult access to tourist facilities, national parks and tourist places, primarily due to the poor condition of the road infrastructure.

The rural population is deprived in relation to the population in urban areas in many respects. Thus, 36% of those living in rural areas face the problem of access to banking services, 24% access to postal services and 20% access to cultural facilities. Basic transport services are not available or are difficult to access for 22% of the rural population. The need to improve the road network in rural areas is emphasized as a high priority in both lowland villages (51%) and mountain villages (54%).

Access to education for children in rural areas is somewhat satisfactory in terms of primary schools, while in terms of secondary education the distance to schools has a negative impact. The telephone network (fixed line and GSM) covers the entire territory of the country, and the penetration of the internet has a huge growth, which from 1.5% availability from households in 2000, rose to 58.3% in 2012 and 82% in 2019 year. National and local televisions, including cable and satellite, and radios are widely available throughout the country.

The quality of physical and social infrastructure in rural areas has deteriorated over the past decades as a result of insufficient investment in development and maintenance[9]. Despite the ongoing investments of the government and municipalities in road infrastructure (modernization and expansion), the condition of the road network is still unsatisfactory in relation to the more developed neighboring countries and the EU average. Small and economically weak rural municipalities have significant problems in maintaining the quality and access to basic services, especially for settlements with smaller populations, which results in greater dissatisfaction with the quality of life of the rural population compared to those living in urban areas. Hence the need to further improve physical infrastructure and basic services in rural areas in order to improve the quality of life, and thus their competitiveness and ability to retain a younger and better educated population and attract investment.

As a result of the situation, intensive and dynamic migration processes are taking place in rural areas in different directions. According to the "Strategy for balanced development 2020-2030", in the period from 2014 to 2019, 35.1% of internal migrations were on the route village - city, 21.6% took place from city to village, migration between villages participated with 34.7%, and intercity with only 8.6%. Thereby, 43.7% of the total settlements were to the Skopje planning region which in the analyzed period is the only region with a positive migration balance. In the total internal migrations, women are most present, more precisely they participate with over 70% in all regions.[10].

**Characteristics of the labor force in agriculture**

The share of the total active population engaged in agriculture in 2019 is 13.9%. Out of a total of 111,033 people engaged in agriculture, 35% (38,478) are unpaid family workers, 49% are self-employed and about 15% are full-time employees. About 17% (18,379) of the total

[9] Most of the smaller rural settlements do not have a sewerage system and use septic tanks or uncontrolled wastewater discharge. The rural population with public sewerage is estimated at 17.7% of the total population. The total population in rural areas without wastewater disposal installation is 8.9% (4% of the total population in the country). About 60% -70% of the population is covered by the public waste collection system run by public enterprises, but only 10% of the population in rural areas receive regular solid waste collection services.

[10] Relocations are mainly due to education, marriage or employment, ie they are conditioned by the socio-economic development of the area, the rate of activity of women and the demand for a certain labor force.

agricultural workforce is employed on a part-time or seasonal basis. More than half of the total employees in agriculture are engaged in crop production, and the rest are engaged in mixed production and livestock breeding. Calculated through equivalent annual work units, the labor engaged in the agricultural holdings in the country is estimated at 151.5 thousand in 2018. 60% of them are paid equivalents, while the rest is the work of engaged members of family farming families, which again indicates the already established number of family farms.

One of the biggest problems in the country's agricultural sector is the aging workforce. According to the SSO structural survey from 2016, only 4% of agricultural holders are young under the age of 35 (or 7,254), 34% are between 35 and 54 (61,724) and the majority of 62% or 111,268 are older from 55 years. The ratio between the number of young holders of agricultural holdings (under 35 years) and the number of farmers 55 years or older is very unfavorable and is 0.07 (which is close to the European average of 0.09). According to the data from ERCS, in 2020 the share of young farmers up to 40 years of age holders of registered agricultural holdings in the total number of agricultural holdings is only 14% (24,423 out of a total of 175,088). Lower incomes compared to other alternatives in the national economy and inadequate living conditions in rural areas discourage young people from staying and starting agricultural businesses. Due to migration, the situation of lack of skilled labor in agriculture is already evident, especially in labor-intensive production.

In addition to the age structure, the educational structure in agriculture is also unfavorable. According to the structural survey from 2016, most of the farmers have completed or unfinished primary education (44.5% or 80,269 people) and secondary education (43.3% or 77,996 people). Only 9,359 of them, or 5.2% have formal education in agricultural sciences. It follows that most of the agricultural workforce lacks formal agricultural education, training, and managerial and business skills. The current advisory system with less than 100 active advisors is insufficient in scope and quality of services offered to adequately respond to the needs of participants in the sector to support the process of their modernization, restructuring and consistent compliance with cross-compliance requirements, promoting innovation and digitalization.

The degree of digitalization of households in rural areas is minimally provided through smartphones, which are present in 88.6% of the rural population, but the number of those who own a personal computer or laptop is 37.1%, compared to nearly 60% in urban areas.

General labor productivity in agriculture in relation to the created value (NVA/AWU) and engaged land is low due to low land capacity per holding, mixed production, and poor technology engagement. The maximum amount of 5,214 euros in 2018, which is a result of the increase in the realized value is still significantly lower than the EU27 average of 13,000 euros. The productivity of the land factor has increasingly positive amounts due to the relatively fixed size of the agricultural area, except in 2017 when it decreased by 13% as a result of the climatic influences on the realized value of production.

Productivity by subsectors is shown in the section on trends by subsectors.

**Structure of agricultural holdings**

The structure of agricultural holdings remains unfavorable and dual, consisting of a small number of large agricultural enterprises and a large, predominant number of very small family holdings with limited production capacity. Business entities, which are only 0.2% of the total

number of agricultural holdings, have on average over 100 times larger engaged capacities per agricultural holding, ie 197 ha, in relation to the family holdings. According to the latest structural survey from 2016, 60.8% of agricultural holdings used less than 1 ha of agricultural land, while as much as 88% less than 3 hectares. Although the average land area and number of livestock units per agricultural holding has increased from 1.4 ha with 2.12 livestock units in 2007 to 1.8 ha in and 2.14 ha livestock units in 2016, structural changes are still taking place with insufficient dynamics to ensure a more serious impact on the overall performance and competitiveness of the sector.

Additionally, small properties are on average fragmented into over five spatially spaced plots, with an average size of 0.24 ha on private land[11]. Such a structure results in limited production results and, consequently, the abandonment of agricultural land, which reaches over one third of the total arable land.

According to the economic size, half of the total number of holdings are classified in the smallest, first class of economic size which achieves up to 2,000 euros worth of sales of agricultural products per year and which contributes at least to the total market value of realized agricultural production (only 10%) . The second class from 2,000 to 4,000 euros includes about 20% of the holdings, the third class from 4,000 to 8,000 euros 16.3% and 8.4% have an economic size of 8,000 to 15,000 euros. The largest share in the total market value of production have the third class holdings with 20%. According to the type of agricultural holdings, mixed holdings cover 30% of the total number of 178,125 holdings included in the last survey from 2016, most of which are those with mixed crop production (31,409). The remaining 70% are specialized holdings[12] generate 60% of the total value of agricultural production.

In the past strategic period, in order to improve the structure of agricultural holdings, the necessary planning, legal and institutional conditions have been provided and active interventions of the agricultural land consolidation policy have been launched on a total of 4,500 ha at ten locations across the country. In 2019, the historically first consolidation procedure in the village of Konce was successfully realized. In parallel, in the period 2015-2020, in order to provide access to free land resources of state agricultural land, in regular procedures a total of 10,481 ha were leased and 4 public calls were made for the sale of a total of 280.4 ha of land under greenhouses, ancillary facilities in function of the greenhouse and facilities in the commercial yard.

Despite the inferior market position resulting from insufficient production potential per holding, the association of farmers in cooperatives, a process that was supported by support policies, has not progressed significantly in the past strategic period. In the register of agricultural cooperatives in the ministry in the period from 2013 to 2020 are registered 61 agricultural cooperatives, of which only 44 are active. The total number of agricultural holdings united in cooperatives is around 790. The main weaknesses remain the inability to gain wider trust, weak management capacity, limited access of new members and a small average number of

[11] According to the Agency for Real Estate Cadastre, the average size of state-owned plots is 2.05 ha, which raises the total average to 0.62 ha.

[12] 70% of specialized holdings are dominated by those for arable crops (60,291), followed by the holdings with permanent plantations (31,219) and the specialized ones for herbivorous livestock (20,523).

members per cooperative, as well as a focus on joint procurement of raw materials or production, rather than on concentrating supply.

### Income of agricultural holdings and the impact of state support

Net value added (hereinafter NVANVA) which is the total value generated by agricultural holdings from production activity, according to the Economic Accounts for Agriculture has a slightly increasing trend in the past strategic period, except in 2017. The average amount of NVA realized by one annual working unit for the period 2014-2018 is around 5,000 euros, which is three times less than the European average, but is at the level of the new member states with the lowest value of this indicator in the union.

Compared to other economic activities through the realized average gross salary at national level, formally employed in agriculture, fishing and forestry earn on average 25% lower income, although there is a trend of reducing the difference in the observed period. The amount of the average gross salary in agriculture, forestry and fisheries for 2019 is 29,351 denars, which is an increase of 28% compared to the amount in 2014.

The difference is similar with the realized incomes of the agricultural holdings (NVA), analyzed through the data from the Economic accounts for agriculture which are lower by 27% in 2017 and 25% in 2018. If the share of subsidies is excluded, then the difference between agricultural incomes and the reference average incomes of the national economy is even greater and is 38% in 2017 and 35% in 2018. The average share of subsidies in NVA for the period 2014-2018 is 13%. The highest share of 15% in 2017 is a result of the increased amount of subsidies and the reduced NVA.

In order to gain insight into the situation at the level of agricultural holding, the movement of the same income indicator is analyzed through the data from the sample that is monitored within the Accounting Data Network of Agricultural Holdings - Macedonian FADN for 2017 (Table number 3) .

According to the presented data referring to the so-called commercial holdings, the average monthly income for settling the factors of production is 298 euros, in which the measures of direct financial support to farmers participate with a significant 34.3%. The highest level of subsidies is in large economies, as much as 56% and medium-sized ones with 42%. It is followed by medium-sized enterprises where the share is about 36%, while the lowest is in small economies that achieve an annual market value of 2,000 to 8,000 euros.

Table no.3 Average incomes of agricultural holdings and share of subsidies for 2017 according to Macedonian FADN, in denars

| **Indicator / economic size of the country. the economy** | **Small (2,000-8,000 €)** | **Medium small (4,000-8,000 €)** | **Medium (8,000-25,000 €)** | **Medium large (25,000-50,000 €)** | **Large (50,000-100,000 €)** | **Average** |
|---|---|---|---|---|---|---|
| **NVA of agricultural holdings** | 115,699 | 204,063 | 449,883 | 727,918 | 1,396,309 | 220,015 |
| **Total subsidies** | 30,935 | 73,778 | 165,649 | 305,336 | 782,086 | 75,421 |
| - subsidies for vegetable p | 26.051 | 45,119 | 81,754 | 123,547 | 67,116 | 44,808 |

| | | | | | | |
|---|---|---|---|---|---|---|
| - subsidies for livestock | 4,884 | 28,660 | 83,903 | 181,788 | 714,970 | 30,613 |
| **Share of total subsidies in NVA%** | 26.7 | 36.2 | 36.8 | 41.9 | 56.0 | 34.3 |

Source: MAFWE, Macedonian FADN, October 2019, weighted data

The state support in the incomes of the agricultural holdings varies depending on the agricultural sub-sectors, namely, 42-70% in the milk producers, sheep and goat breeders; growers and horticultural crops about 5%, grape growers 26%; and perennial crops 14%.

Support measures in the form of direct payments have a positive impact on supplementing and increasing the incomes of agricultural producers. Support plays a key role in the sustainability of the activity for most of the Macedonian agricultural holdings, ie it contributes to increasing the development and investment potential of those with larger production capacities and better business management. By supplementing farmers' incomes and maintaining agricultural production, direct payments also affect the provision of social stability to the rural population, especially those dealing with sub-sectors with insufficient comparative advantage or living in areas with natural limitations.

FADN data for the period 2015-2018 showed that the liabilities and debts of farmers are insignificant in terms of the value of their available funds (about half a percent), which in addition to caution, speaks of unsatisfactory access of holdings to capital.

**Direct payments to support farmers' incomes**

In the period from 2014 to December 1, 2020, for the policies of financial support in agriculture and rural development, a total of 53.3 billion denars or 866.7 million euros were paid from the national budget of the state or an average of 123.8 million euros per year. The lower amount of payment in relation to the allocated 138 million euros is primarily due to the slower dynamics of the implementation of investment measures than the rural development policy.

Most of the total financial support funds are allocated and paid for direct payment policies to support farmers' incomes. In the period 2014-2020, 732.4 million euros were paid for direct payments, ie 82% on average of the total amount of all measures of state support to agriculture and rural development. The average annual payment amount ranges from 89 million in 2016 to 115.1 million in 2019.

All direct support is related to specific products, per unit of product delivered to the processing facility, livestock or area related to a specific production, as well as support for inputs in production (seed material, refining, fuel). The number of measures involved is extensive (over 40) and complicated to implement.

The largest share in the total amount have direct payments intended for crop production, which in the period 2014-2020 amount to 61% of the total amount paid for these policies. Livestock production accounts for 33%, followed by measures for additional direct payments (state aid) with 6%.

Table no.4 Overview of paid funds by programs for the period 2013-2020 (as of 01.12.2020), in millions of denars

| Programs / Paid funds in denars | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|
| **Program for financial support in agriculture** | 5,623 | 6,426 | 6,309 | 5,486 | 6,327 | 6,751 | 7,078 | 6,668 |
| crop production | 3,796 | 4,265 | 3,797 | 2,812 | 3,648 | 4,174 | 4,378 | 4,224 |
| livestock production | 1,732 | 1,869 | 2,086 | 2.105 | 2,447 | 2,118 | 2,246 | 2,184 |
| measures for additional support (state aid) | 95 | 293 | 426 | 569 | 232 | 460 | 454 | 260 |
| **Program for financial support of rural development** | 146 | 1,012 | 1,145 | 1,658 | 1,322 | 1,128 | 826 | 964 |
| measures for financial support for rural development | 123 | 966 | 1,011 | 1,537 | 1,224 | 1,036 | 727 | 890 |
| technical support | 23 | 46 | 135 | 120 | 98 | 92 | 99 | 74 |
| **Program for financial support of fisheries and aquaculture** | 8 | 48 | 42 | 20 | 21 | 16 | 26 | 31 |
| **IPARD Program** | 39 | 25 | 150 | 254 | 338 | 82 | 739 | 327 |
| **Total from national funds** | **5,778** | **7,486** | **7,496** | **7,163** | **7,670** | **7,895** | **7,931** | **7,663** |
| **Total support for the sector** | **5,817** | **7,512** | **7,645** | **7,417** | **8,008** | **7,978** | **8,670** | **7,990** |

Source: AFSARD, 2020

The average amount of direct payments per hectare of agricultural area for the entire period is 83 euros, while the average amount per agricultural holding, according to the number of support beneficiaries in 2018, is 1,208 euros.

Regarding the fairness in the distribution of funds for direct payments, from the analysis made for payments under the program for 2018, 20% of the total number of beneficiaries of funds that have received the most funds (17,330 out of 86,500) gained 64.2% of the total amount of paid funds (Denar 4.3 billion from Denar 6.7 billion). Although the distribution of funds is more balanced than at EU level, there is still a concentration of 2/3 of all funds in one-fifth of the beneficiaries, which indicates the justification of further interventions in the existing methods of allocation of funds.

**Investments in agriculture**

The total growth of the rate of investments in fixed assets in the agri-food sector in the observed period 2014-2018 is 28% (above the projected with the strategy), while the realized average annual growth of investments is 6%. Individually by components, an average annual growth of 6% was achieved in the primary production and 8% in the food industry. The maximum annual value of 5.8 billion denars was invested in 2015 as a result of the highest 3.9 billion denars[13]realized in primary production. A decrease in the volume of investments was

[13] SSO, Annual Report for 2014-2019 and Annual Survey on Investments in Fixed Assets INV.01 (B) reports (unpublished data)

registered in 2016 and 2017, which are characterized by problematic weather influences and reduced production value and hence reduced investment allocations.

In the same period, the amount of depreciation of fixed capital in agriculture by an average of 2.3 times exceeds new investments, which leads to the conclusion that investment activity in agriculture is still marginal and insufficient to modernize outdated applied technology. Lack of investment in agricultural machinery results in increased labor engagement and, as a consequence, low labor productivity.

From a regional aspect, the Southwest and Northeast are the planning regions with the lowest investment activities in agriculture, but also at the same time with the most unfavorable ratio compared to the gross value added of agriculture. Unfavorable ratio of investments compared to the gross value added of agriculture have the Vardar, Southeast and Polog planning region, as regions where agriculture has a large share in the total gross value added of the region.

Significant contribution to the improvement of investment activities in agriculture and rural areas is given through state measures for financial support of rural development. The share of paid funds from rural development programs (from national and EU funds) in the total paid funds for financial support ranges from a minimum of 14% in 2014, to a maximum of 26% in 2016, or an average of 18%. The increase of the participation is for more than 5 times in relation to the amount from 2013 of only 3%, but still twice below the projected level with the strategy of 35%.

According to the national strategy, in the period from 2014 within the IPARD Program 2014-2020, the measure Technical Assistance has been newly accredited and is already being implemented, while the measure: Investments in public rural infrastructure is in the accreditation phase. The accreditation of this measure, as well as the accreditation of the measures Advisory Services, Leader and agri-environmental measures are expected to be completed within the next strategic period. Regarding the absorption of IPARD funds, it has significantly increased with the start of the implementation of the second IPARD program for the period 2014-2020 and as of October 2020 is 50.7% compared to the utilization of IPARD 2014-2020 of 21.7% .

Despite significant support under the national rural development program and IPARD II for the modernization of agricultural holdings (more than 600 investments approved under IPARD II), additional investments are needed in tractors, combines[14], attached machinery for sowing, fertilizing, protection, irrigation and other agricultural activities. Due to the insufficient application of the minimum quality standards, significant investments are especially necessary at the level of the economy for the performance of harvesting and post-harvest activities and storage for fruits and vegetables, rooms for drying and storage of cereals, as well as packaging equipment for cereals. crops (especially rice).

The purchase of land under greenhouses by owners in the past should further stimulate investment in inefficient and outdated heating systems (which significantly increase production costs), drip irrigation and the renovation of other installations. In perennial plantations, the change of the unfavorable age and variety structure in fruit growing and viticulture requires

[14] The total number of tractors in the country in 2013 was 92,708, and the combine harvesters - 1,797. The number of tractors is relatively low on arable land - 0.2 tractors per hectare and approximately at the EU level in agriculture - 0.5 (0, 6 in the EU), but a bigger problem is the obsolescence and obsolescence of about 70% of tractors and combines that are more than 20 years old

reconstruction of the existing ones and establishment of new technologically-advanced plantations, as well as investments in post-harvest activities.

Entities in the livestock sector, especially in the milk and meat sectors, have a need and obligation to comply with the provisions of national legislation aligned with EU standards in the field of milk hygiene, environmental protection and animal welfare, which require significant investments. According to estimates by the Food and Veterinary Agency (hereinafter FVA), 60% of dairy farms do not have milking facilities, and animal welfare standards are particularly demanding in laying hens. Significant investments must also be made in the management of manure on livestock farms due to animal welfare, environmental protection requirements and the mitigation of climate impacts in waste management. Many livestock farms lack the capacity to store grain and silage which affects their overall production potential.

Regarding the processing industry, the technical-technological equipment still needs to be improved in order for the industry to adequately withstand the competitive pressures. Less than 10% of the total production equipment is new or not older than five years. Companies have problems with outdated or inadequate equipment in the quality control, packaging and labeling processes.

Due to the demands of the new more selective markets, fruit and vegetable processors and exporters of fresh fruits and vegetables are showing more interest in certification according to ISO 9001 (half of them have the standard) and ISO 22000 (only about 10 companies are certified). There is also growing interest in the necessary investments to implement the BRC standard for export to markets in the UK. Half of all companies, especially milk and meat companies, have product tracking systems. Additional investments are needed by some operators such as slaughterhouses and meat processors in environmental protection, especially for the management of animal waste, as well as in general with all processors to improve energy efficiency and the use of renewable energy sources.

### Assessing the impact of performance support on agricultural holdings[15]

The support given during the period 2014 - 2020 has a significant impact on the development of the structure of the holdings, ie the consolidation of the holdings. Thus, the average size of supported holdings in relation to the used land is 25%, while their economic size is 5% higher compared to those holdings that are not beneficiaries of subsidies. The average size of holdings, however, remains much lower than the EU average[16] due to which there is a need for further policy interventions of different types.

The total production of the supported holdings is 13% higher than the production of the others. In terms of sub-sectors, the support encourages positive development in all sub-sectors with different intensity, but is generally more efficient in the livestock sector in terms of supporting crop production. The efficiency of direct payments in crop production is estimated at 1.2 (i.e., one denar of support creates 1.2 denars of output), the same in the livestock sector is 2.16,

[15] The analysis of the impact of the policy on the performance of agricultural holdings is based on FADN data for 2018.

[16] Average EU land per holding is 15.2 ha, and the economic size is 32.9 European units of size, compared to 1.71 ha per holding and 12.74 European units of size in our country

and is highest in cattle breeding where the increase in the value of production caused by 1 penny support is 3.25 units. The main reason behind these results is the greater specialization of the holdings in the livestock sector than in the crop production where the holdings are mostly mixed. The higher value of production of supported farms by sub-sectors ranges from 37% in milk to 71% in pork.

The productivity of the factors of production as a relation of the value of the realized production and: the realized costs (total productivity), unit of used land, cultivated equivalent of unit of livestock and invested equivalent unit of labor is higher in the supported holdings than in the holdings without support by 14%, 90 %, 14% and 37%[17] consequently.

In terms of net income, estimates show that subsidized farms have 28% higher income than those without any subsidy. As with other indicators here, entrepreneurial income of farms lags far behind the EU average of 14,129 euros per holding compared to 713 euros in the country.

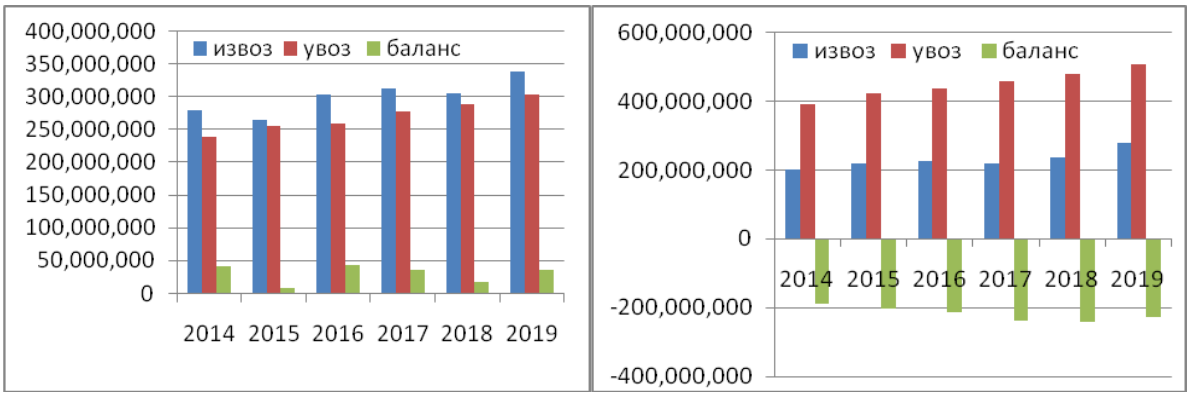
**Trade in agri-food products**

In the period 2014-2019, the foreign trade exchange with agri-food products took place with a similar dynamics of development and within the previously established relations between exports and imports. Macedonian agricultural production and food industry recorded a continuous, gradual increase in competitiveness in foreign markets with an increase in the value of exports of agri-food products by 28%, from 486.2 million euros in 2014 to 624.5 million in 2019, while imports in the same period it increased by one percentage point more, from 649 million euros in 2014 to 837.2 in 2019.

The average coverage of imports by exports for the period is 73% which results in an annual amount of negative trade balance of EUR 200 million. Primary agricultural products have on average 30 million euros of positive trade balance for the past period (300 million exports and 270 million imports). Of the imported primary products, 23% are products for which the country does not have natural-climatic conditions for production. The main impact of the trade deficit comes from the import of processed products in the amount of EUR 450 million on average, which is almost twice as high as the average value of exported processed products (EUR 230 million). Due to the lack of access to the sea, the country is a net importer of fish and fish products for about 22 million euros per year, resulting in an average annual deficit of 18 million euros.

Chart No. 1 Trade in primary and processed agricultural products for the period 2014-2019, in euros

[17] The difference in labor productivity calculated by net value added is even more significant and is 49%.




Source: SSO 2020, MAFWE processing

The most important export product is tobacco, which accounts for one fifth of the value of the total export of agri-food products (20.4%), followed by the tariff category Bread, pastries, cakes, biscuits and waffles with a share of 10.5% and wine with 8.7 %. Vegetable products account for a significant 7.3%, and fresh products: peppers and mushrooms 3.2% and cabbage and apples each with 2.9%.

On the import side, poultry meat with an average of 6.2% has the largest individual share in the value of the total import of agri-food products. Together with other types of meat, such as beef (with an average share of 4%) and pork (with 3.4%), meat imports account for 13.6% of total imports. Approximately the same share (13.8%) has the group of processed products, as follows: not elsewhere specified or included[18]with an average share of 5.1%, chocolate and cocoa products with 4.6% and Bread, pastries, cakes, biscuits and waffles with 4.1%. Sunflower oil participates with 4.3%, sugar with 4%, southern fruits with 3.7%, various types of cheeses with a share of 2.3% as much as wheat, while wheat flour participates with an average of 1.6%.

In the period 2014 - 2019, the most important trading partner with agri-food products are the EU countries which with 49%, participate on the side of total exports and on the side of total imports[19]. The second most important partner are the CEFTA member countries which participate in the total export of agri-food products with 34.4%, while in the total import with 28.1%[20]. From the non-European markets, the most important in the export of agri-food products are the United States of America with 3.9% of the total export (due to the large export of tobacco) and Brazil with a share of 4.2% of the total import (due to the imported quantities of poultry and beef meat and coffee).

[18] used in the food industry as well as vegetable fat cheeses

[19] The most important export destinations in the EU are Greece (with 15.7% of total exports to the EU-28), Germany and Croatia with 13% each and Bulgaria with an average share of 12.4%. Most agricultural and food products are imported from: Germany (14.1% of total imports from EU-28), Bulgaria with 11.5%, Poland with an average share of 10.6% and Croatia with 9.8%.

[20] Serbia with 11.5% share in the total export of agri-food and fishery products and share of 22.8% in the total import of these products is the most important trade partner of the CEFTA member countries.

## I.2 Conditions and identified needs of the agricultural sub-sectors

Two thirds of the total value of agricultural production falls on crop production (77% in 2018). Livestock production contributes with the remaining 23%, while services in agriculture cover a completely insignificant part. The total value of agricultural production in the period 2014-2019 increased despite the slight decline in livestock production.

Horticulture with 34% has by far the largest individual contribution to the total value of agricultural production, followed by fruit growing with 12.2%, while other plant subsectors participate with between 5 and 10%. Half of the value of livestock production is provided by dairy production with 11.5%, while the other sectors have an individual share of less than 5%.

Based on the conducted SWOT analysis and the analysis of the situation, the needs in the most important sub-sectors of the agricultural production have been identified. The sub-sectors included in the analysis cover 90% of the total gross value of agricultural production, ie up to 87% of the value of crop production and 95% of livestock production.

### Livestock production

### Cattle breeding and milk production

The beef and milk production sector is in the process of restructuring by reducing the number of producers and increasing production capacity. The total number of farms is lower by 11,200 (i.e. over 10,000 according to the FVA) and the number of those with less than 20 heads decreases (and is 47%, from 50% in 2014) and the representation of all categories greater than 20 increases. throats. As a result, in the period from 2015 to 2019, the average number of cattle per farm has increased from 7.4 to 9.3, but the sector generally has a decline in the total number of cattle by 25%, or about 58,000 heads.

In the past, the sector was also affected by negative market and sanitary challenges. With the abolition of production quotas in EU countries in 2016, the purchase price of milk, which is at the level of the European average, decreased by 9.4% in the period from 2014 to 2019 (from 19.6 to 17.7 denars / l ). In the same year 2016, ie only one time after the spread of bluetongue, the sector was again put on another more serious test with the appearance of nodular skin disease in cattle, due to which a large number of cattle were destroyed. Such movements have resulted in a reduction in producers' incomes.

The mentioned structural changes have a positive effect on the production of cow's milk and a negative impact on the production of meat. Milk production shows a slight upward trend, especially among cows under production control whose productivity has increased from 6,390 to 6,840 kg of milk per cow per year or twice the national average of 3,400 kg of milk. However, their number of 3,000 covered heads is still small compared to the total number of cattle. The racial composition is still dominated by crossbreeds and combined breeds (58%), while Holstein-Frisian cattle are 38% of the total number of cattle in the country. Indigenous cattle Bush and buffalo account for about 3%, and there is an increased interest in raising cattle in organic production which in the period increased the number of heads by more than 2.5 times

(from 2,726 to 7,170). The sector has a further need to improve the racial structure for greater productivity.

Domestic beef production meets only 20% of the needs and has a continuous downward trend. In the observed period, production dropped from 5,500 tons in 2014 to 4,000 in 2019. The needs of 11,500 tons of frozen and fresh beef are met by imports worth 36.5 million euros (in 2019).

The biggest challenge on which the sustainability of the dairy sub-sector depends is achieving adequate quality and safety of milk (protein and fat content and total number of bacteria and somatic cells). According to the monitoring of cow farms conducted by the FVA (Report 2020), only 23% of dairy farms produce milk that meets the legal requirements for safety, ie only 2.1% of farms are in the first category (maximum 100,000 bacteria / ml of raw milk ), while the majority, 65% are in the second category, which implies the need for serious investments to improve the sanitary-hygienic conditions in the farms. As for the quality for which there is no official data because the quality control system of the purchased milk per farm has not been established yet, no more than 20% of the purchased milk belongs to the extra class (2019), ie it meets the legal requirements.

In the process of consolidation, modernization and mechanization of the farms, increased investments are needed, primarily in nutrition, milking, fertilization, animal welfare and fertilizer treatment, especially in those farms that are classified by the FVA as necessary to make changes with goal of achieving the required standards. The realization of investments is now largely disabled by the non-urbanized rural area, in which many of the facilities for agricultural purposes are listed as illegal facilities. Dairies and slaughterhouses, which are a necessary and important part of the milk and beef production chain, also need investments for modernization and application of legal standards.

Cattle breeders have insufficient area of agricultural land for their own production of animal feed which makes their production more expensive and less competitive.

**Sheep breeding and goat breeding**

Sheep breeding and goat breeding, which are based on extensive cultivation of natural hilly and high mountain pastures in the country, for most areas with difficult production conditions, are the only option for economic activity in the rural economy and a way to alleviate unemployment and poverty. The activities also provide a significant contribution to biodiversity in the conditions in which they take place.

Structural constraints related to labor supply difficulties for extensive sheep and goat breeding as a result of depopulation of rural areas and the age structure of breeders, but also the low price of lamb, have contributed to stagnation and a gradual decline in the number of sheep in the past. period (from 740,457 in 2014 to 726,990 heads in 2018), including the category of breeding sheep, which indicates a tendency to decrease the national herd. The decrease in the number is especially noticeable in 2019 (684,558 heads).

The subsector is in the process of restructuring by reducing the number of farms by more than a thousand (from 4,805 in 2014 to 3,842 in 2019), but also their consolidation expressed through an increase in the average number of sheep per farm by about 20% (from 144 to 171

heads for the period 2014-2019)[21]. The breed structure of sheep is dominated by local strains (Sharplanina and Ovchepolje) which are included in the program for protection of biodiversity in breeding and their crossbreeding with merino breeds, in the largest percentage Württemberg. Breeding of highly productive breeds of sheep and goats as one of the main preconditions for creating a developed sheep and goat production is not present.[22].

The number of goat breeding has a positive growth trend in the past period from 81,344 heads in 2014 to 117,447 in 2018. Here, too, in 2019, a significant decline of 25% was recorded (at 87,851 heads). Similar to sheep breeding, there is a change in the structure of farms with an increase in the average number of heads from 12 in 2014 to 18 in 2019[23].

In the past period, the number of sheep in organic production has doubled from 52 to 110 thousand (from 7% to 16% of the total number of sheep). A similar trend, but with much lower intensity, is in goat breeding where the percentage of goats in organic production in relation to the total number of goats increased from 3.2% to 5.4%. The number of sheep and goats in control milk has also increased (from 870 to 5,200 sheep and from 230 to 1,300 goats), but their number is still insignificant in relation to the total number of heads.

Sheep milk production has a variable trend, up until 2016 when the peak of 41 thousand tons was reached and declining in the next three years (up to 35.6 thousand tons in 2019). Productivity per dairy sheep for the analyzed period follows the same movements. The purchase price of sheep milk, which in the analyzed period shows an increasing trend (33.18 denars / kg in 2014 to 39.0 denars / kg in 2019) is far below the price on the European market.

However, the key product of sheep breeding is lamb which is exported to traditional markets in the EU, mainly to Greece, Croatia and Italy (83% in 2019) and the rest of the markets from the former Yugoslavia. As a result of the reduction of the purchase price of lamb live weight from 162 denars / kg in 2014 to 135 denars in 2019, the decline in the number of sheep and the consequent reduction of total sheep meat production (4,727 t in 2014 to 3,392 t in 2019 ), the export of lamb meat is declining both in quantity and value (from 2.8 thousand tons worth 13.3 million euros in 2014 to 1.9 thousand tons worth 9.6 million euros in 2019). The share of exports to EU countries in the observed period decreased by 8% with a corresponding increase in other markets.

The sub-sector operates in difficult natural and economic conditions with a downward trend in market prices for key products and with incompletely formalized terms of sale. In the past period, a rulebook for sale from the doorstep was adopted, as well as a rulebook for derogation of the conditions for processing products of the agricultural holding, which should improve the market valorization of production by breeding holdings and the possibility of state-assisted investments. The application of modern zootechnics in sheep and goat breeding is low, and sheep and goat breeders need additional investments to modernize and meet the standards.

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[21] The growth trend is most pronounced in the farms with size from 201 to 500 sheep, whose percentage from 19% in 2014 increased to 25% in 2019, and a small increase is observed in the farms with over 500 sheep. However, the most common remain farms with a size of 101 to 200 sheep (30% of the total number).

[22] sheep: Lakon, Asaf, as well as highly productive breeds of goats: Alpina, Sanska, Togenburg and others.

[23] Half of the holdings raise from 21 to 50 heads, 35% have a herd size over 51 heads and about 30% have under 21 heads.

Most of the sheep and goats are bred in old, ruined and unsuitable facilities, which raises the need to build new or reconstruct existing facilities.

The process of depopulation in rural areas and insufficient supply of labor is one of the key limiting factors in the development of the sector. Low accumulation and seasonal income that do not correspond to the time of procurement of cheaper raw materials affect the attractiveness of larger investments in sheep breeding. If we add to this the low level of education of farmers, especially in areas such as modern and innovative technology of cultivation, marketing, management, etc., it becomes clear why in the past modernization is lacking and the sector is lagging behind in the application of modern production standards.

**Pig breeding**

The pork sub-sector is the only livestock sub-sector that fully covers them meets the needs of the domestic market for fresh pork. In the period 2014-2020, the sub-sector showed an overall increase in the number of farmed heads by 13%, from 24 heads / year to 27 heads / year and meat production by 35%, from 9,886 tons in 2014 to 13,384 tons in 2019[24]. The positive trend can be followed by direct payments for bred and slaughtered fatteners in registered slaughter capacity ranging from 118,470 in 2014 to 185,056 in 2019.

The sub-sector for pork production consists of about 2,315 farms (farm registration number, FVA 2019). Carriers of the improvement of the genetic potential of the sector are five large farms that cover nearly 40% of the number of sows (5,468 heads in 2019), the three recognized organizations for the production of breeding animals (repro centers), as well as a Center for artificial insemination of pigs from where the genetic potential of the total population of pigs is disseminated in the remaining small and medium pig farms in which the remaining 60%, ie 8,575 sows are raised.

Macedonian pig farms generally apply modern technological solutions and breeding methods and with constant (re) investment in the sector reach the highest standards of production efficiency per head and quality of pigs in terms of production characteristics which is close to the level of developed countries. Organized pig farms take constant care of biosecurity, prevention of infectious diseases of pigs, health control, as well as promotion of the principles of animal welfare.

Unlike the market of fresh pork which is satisfied with the production On domestic farms, the processing industry is fully oriented towards the procurement of raw material through the import of chilled and frozen pork, which reaches 26.5 million euros per year, neglecting the available opportunities to provide raw material of domestic origin from a well-known manufacturer and with controlled quality.

Pig farming needs further maintenance and promotion of the solid genetic potential of the population and investments in farms for cost optimization and expansion of production, meeting high environmental standards and reducing the impact of climate. Larger farms can reduce their energy costs by investing in fertilizer utilization and biomethane production.

[24] Sources: Report on home bookkeeping, selection and monitoring of the situation in pig farming from 2010 to 2019 and SSO

A special challenge for the sector is the threat of infectious diseases, primarily African swine fever, which makes it necessary for farms to apply appropriate biosecurity measures.

Due to the reduction of the negative impacts from the changes in the market prices, it is necessary to apply instruments of European type which can influence the temporary removal of the excess quantities of pork from the market. In order to monitor pork markets and initiate necessary interventions and promote the quality of domestic product in our and foreign markets, initial initiatives of association of producers need regulation to define their market position and support in implementing commonly defined priorities.

Although prescribed, the European minimum standards for quality assessment of slaughter line (hereinafter SEUROP) have not yet been applied due to the need to meet institutional requirements and technical support.

**Poultry**

Domestic egg production achieves the goal of maintaining the existing state of complete self-sufficiency of consumption with domestic production, with occasional imports and exports in insignificant quantities. Due to the inability to balance supply and demand, prices tend to fluctuate significantly at certain times of the year.[25]. In 2020 (and 2021) this effect on the market is even more positive due to the impact of the COVID-19 crisis and reduced demand from the catering and population, and is often caused by imports with dumped prices.

The lack of all components of the poultry industry industry prevents organized domestic production which is insignificant and satisfies only 2% of domestic consumption. The remaining 40,000 tons are imported worth 50 million euros per year, which is the largest single item in the import of agri-food products.

In the past strategic period, the sub-sector has not shown positive movements. The decrease in the number of laying hens by 29% (from 1,437,096 in 2014 to 1,024,877 in 2019) was reflected in a decrease in the number of eggs produced by about 43%, as well as the already insignificant broiler production. However, the average number of eggs per laying hen remains at around 140.

Egg production is the only livestock sub-sector with introduced minimum standards for classification according to European requirements, but the safe removal and treatment of Class B eggs depends on the construction of a capacity for processing eggs into liquid egg products, which would also be part of the system for interventions of occasional surplus products in disruption of the egg market.

In the area of food safety, monitoring systems for Salmonella and other diseases important to the European market (New Castle) remain to be completed in order to ensure the smooth export of eggs to the European market.

In the past period, certain steps have been taken to encourage the start of small self-sustaining businesses for poultry production with an alternative approach and logistical support has been provided to large entities interested in starting investment activities in establishing a serious production chain for broiler production.

[25] Especially in the late spring and summer period of five months during the year when there is a surplus that causes the loss of industry due to reduced egg prices in the period is about 150 million denars.

The need to ensure regular control of the content of absorbed water in imported frozen poultry remains current due to the recorded frequent findings of higher quantities than legally prescribed.

**Beekeeping**

Beekeeping is of great importance for the sustainability of all crop production, and the value of crop yields due to bee pollination several times exceeds the total value of all bee products. Beekeeping is one of the potentials of the rural economy, especially in hilly and mountainous areas where other alternatives for agricultural and other economic activities are limited. The conditions in our country enable the development of this branch of agricultural production and its intensification in the next period.

The number of bee families in 2019 has increased compared to 2014 by 30%, ie from 73,869 to 96,143[26]. According to the 2016 Structural Survey, almost all farms involved in beekeeping are individually owned (4,913 out of a total of 4,916). One business entity is registered in the Polog, Pelagonija and Northeast regions. Cbut 2.1% of the beekeepers in the country who are beekeepers are professional with more than 150 bee families[27], while the largest percentage (49.4%) are hobby beehives with 20-50 bee families. A small part, 16.5% move their bee families, while the rest practice stationary beekeeping. As of March 2020, 19 facilities for production, processing and manipulation of honey and bee products were registered in the FVA register.

The production of honey in the past period varies between 395 tons in 2017 and 834 tons a year earlier when the highest yield per family of 10 kg was achieved. The reduced and variable production and yield is due tochanged climatic conditions that show a strong impact on the honey-bearing characteristics of plants on the one hand and the formation of new bee families in season in order to compensate for winter losses. The newly formed families can not show their maximum production capabilities, so there is a situation when the number of bee families increases to reduce the production of honey, which is perceived according to the yields, which in the last two reporting years 2017 and 2018 are extremely small (5 , i.e. 6 kg). Although yields are low compared to European, The relative prices of honey in the country are higher than the average price of the EU countries, which is 6.46 € / kg in retail and 4 € / kg in wholesale.

Climatechanges in the last few years, not only in our country but also worldwide, cause unusually large losses of bee colonies. In accordance with international recommendations, there is a need to take measures to restore and compensate for the losses by encouraging the breeding of honey bees in as many locations as possible and the use of genetic material from indigenous subspecies as the most adaptable to climate change. Emphasis should be placed on selected bee queens and bee swarms from controlled genetic material originating from the indigenous subspecies of honey bees - Apis mellifera macedonica, which most easily copes with environmental challenges and stressors.

[26] However, there are large differences in the data on the number of bee families provided by the SSO, FVA and the number of paid families by AFSARD.

[27] According to the classification of the Council of Europe

One of the identified needs is the improvement and expansion of the bee pasture of indigenous plants characteristic for each region needed by the bees ("bee friendly") and perennial plantations of honey flora.

## Crop production

### Horticultural production

With a contribution of one third of the total realized value of agricultural production, 900 thousand tons average annual production volume and over 50 thousand arable hectares, gardening is the most important sub-sector in agricultural production. In the past period, there has been an increase in the area under industrial peppers and cabbage and a decrease in the area under profitable crops such as tomatoes and cucumbers. The highest production volume was achieved in 2015 (966,863 tons), after which production is gradually reduced to 903,445 tons in 2019. Excluding potatoes, the leading crop in terms of quantities produced is peppers with an average production of 165,919 tons in the last decade or 19% of total vegetable production. Tomato has a similar representation with 153,315 or 17%, followed by the watermelon with an average production of 130,021 tons or 15% and the cabbage with 112,389 tons or 13%.Horticultural production is organized in protected areas[28] and outdoors. Greenhouse production that takes place in old and depreciated facilities has decreased in active areas from 216 ha in 2013 to 140 ha in 2019, with a corresponding reduction in production, from about 16.9 thousand tons to 8.3 thousand tons. The production in tunnels (foils) and stationary facilities (greenhouses) varies from 4,550 ha in 2013, to 6,635 ha in 2016, to 4,866 ha in 2019, of which about 200 thousand tons are produced annually. Although these constructions are intended for the production of profitable vegetables for fresh consumption (tomato, cucumber, sweet and hot pepper), peppers for industrial processing and cabbage are more and more present. The facilities are in serious need of significant investment.

Of the produced quantities, about 25% are placed on the domestic market, 7% are purchased by the processing industry and 15% are exported. There remains a large volume of production (40-50%) that has not been realized. Exports of fresh and chilled vegetables have a downward trend (from 162 thousand tons in 2013 to 130 thousand tons in 2019) at the expense of imports which has a tendency to increase. Dominant export products are cabbage and industrial pepper, while in the same period the share of tomatoes, cucumbers and watermelons has been reduced by two to three. The decline in competitiveness is evident in the traditional regional markets of the Western Balkans and the EU6 group, which are the most important for the Macedonian vegetable products on which half of the exported quantities are realized.

In general, there is a trend of changing the production structure in horticulture by switching to less labor-intensive crops due to labor shortages and costs, conversion of orchards to horticultural crops or complete abandonment of production due to economic unprofitability, which in large part due to variations in yields, often as a result of weather and price pressures.

The sector is in need of interventions that will improve the distorted competitiveness. The main identified needs in vegetable production refer to the change of: outdated and inefficient agro-technical measures, own seedling production, variety, inadequate harvesting and lack or

[28] greenhouses and hothouses - stationary buildings and polyethylene tunnels - mobile buildings

improper application of post-harvest processes and standards. Intensive production practices that do not take into account the sustainability of soil production capacity, water resources and environmental protection need to be overcome.

A particularly big problem is the placement of products and distrust of buyers. Manufacturers need stable contracts and greater certainty as opposed to existing non-contractual production (or formally concluded contracts), as well as higher purchase prices. Manufacturers themselves need to improve their cooperation to overcome the individual fragmented production of small quantities of non-standard product which greatly affects their disadvantage, weak receptivity to support policies and lack of bargaining power. The horizontal cooperation of the primary producers in order to concentrate the supply should be significantly improved. The minimum quality standards in gardening, although in force for a long time, do not experience real application.

One of the priorities in order to take advantage of comparative advantages and improve competitiveness is to improve marketing of garden products. The existing market logistics centers do not function as drivers of the integration of the value chain for fresh vegetables (from provision of planting material, implementation of the necessary standards for the identified markets, to purchase of products), and the need for additional investments in modernization of post-harvest infrastructure remains. The flow of information about the needs of the markets to the buyers and from them to the producers is inconsistent and incomplete.

All participants in the sub-sector have identified a need for new knowledge and innovations that need to be created and transferred through implemented research projects, trainings, advisory support and demonstration holdings.

The use of seeds from traditional horticultural species is increasingly under threat of extinction suppressed by commercial imported seeds.

**Fruit growing**

In a good part as a result of the support provided through the national measures for rural development, the areas under orchards in the past strategic period have increased by 1,475 ha, ie by 10%, which has achieved the goal of 17,000 ha under orchards. The trend has an upward trend in all fruit crops, with a noticeable increase in the area under the hazelnut. Apples remain the most common fruit crop, followed by plum, peach, sour cherry and hazelnut.

However, the significant increase in area was not accompanied by a corresponding increase in fruit production[29]. For the period 2014-2019, 186.3 thousand tons were realized, which is below the average of about 220 thousand tons. This is primarily due to unfavorable climate events in most of the years of the period (except 2015 and 2018), but also due to the establishment of new plantations in unsuitable locations and outdated technology that is without satisfactory productivity and resistance to weather changes. Consequently, exports (average 26.6 million euros per year) lag behind the increasing imports (with an average value of 41.8 million euros) in which the largest percentage contributes to products typical for our

[29] According to SSO data on the quantities of fruit produced, the leading crop is the apple, with an average annual production of 101 thousand tons, which accounts for 54.2% of total fruit production. Apples are followed by plum with 32.7 thousand tons, or 17.6%, peach 12 thousand tons or 6.4%, sour cherry with production of 8 thousand tons, or 4.3%, pear with 7.3 or 3.9% of total fruit production. Cherries have slightly higher production.

region - banana, olives, citrus and nuts. Exports are increasingly concentrated in the Russian market, and Middle Eastern countries are emerging as promising new markets. However, a good part of the imported products can be produced at home, and the variety and age structure of the plantations need to be changed. Due to the significant investments, the establishment of the plantations and their maintenance needs further support.

Due to the growing problem with lack of quality and skilled labor, more than ever, the need to introduce modern machinery in production processes, especially in those parts that absorb a lot of labor, such as pruning, harvesting, post-harvest processes and fig. Lack of sufficient modern storage facilities for longer storage of fresh fruit imposes the need to continue and increase the construction of purchase and distribution centers, but also storage facilities with smaller dimensions intended for own needs.

The process of merging fruit growers into functional cooperatives has long begun, but their capacity in terms of providing functional concentration of a significant part of the total supply remains far from satisfactory.

In order to promote domestic production, especially in certain groups of the population such as schools, people at social risk, institutions, etc. lack of policy instruments for the purchase and distribution of European type products.

**Processed fruits and vegetables**

Fruit and vegetable processing is one of the competitive and growing segments of the Macedonian agri-food sector in which participate about 60 active processing facilities, most of which are organized in the Macedonian Association of Processors. About 85% of the total number of active facilities process only vegetables or combined vegetables and fruits, and about 15% specialize in fruit processing. Canning, especially of vegetables, is the most common type of processing.

In the period from 2014-2019, the production has a trend of constant growth from 52.7 thousand tons in 2014, to 62.4 in 2019 or an average of 56.2 thousand tons. The industry is strongly export-oriented and in the same period about 79% of the total sold volume was realized on foreign markets, mostly in the EU[30]. The value of exports of processed products is continuously growing and the largest value of exports of 59.7 million euros was recorded in 2019, which is an increase of 24% compared to the value of exports in 2013. The value of exports is twice higher than the value of imports of processed products (31.8 million euros in 2019).

The utilization rate of the installed capacity of the industry of about 120,000 tons per year has increased from 53% in 2014 to 62% in 2019. Incomplete utilization results from the short processing season and the lack of available raw materials in off-season conditions, which would extend the production season. Due to high tariffs and complex procedures for importing fresh agricultural products, the processing industry relies almost entirely on arrangements with

[30] 58% of the total exported quantities and it participates with 54% in the total value of exports in 2019

domestic producers[31], mostly to retailers. In the period, the industry purchased an average of 12.8 thousand tons of fruits and 61.5 thousand tons of vegetables for processing per year, and red pepper for industrial processing with a share of over 67% in the total purchased quantities of vegetables is the main product.

Contract production is still not sufficiently represented as an efficient mechanism for regulating the demand and supply of raw materials for industry and most of the raw materials are negotiated ad hoc, before the beginning or at the peak of the processing season. Producers of fresh vegetables and fruits prefer to produce for the markets for fresh products, and to transfer the rest to the processing industry. Most often these products are unsuitable for processing which causes losses in the production process and lower quality of the final product. This, combined with the impossibility of importing raw materials in case of market shortages, obstructs the increase of production.

The industry needs seasonal and skilled labor, greater automation of the production process and equipment upgrades. Regarding the raw material, it is necessary to improve the quality, the varietal composition and the appropriate classification and packaging. Further faster development is possible only if a planned production of raw materials is established, based on longer-term contracts with primary producers. In order to be sustainable in providing domestic raw materials, steps are needed to strengthen the vertical integration of vegetable and fruit value chains by supporting contract production.

In order to comply with market demands, the production of vegetables and fruits should be improved and adapted to the needs of the processing industry, but also to introduce new varieties of vegetables (especially peppers) suitable for processing. It is also necessary to introduce / adjust production technologies to extend the harvest season. The development of appropriate technologies should be the subject of scientific research projects in appropriate institutions and training of industry representatives.

Access to capital as well as insufficient promotion of domestic products are also considered to be limiting factors and need to be improved. The fruit and vegetable processing industry needs to support more intensified and thought-out marketing activities through modern (e-commerce, online tools, web portal for demand / supply) and conventional methods in the domestic and targeted international markets.

According to the requirements of foreign buyers, the Macedonian processing industry needs to upgrade existing standards and introduce new security mechanisms, such as the introduction of traceability and detailed data and farmers - suppliers of raw materials for processing (used seeds, fertilizers, pesticides etc). Additionally, support is needed in introducing, implementing and certifying the new requirements of the upgraded quality standards, such as ISO 22000-2018 and IFS 2020. From the aspect of meeting the hygiene requirements, it becomes a necessity especially for companies that have a large workload the introduction of sanitary-hygienic checks according to the standard TN-STANDARD A75-S041 to prevent food contamination, especially during the COVID-19 pandemic.

[31] 21% of the total quantities of vegetables purchased in 2019 from individual producers, 15% from companies and cooperatives, 62% through intermediary traders and 2% are procured either from imports or from own production

**Viticulture and winemaking**

Viticulture is one of the most important agricultural branches with a share of 17-20% of agricultural GDP, which includes about 25,000 agricultural holdings. The areas under vineyards in the past strategic period have increased by 7%, from 21,109 hectares in 2013 to 24,468 hectares in 2019. The dynamics of raising new vineyards is about 2% per year. Grape production in the same period is relatively stable with an average of about 260 thousand tons per year and a yield of 11.3 tons / ha. On irrigated plots, the average yield is significantly higher and ranges from 17-23 tons per ha. The year with the largest production volume and the highest yields is 2016 with a total of 333 thousand tons and 14.4 tons per hectare. In the structure of the total grape production, wine grapes participate with 84%, while 16% belongs to the table grapes.

The purchase of grapes on average for the period 2014 - 2019 is about 100 million kilograms. The structural weaknesses related to the division of supply and demand in relation to the number of entities, their size and organization, create asynchronous relations, unbalanced position of the participants in terms of defining prices and purchase conditions and insufficient bargaining power of wine grape producers. This in turn leads to the occurrence of periodic surpluses or shortages of grapes with a purchase price of grapes that is often very close, even below the cost of production. The difference is usually alimony through state-provided income support.

The structure of the vineyards is unfavorable with more than 60% of the plantations older than 15 years, a larger number of plots less than 1 hectare and an assortment that needs to be adjusted to the needs of the wine industry for production of high quality bottled wines, ie market demands in relation of the varieties for table grapes (seedless, etc.). The application of mechanization-based processes in grape production that would optimize production costs, improve quality and shorten time is insignificant[32], due to which it is necessary to renew the mechanization and specialized equipment.

Wine production is organized in 76 wineries whose number in the next period is expected to increase significantly with the facilitations made in the registration of "small family" wineries.[33]. Average production in the period 2014-2019 is variable and depends mostly on climatic conditions, but on averageisabout 100 million liters. The growing trend of foreign exchange inflow shows that the Macedonian wine industry is overcoming the period of transition, increasingly reorienting from the production of bulk wine with low price, limited quality and almost no recognition, to the production of quality wine in bottles.In the period from 2014-2020, the most important market for Macedonian wine is the EU which participates with 63% in total exported quantities and 55% of the realized value.[34], as well as the CEFTA member states, i.e. Serbia, with a share of about 20%. Although twice as high (€ 0.8 / l, compared to € 0.47 /

[32] Mechanization is used only for basic soil cultivation and for vine protection. For ampelo-technical measures, harvest, etc. almost no mechanization is used, especially in the segment of family farms.

[33] In accordance with the amendments to the Law on Wine ("Official Gazette of RS Macedonia" no. 235/19).

[34] In 2019, 359,000 hectoliters belong to bulk wine, and 121,000 hectoliters of wine in bottles with utilization that ranges between 90 and 100% in the past strategic period. The Republic of Germany is the most important destination for the export of Macedonian wine, with a share of about 50% of the total EU exports. The second most important country is Croatia with a total EU share of about 29%.

l), the value of bottled wine in the past strategic period remains low as a result of Bag in Box wine and packaging exports. of wine in plastic up to 2 liters.

Despite the favorable climatic factors for growing renowned wine grape varieties, the long onetradition and the potential for production of quality wines from indigenous and regional grape varieties (Stanushina, Vranec and Temjanika), the country has not yet used the available potentials in winemaking. Macedonian wine is insufficiently recognizable on the world map or has a built perception of a country producing bulk wines. Hence, improving the image by applying various innovative marketing approaches adapted to modern trends in world markets, including connecting with wine and rural tourism, remains a need in the next strategic period.

The current system of protection of geographical origin should be fully harmonized with the EU legal framework in order for wines with a protected geographical name to be accepted by the union and protected on the European market.

The sector needs to continue supporting income (of primary producers) and co-financing the necessary investments in order to accelerate and facilitate the process of structural adjustment and optimization of the production potential for grape and wine production, modernization of production factors and introduction of new production practices.

Traditional types of vines are present on smaller and smaller areas. On the other hand, the indigenous varieties are fully adapted and optimally grown to the existing agro-ecological conditions, which is especially valuable in the current climate change.

**Cereals and fodder crops**

The production of cereals, which is important for ensuring security in the supply of the basic food product for the population of the country and the basis for the development of animal husbandry, engages significant production capacities that generally achieve insufficient efficiency in the outputs. The production of cereals is realized on 30% of the total arable land (157,685 ha in 2019) by 107,873 agricultural holdings that produce 8.2% of the value of the total agricultural production with yields at least twice lower than the European average.

The sector that is influenced by the regional competition from the liberalized CEFTA market and the imperial quota from the agreement with the WTO, in the period 2014-2019 showed a decrease of the cultivated area by 1.8% and reduction of the share in the total value of production by almost 2% ( of 10.1% in 2014).

The most important crop, wheat has the largest share in the total area under cereals of 43.7% in 2019 (decreased from 47.8% in 2014). Total wheat production decreased from about 288,000 tons in 2014 to 240,000 tons in 2019 or by about 16.7%. The market price of wheat in the period 2014-2017 was approaching the world level which is significantly below the prices achieved in the previous strategic period which reached up to 14.8 denars / kg[35]. The increased

[35] Decreases from 11.53 den / kg. in 2014 at MKD 8.84 / kg. in 2017, and in the period 2017-2019 there is an increasing trend from MKD 9.39 / kg in 2018 to MKD 10.57 / kg in 2019

average yield compared to the past strategic period[36] which in 2019 produced a profit[37]of only 2,000 denars per hectare, is still far from the level that will ensure sustainability of production. Due to this, the arable land decreases from 76,686 ha in 2014 to 68,847 in 2019.

Based on the identified weaknesses in wheat production, there is a need to maintain income support that actually maintains the current level of production, the need to reduce production costs and increase yields, especially in conditions of increased negative climate impact, which mainly repercussions on reduced productivity.

In conditions of market disruption and fall of the purchase price below the amount of products costs, measures of interventions are legally provided in accordance with the law, which so far have been applied only in the form of assistance for storage in state warehouses. Other interventions need to simplify procedures.

The areas under barley as the second most important cereal crop participate with 28% in the total area under cereals and in the period 2014-2019 have an increasing trend. However, due to the reduced average yields per hectare by 15.3%, the total barley production decreased by about 9.5%. Areas under corn participate with 21.6% in the total area under cereals and in the period 2014-2019 have an increasing trend of 11.5% with increased total production by about 6%. The size of the current maize area is sufficient to cover domestic needs if average yields are increased by about one-half through the use of highly productive hybrids and the introduction of new production technologies, primarily in terms of efficient irrigation.

Rice, which is the only export cereal crop, does not deviate from the general conditions in the cereals subsector. Culture is strongly influenced by price pressures in foreign markets dictated by far more competitive world producers. Rice production in the period 2014-2019 has a downward trend due to reduced areas by 31.3%, from 5,174 ha to 3,555 ha in 2019. Rice areas participate with 18% of the total irrigated area, right after the vineyards with 25%, due to which the impact of climate change is a significant factor of long-term sustainability. The only scientific institution that deals with the promotion of rice production for years has been neglected in terms of renewing the scientific staff and providing funds for the implementation of research projects.

Fodder crops in the period 2014-2019 record increased production trend and volume of average annual production of about 296,562 tons (from 255,082 in 2014)[38]. However, domestic production of animal feed and fodder crops meets only about 40% of total feed needs, while the rest is supplemented by imports, mainly from neighboring countries. Insufficient production of fodder crops and generally fodder is one of the main limiting factors for the development of livestock which negatively affects its cost structure. One of the reasons for this is the insufficient land area per farm, as well as the extensive way of production without the application of

[36] 3.5 t / ha in 2019 and the maximum 3.8 t / ha in 2016 compared to 2.9 t / ha for the period 2007-2013

[37] Of calculated average production costs of MKD 34,835 per hectare for the accounting year 2019 and MKD 36,836 / ha of revenues at realized yield and purchase price

[38] The most common fodder crop in the analyzed period is alfalfa with an average area of about 19,622 ha and an average annual production of about 112,458 tons. In second place is the fodder corn with an average area of about 6,000 ha and an average annual production of about 150,862 tons. They are followed by clover with about 3,702 ha and an average production of about 17,725 tons. Graor with an average area of about 2,070 ha and production of about 7,084 tons.

intensive agro-technical measures in production, then the fragmentation of the plots and the impossibility of proper application of irrigation in many areas.

### Tobacco and industrial crops

Tobacco production as the most common industrial crop[39]is organized as a mono-productive agricultural activity in several regions in the country and fully oriented to the oriental aromatic types. The replacement of tobacco with another non-agricultural or agricultural economic activity that would provide an equivalent level of income is limited due to the lack of alternative employment or due to inadequate natural conditions for another type of agricultural production in the existing production areas. Tobacco production has a strong social component due to the labor-intensive character and the engagement of about 155,000 members of family farms (or about 6-8% of the total population). All stages of the production process are regulated by a special legal solution.

The high purchase prices and the continued support of the income in the period 2015-2019 contributed to the increase of the revenues per decare area by 36.3% compared to the previous strategic period (from 26,700 to 36,400 denars). As a result, the production shows a stable trend with an average production area of about 16,588 hectares and an average annual production of about 25,300 tons. With achieved one fifth of the total value of exports, tobacco is on the first place as the most important Macedonian export product.

The production of other industrial crops as well as other agricultural production is extensive and is characterized by low yields that are drastically below the regional and European average. Non-competitiveness mainly arises from small agricultural holdings and the fragmentation of their land plots which often result in annual revenues insufficient to cover basic costs. In order to reduce production costs, producers are forced to save on tillage, fertilizers, pesticides that affect low and poor yields. Additionally, in most of the industrial crops, due to the trade liberalization, the purchasing processing facilities prefer the cheaper and higher quality imported raw materials. An exception to this may be the production of poppies for which there are conditions and interest in the country for purchase and extraction of alkaloids from poppy heads.

Sunflower is the second most abundant industrial crop after tobacco, with an average production area of 4,300 hectares and an annual production of about 6,688 tons, covering only about 7% of the needs for edible oil, while the rest is supplemented by imports. The relatively low purchase price of sunflower seeds, the low yields and the huge competition with cheap raw sunflower oil make the crop unprofitable and unattractive for producers.

### Organic production

The main goal in the part of the organic way of production in the past strategic period was the establishment of an institutional and legal framework, providing policies to support organic production, its promotion and popularization, as well as improving the recognition of the domestic market by starting to export to foreign markets.

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covers about 80% of the total area under industrial crops

Under organic agricultural production in 2019 are processed 0.41% of the total agricultural area. Organic production has increased significantly according to the certified arable land and the number of entities in the past strategic period. Thus, in 2019, 847 operators were registered, or 2.5 times more than the number in 2014 - 344. There is a significant increase in the areas under organic plant production, from 2,359 hectares certified or in transition production in 2014 to 4,275 in 2019[40.]The leading branch in livestock organic production is sheep breeding where from 52,288 heads in 2014, the total number of sheep in organic production rises to 57,936 in 2018 and another 43,381 sheep in transition, ie a total of 101,317. An increase from 6,285 in 2014 to 7,760 in 2016 is also recorded among bee families.

Financial support from additional subsidies that are higher than the amounts approved for conventional production previously set at 30%, in the past strategic period has been further increased to 50% for crops, livestock and beekeeping, 70% for fruit and viticulture and 100% for horticultural production. In the next period, the accreditation of the measure for support of the organic production is expected within the agro-ecological measures supported by the IPARD 3 program, calculated according to the appropriate methodology that should provide higher support compared to the existing one.

Organic production needs greater recognition and verification of increased market value through higher prices, which is still not the case for the most part and is often marketed without the necessary differentiation.

The development of organic production in the country is slow due to the lack of appropriate protective equipment that contributes to the trend to certify most crops that have fewer requirements in terms of required protection (nuts, hazelnuts, Japanese apples, pomegranates, etc.). Companies that offer remedies have no particular interest in selling assets permitted for use in organic production due to the limited market. Producers also complain about the weak supply of allowed raw materials for crop production on the domestic market (seeds, seedlings and pesticides).

Insufficient educational and informational activities for organic farmers are another obstacle to the development of organic production.

**Seeds and planting material**

Production of agricultural products is largely determined by the use of quality certified seed and planting material which guarantees higher yield, quality and authenticity of the variety or product. For a good part of the crops, the farmers use mercantile seeds from their own production, which has been identified as one of the factors influencing the low yields and risk to plant health. Due to the decline in scientific research and economic capacities that were engaged in the production of seeds and planting material in the country, domestic seed production meets only about 30% of the needs, while the rest uses mercantile seeds or imported seeds. The situation is similar with the production of domestic planting material from

[40] The largest share in the organic plant production in 2019 have fodder crops with 34%, followed by cereals with 23%, orchards with 17%, aromatic / medicinal plants with 12%, horticultural crops with 10%, while oilseeds and vines. plantations with 1-3% each.

fruit plants and vines necessary to satisfy the growing interest in raising and renewing the existing perennial plantations with quality seedlings.

With the introduction as a condition in the support measures, in the past period there has been increased use of certified seed material for crops by support users, as well as a tendency to increase domestic production of planting material with varietal characteristics adapted in certain regions of the country.

The need to increase the production of seeds and seedlings of domestic origin and the increased use of certified material in production remains relevant in the next strategic period and is directly related to the provided supplement to the income of producers. Also a priority remains the domestic production of seedlings of garden and ornamental plants produced in special, sanitary-safe conditions.

Creating new varieties of more productive and better varieties of agricultural plants is a long process. Breeding programs include selection and creation of new varieties that are characterized by different production, biological and agro-ecological properties adapted to different soil-climatic conditions in our country. The selection of new varieties is currently stagnant due to lack of funds. For these reasons, there is a need to introduce breeding programs for creating varieties that give higher yields and quality and are adapted to our soil-climatic conditions in certain regions. Also, the problem of lagging behind in fulfilling the legal obligation of producers for a DUS test of all domestic varieties of seeds and seedlings of agricultural plants for (re) entry in the national variety list is evident.

The main plantations in fruit plants and vines that are used for the production of basic planting material are the basis for obtaining virus-free and quality seedlings. In order to achieve a significant step in raising the root crops of fruit plants and vines, it is necessary to provide a basic material for stem plants that is rarely traded. For these reasons, domestic producers produce certified and standard material (SAS) from fruit plants and vines. The creation of stem plantations requires training on the method of production and raising of basic stem plants, which would be delivered to experts from scientific institutions and seed material producers by external technical support.

Our country has a great variety of indigenous varieties of agricultural plants adapted to the local soil-climatic conditions that are a national treasure and a source of genetic potential for the creation of new varieties and they will be subject to protection and conservation. With the influx and dominance of commercial varieties of seeds and planting material of foreign origin, it is necessary to preserve the national diversity of seeds and planting material, which, although less fertile, are characterized by greater resistance to climate change and disease. The conservation procedure requires the preparation of reports with research results or data by indigenous variety grown in certain areas in our country and its inclusion in the national variety list for which funds and initiative are lacking. Part of the protection system is the current functioning of the gene banks in authorized institutions where seed and planting material of variety and indigenous variety registered in the national variety list are stored and maintained.

Ornamental plants, including flowers, are part of the products referred to in the provisions of the Law on Seeds and Seedlings for Agricultural Plants. Regarding the production of ornamental plants, there is a problem of taxation of seed material with a higher rate of Value Added Tax (hereinafter VAT) of 18% instead of the preferential tax rate of 5% which is generally applied in the trade and import of seeds and planting material for production of agricultural plants in accordance with Article 30 of the Law on Value Added Tax.

### I.3 Environmental conditions, natural resource management and the impact of climate change

Although the general use of fertilizers and pesticides is relatively very low compared to EU countries, intensive agriculture and the transformation of semi-natural pastures into arable land can pose a threat to the country's biodiversity in localized areas with high production potential in the country. Loss of biodiversity as a result of land abandonment and traditional cattle breeding in hilly and mountainous areas leads to deterioration and eventual extinction of semi-natural habitats and traditional landscapes. A special problem is the intensive urbanization and expansion of some of the settlements at the expense of agricultural land.

The negative effects of climate change are expected to have a greater impact on agriculture than any other sector in the country, significantly reducing the yields of most crops. The analysis of the different climate change scenarios for the country shows that the average annual temperature will increase by 1.0 ° C by 2025 and 1.9 ° C by 2050, while the average rainfall is projected to decrease by 3% and 5%. in the same time periods, which means a significant increase in dryness. This risk is further intensified by the relatively low productivity and lack of adjustable capacity also known as the "adaptation deficit" due to a number of structural factors.

With a significant proportion of the rural population dependent on agriculture for their livelihood, rural communities are particularly vulnerable to the risks posed by climate change. Sensitive subsectors and areas are: crop production[41], soils and livestock. The risks of climate change in the agricultural sector in the country outweigh the potential benefits of it.

The most significant impacts of agriculture on the environment are associated with soil degradation and salinization as a result of unsustainable agricultural practices and land use; poor water management; biodiversity degradation and soil erosion. All of these problems increase the vulnerability of agricultural systems and rural assets to external shocks, such as climate change.

As climate change is projected to have a negative impact in almost all important agricultural regions of the country, there is a need to develop and implement adaptation options to increase the resilience of agricultural systems that will provide protection against natural disasters, environmental protection and sustainable management. resources, as well as for adaptation to climate change.

The cultivation of agricultural crops on most of the territory of the country is impossible without additional irrigation. On the other hand, due to the frequent heavy rains that often coincide with the periods of increased humidity, agricultural areas, especially along the larger river streams, are often hit by floods with large economic losses after production. Hence, expansion and rehabilitation of existing and construction of new irrigation systems remains a priority need

[41] The following crops are defined as vulnerable crops: vine / grape as the most important crop in the Vardar region, tomatoes in the south-east of the country, wheat as the most important cereal crop in the Skopje, Kumanovo region and Ovche Poleito, and apples in the southwest region, especially in Resen. Alfalfa as a crop with a very high demand for water and great importance in the livestock sector, which is vulnerable in all agricultural regions in the country, especially for the Bitola region.

especially in terms of expected adverse effects of climate change that will increase irrigation needs on the one hand, and reduce the available amount of irrigation water from another.

National biological resources, represented by indigenous varieties, breeds and species, should be conserved for economic, scientific, cultural, socio-economic and environmental benefits. The number of varieties and species in agricultural production is evidence of the great biological diversity of the country. According to the National List of Indigenous Agricultural Plants and Livestock Breeds, there are 410 indigenous varieties of plants of different species. Based on this list, the Minister of Agriculture prescribes the method for monitoring and analysis of the condition of indigenous species based on their level of endangerment and provides additional measures for preservation, collection and storage of necessary genetic resources and their use for agricultural production. The genetic diversity of plant species present in the country is stored in gene banks in three scientific research institutions.

Regarding the protection of genetic resources in livestock breeding, Article 54 of the Law on Animal Husbandry defines the indigenous breeds and / or lines according to the types of livestock: Cattle - Busha; Sheep - Karakachanska, Ovchepolska and Sharplaninska sheep: Goats - Balkan goat: Pigs - locally primitive: Chicken - domestic chicken: Buffalo - domestic buffalo: Horse - domestic horse: Donkey - domestic donkey: Bees - bee (Apica mellifera) shepherd dog Sharplaninec. They are included in the monitoring system and are part of the measures and activities of the Program for protection of biodiversity in animal husbandry. Most are subject to financial support.

The forestry sector is expected to experience a high level of impact from climate change. The main sources of exposure (and associated impacts) for the country's forests are rising temperatures, declining rainfall, increasing forest fire frequency, and changes in forest productivity.

The economic, social and ecological functions of forests are of great importance for the sustainable development of society and for improving the quality of life, especially in rural and mountainous areas. According to statistics, the total area under forests will decrease by 1.01 million ha or 39.2% of the country's territory in 2018, and together with other forest land and bare land related to the forest, 1.12 million[42]ha or 43.7% of the country. The area under forests has increased by 4.9% since 2010, while the other forest land by as much as 14.3% as a result of the spread of abandoned agricultural land. The total wood mass is 74,343,000 m³, and the total annual growth is 1,830,000 m³ with an average annual growth of 2.02 m³ per hectare. The planned annual blade level is about 1,300,000 mW, and about 70% of it is used.

State-owned forests cover 90% of the total area under the forest, and their share in wood reserves is 92%, and the rest are privately owned forests. There are more than 200,000 plots owned by about 65,000 households, averaging 0.6 ha per household. Employment in the forestry sector is estimated between 0.3% -0.5% of total employment. However, despite the potential, the contribution of forestry to the national GDP is less than 0.5%, twice less compared to the EU average of 1%, and the share of the wood industry (primary and secondary processing of wood, furniture, paper and cellulose, etc.) in GDP is 2.5-3%.

[42] Of which the total area under forest is 947,653 ha, of which 82% are deciduous, 12% coniferous and 6% mixed forests. High-stemmed forests cover less than 30% of the total area under forests and participate with 61.6% in the total wood reserve, and low-stemmed forests occupy 70% of the total area under forests and participate with 38.4% in the total wood reserve.

Although the country has good potential for forestry development, limiting factors are: the high percentage of degraded forests and shrubs and the poor quality of the wood mass due to which it is used more as firewood and very little as technical, widespread illegal logging and other illegal activities. , followed by devastating forest fires that annually (1998-2012) destroyed an average area of about 10,344 hectares and deforestation due to climate change or attack by harmful insects and diseases. These risks cause huge economic and environmental losses in the forestry sector.

Poorly developed forest road infrastructure hinders the development of the forestry sector. Insufficient openness of forests with forest roads affects the fast, quality and effective execution of professional work in forests, but also the timely intervention in the occurrence of forest fires. In order to improve investments in infrastructure, MAFWE has prepared a "Study for development of forest road network in the Republic of Macedonia" according to which the design and construction of forest roads in the future will be done on the principle of planning and project documentation by selecting appropriate technologies and the use of modern information and technological aids. Based on this study PE "National Forests - Skopje, Department for Forest Management and Hunting and Design in the future will develop special plans for forest management.

In recent years there has been a growing interest in growing fast-growing trees for industrial use.

Water resources, i.e. groundwater and surface water are relatively clean upstream and deteriorate rapidly along their middle and lower reaches. The risks of water pollution are high in intensive agricultural regions with monoculture production near water sources and lakes. Livestock farms are a special problem for groundwater. The modernization and intensification of agriculture will further endanger surface and underground springs and reservoirs. Polluted water limits the choice of crops, especially more profitable crops such as vegetables and fruits.

About 38 percent of the country is prone to high soil erosion due to topographic features and heavy rainfall, but in many cases, soil erosion is caused by unsustainable agricultural practices. Soil erosion has resulted in large amounts of sediment ending up in reservoirs and irrigation and drainage facilities, leading to reduced storage / flow capacity and damage to critical infrastructure.

### I.4 System of knowledge and innovation in agriculture

The education system in agriculture consists of agricultural secondary schools and higher education institutions. Non-formal education is not institutionalized, but is implemented irregularly, within national and international projects.

There are eighteen secondary vocational schools with curricula for the professions: agriculture and veterinary medicine (in 10 schools), forestry and wood industry (in 7 schools) and food (in 5 schools). Schools are dispersed in different parts of the country. Given the trend of unattractiveness of these professional profiles, all these schools offer other curricula and teaching profiles (especially high school classes), which attract more students. Even in areas where agriculture is one of the main activities and source of income of the population, and where there is a need for this type of specialized curriculum to continue and improve the management of agricultural holdings, there is little interest and the number of students is declining. every year. The problem of increased migration and emigration also contributes in

this direction. In order to use these capacities, it is necessary to put them in function of a system for non-formal education of farmers that will provide a continuous training system to improve their qualifications, especially for agricultural management, application of new technologies, application of market standards for food quality and safety.

Higher education in agricultural sciences, forestry, wood industry, veterinary medicine and food technology takes place at nine faculties that are part of the five state universities. The faculties offer a significant number of study programs of first, second and third cycle education. The study programs provide knowledge and skills for the professions in the field of agriculture, veterinary medicine, food and forestry and cover the needs of the labor market in these areas. In the part of higher education institutions, the number of students is drastically reduced due to the reduced interest in studying in these areas, as well as the reduction of the number of students in the secondary schools that was mentioned in the part of secondary education. This contributes to the insufficient capacities utilization, and above all the personnel potentials of the teaching-scientific workers to be used in the part of building the systems for transfer of knowledge especially to the advisory services, in the scientific-research and professional-application projects in improving the technical-technological processes, transfer of modern technologies and improvement of methods in the management of agricultural holdings.

In the part of scientific research work, innovations and technology transfer, besides the faculties, the three scientific institutes also participate, which in the last few years are also with insufficiently used capacities, as a result of very small investments in science and the undeveloped system for continuous professional applicative work for the needs of agriculture.

In the past, the transfer of technologies and innovations is a shortcoming, due to the weak connections between the key institutions in such a system (teaching-scientific institutions - advisory services - producers / state institutions). Some of the teaching-scientific institutions have agricultural land, but due to insufficient support these institutions can not implement more serious application projects and turn these land facilities into demonstration farms, which should be seriously supported and built in the coming period.

Modern agriculture today in extremely fast technological-technical and socio-economic changes, as well as under the serious influence of natural conditions and above all climate change must be strongly supported by the rapid flow of information. Although significant improvements have been made in the past period in the area of system building and the introduction of Information and Communication Technology (hereinafter ICT) in agriculture, all this must continue at an even greater pace and with the connection of systems and databases with each other. and giving manufacturers greater access to their use.

## PART II. OBJECTIVES, TYPES OF POLICY INTERVENTIONS AND MEASURES FOR THE PERIOD 2021–2027

Based on the needs assessment in the agricultural sector, rural development, environmental and climate aspects and natural resource management, Part II of the strategy presents the strategic and specific objectives of the national agricultural policy for the period 2021 - 2027 and the selected policy interventions by types in nine areas of intervention that should contribute to achieving the set goals.

### II.1 Strategic goals for development of agriculture and rural areas

Because of the multidimensional significance as the third most important economic activity in the country that provides food population and sustainability of rural areas and has significant environmental and climatic links, iagriculture and in the next strategic period will be one of the priority economic sectors in the country. The COVID-19 virus pandemic further emphasized the importance of agriculture, ie the need for the population to be provided with healthy, safe, quality and varied food of domestic origin.

The goals of the strategy are through modernization to achieve an increase in agricultural production in order to better meet consumption with domestic production, raising the quality of Macedonian agricultural products with added value, ensured food safety and animal welfare, ie to create conditions for sustainable agriculture that is competitive in the domestic and foreign markets. Improved agricultural performance along with other policy interventions will contribute to improved rural sustainability. At the same time, agricultural practices should be beneficial for the protection and promotion of the environment and the maintenance of biodiversity.

In the past strategic period, Macedonian agriculture operated in conditions of: increased competition from regional agricultural economies with losses in competitiveness and sub-sectors with comparative advantages, reduction of world product prices, under the influence of unfavorable climatic conditions, especially in 2017, spread of serious diseases with major damage to the livestock sector and finally, in the last year of the period, with market disruption caused by the impact of the global coronavirus pandemic. The sector is under severe pressure from declining labor availability in rural areas due to general migration movements.

At the same time, the sector is in the process of restructuring with the reduction of the number of agricultural holdings and the gradual consolidation of capacities. Within that process, the improvement of business performance can be achieved by changing the existing approach in production and marketing by investing in improved technologies and applying advanced business management knowledge. The co-financing of at least half of the investments for modernization of agricultural holdings and processing facilities will continue to be supported by the national budget and the funds of the instrument for pre-accession assistance from the EU - IPARD, while farmers and other stakeholders in the sector will for the first time have the opportunity to effectively upgrade their knowledge and skills through functional links with science and advisory services achieved under the newly established Agricultural Knowledge and Innovation System. In order to provide an opportunity for livestock farms to invest, the economic facilities in the farms will be legalized.

As the gradual transformation of agri-food production systems takes place, it will be necessary to ensure that the transition does not further contribute to unemployment or depopulation of rural areas or the deterioration of rural areas and the loss of biodiversity. Hence the need to create alternative and sustainable agricultural and non-agricultural economic opportunities in rural areas.

Additional pressure on agricultural holdings comes from the negative impact of global climate change on the size and quality of yields. Adapting and improving performance in such conditions requires additional investment and innovative measures supported by policies that will help increase its resilience, but also reduce the impact of agricultural and forestry activities on climate change. Supporting local governance and social capital in rural areas through the

LEADER approach, disseminating good practices and innovation and networking will enable rural communities to better respond to different types of challenges.

The sustainability of rural areas is directly related to the living and working conditions in them. Increased investments in communal, economic and road infrastructure in rural areas in the next period will have to affect the improvement of the well-being of the population and the development of economic activities, especially aimed at providing conditions for young people to stay and live in villages. As a driving force for rural development, young farmers starting an agricultural business will be encouraged to implement their plans. Capital investments for the rehabilitation of existing and expansion and construction of new systems in water management and drainage as a prerequisite for agriculture, remain to be the most important item in investments, especially in conditions of pronounced climate impacts.

The lower incomes in agriculture compared to other economic activities contribute to the acceptance of the sector as less attractive, due to which the departure and lack of labor force is evident. Revenue support through direct payments plays an important role in the sustainability of the production activity for most of the holdings especially in sheep breeding and goat breeding, cattle breeding with milk production, cereals, etc., ie contributes to increasing the development and investment potential of those with larger production capacities. In addition to maintaining production, payments have a positive impact on the social stability of the rural population, especially those dealing with sectors with insufficient comparative advantage or living in areas with limited production conditions.

However, in order to increase the efficiency of investments, the focus of the policies will be on family businesses that will be supported to specialize in high-quality agricultural production demanded in the markets. Small farms need to consolidate their supply and strengthen their bargaining position by joining cooperatives, increasing the productivity of limited capacities or converting to other more profitable types of production. On the other hand, large agricultural enterprises and processing facilities should use the opportunities to support investments to improve competitiveness and their performance, to improve horizontal integration and, of course, to establish functional, partnership links with primary production. They should be leaders in the development and broadcasting of modern technology, innovation and improved genetics. All participants together will have to respect the mandatory agreements for the purchase of agricultural products and start with consistent application of minimum quality standards.

Inherited structural weaknesses in agriculture related to the small average area per holding and spatial dispersion of plots are the main limiting reasons for insufficient competitiveness. For gradual overcoming of the situation in the next period, the state intervention in consolidation of the plots will continue, allocation of state land to the real producers by allocating the cattle breeders in special announcements and sale of separate plots. At the same time, the land market will be stimulated by taxing agricultural land that will not be cultivated or offered for lease.

Policies in the agricultural sector will be in line with the general obligations and guidelines of the country for adjustment to the EU Common Agricultural Policy (CAP), while not neglecting the needs of the domestic market and markets globally. The adjustment should enable the sector to function more successfully in conditions of increased competition in the single European market.

In order to address the identified needs of the sector, the interventions of the national agricultural policy in the upcoming strategic period 2021-2027 will need to achieve the following **strategic goals** for:

- improving the competitiveness of the agri-food sector, economic sustainability and income of agricultural holdings,
- application of environmental practices in production that lead to mitigation and adaptation to climate change and
- ensuring sustainable development of rural areas.

These goals will be complemented by the horizontal goal of modernizing the sector by encouraging and sharing knowledge, innovation and digitalisation in agriculture and rural areas and encouraging their acceptance by farmers and other stakeholders in the sector.

### II.2 Specific objectives for the development of agriculture and rural areas

The achievement of the set strategic goals will be achieved through targeted agricultural policy interventions in nine specific areas that are presented as specific goals. The specific goals, ie the areas of intervention of policies for the period 2021-2027 are given in Table 5, which presents the relationship between them and the three main objectives of the strategy.

Table no.5. Overview of strategic and specific goals of the NSAFR 2021-2027

| Strategic goals | Specific goals |
|---|---|
| **Improving the competitiveness of the agricultural sector, economic sustainability and income of agricultural holdings** | SG 1. Supporting the sustainable income of agricultural holdings due to their contribution to improving the security of food supply |
| | SG 2. Strengthen market orientation and increase competitiveness, with a special focus on research, technology and digitalization |
| | SG 3. Improving the position of farmers in the value added chain of agricultural products |
| **Application of environmental practices in production that lead to mitigation of the impact of climate change adaptation to the same** | SG 4. Contributing to climate change mitigation and adaptation, as well as greater use of sustainable energy |
| | SG 5. Encouraging sustainable development and efficient management of natural resources such as water, soil and air |
| | SG 6. Contribute to the protection of biodiversity, improvement of ecosystem services and conservation of natural habitats and landscapes |
| **Ensuring sustainable development of rural areas** | SG 7. Attracting young farmers and facilitating the development of businesses in rural areas |
| | SG 8. Promoting employment, growth, social inclusion and local development in rural areas, including bio-economy and sustainable forestry |

| | |
|---|---|
| | SG 9. Improving agriculture's response to society's demands for food health aspects, including food safety, nutritional composition and sustainability, food ending up as waste, and animal welfare |

The description of the specific objectives and their relation to the policies that should contribute to their achievement are elaborated in more detail below.

SG **1. Supporting the sustainable income of agricultural holdings due to their contribution to improving the security of food supply**

In conditions of continuous variability of prices on the markets with agricultural products, the agricultural activity realizes significantly lower incomes than the average in the country. Due to this, the support of supplementing the income of the farmers realized from the markets through direct payments will continue. Payments, which will generally be at the same level as in the past, should take a closer look at European-type characteristics of non-production. At the same time, part of the production-related payments will be precisely targeted in treating the identified problems and conditions in the sub-sectors and aimed at achieving the defined sub-sector goals.

In order to ensure revenue stability, instruments for income stabilization and risk management will be applied, such as insurance, establishment of private mutual funds, private storage and limited interventions in the markets, as well as intervention increase of the amount of support, especially in the first period until the other instruments of European type are introduced.

SG **2. Strengthen market orientation and increase competitiveness, with a special focus on research, technology and digitalization**

In the past period, the productivity of the factors of production has a positive trend and in a good part of the sectors it maintains the production in conditions of structural adjustments and reduced total capacities. However, compared to the European level, and even in the regional context, there is a need for further improvement. With limited resources, increasing productivity is the only way to increase the level of income of economies and in that direction policy interventions will co-finance capital investments to optimize production costs and rationalize labor. Support will be provided for improving the genetic potential in animal husbandry, changing the variety structure in viticulture and fruit growing, as well as supporting the production and application of certified seed and planting material.

Special emphasis will be placed on the introduction of policies that have been completely neglected in the past aimed at training human capacity to apply new technologies. The newly established Knowledge and Innovation System should connect all stakeholders in innovation creation, knowledge transfer and digitalization and enable the exchange of digital technologies, smart farming and production methods based on knowledge and good governance. The negative perception of modern technologies among farmers will be overcome with effective advisory services, demonstration farms and trainings to facilitate the acceptance of new technologies.

The reduction of production costs and creation of conditions for application of modern technology will be achieved by improving the land structure by consolidating the plots, and the increased availability of land for cultivation through lease and sale will increase the area per holding.

**SG 3. Improving the position of farmers in the value added chain of agricultural products**

Restructuring and consolidation of holdings is a long process, so improving the position of farmers in the value chain in the short term is possible only through their association in cooperatives. This will continue to be supported by rural development policies by supporting the establishment and operation of agricultural cooperatives. Additionally, a new policy intervention will be introduced for the recognition of producer organizations and inter-branch organizations and the implementation of activities from their operational programs. Due to the insufficient progress of association in the sector, and in order to stimulate it, forms that are not economic association, but have a market orientation will be supported in transition. The association of women from rural areas in cooperatives will be additionally stimulated.

In order to establish fair market relations, the provisions of the Law on Agriculture and Rural Development will be consistently implemented, which refer to mandatory contracts for the purchase of agricultural products, registration of buyers, arrangement of purchase points, and notification will be done electronically. way. Improving market transparency will be stimulated by the establishment of market information systems for the most important products related to LPIS. The position of farmers in the market will be supported by developing new models of production of products with a given value demanded in the markets (organic production, protected geographical indications) and by reducing, i.e. avoiding intermediaries (direct sales, electronic sales, etc.).

**SG 4. Contributing to climate change mitigation and adaptation, as well as greater use of sustainable energy**

Climate change has a serious impact on Macedonian agriculture through reduced yields, the need for additional irrigation or drainage and increased incidence of atypical plant and animal diseases. In order to mitigate and adapt to climate change, practices that do not affect the climate will be stimulated by introducing them in cross-compliance requirements and with increased intensity of co-financing the necessary investments. The new IPARD program for the period 2021-2027 will provide an additionally higher percentage of public co-financing of investments aimed at mitigating and adapting to climate change. Projects to support the reduction of GHG CO2 equivalents will represent at least 5% of the total number of projects financed through Measure 1 of the IPARD program (compared to 1.6% at the beginning of the period).

The negative impact of the changes will be mitigated through support for the procurement of protective equipment, efficient water use systems, such as and change of varieties appropriate to the future climate regime will be encouraged, especially for the most sensitive subsectors. Special attention will be paid to stimulating investments in the production of energy from sustainable sources of the economy and improving energy efficiency.

Farmers will be supported by appropriate advisory packages for good practices and training to reduce the impact of change.

One of the main answers will be the realization of large capital investments for the rehabilitation of the existing and construction of new hydro systems for irrigation and drainage that should improve the regional availability of water during the irrigation periods, as well as flood protection.

**SG5. Encouraging sustainable development and efficient management of natural resources such as water, soil and air**

Soil is the most important natural resource and basis for agricultural production and the provision of sufficient food for the population depends on healthy and fertile soil. Policy interventions to protect the soil from degradation will be strict adherence to cross-compliance requirements for soil cover, erosion protection, investment support for precision agriculture using sensors for optimal application of agro-technical measures and providing financial support for agri-environmental measures.

Precise agriculture that doses the use of water and fertilizers as needed will be promoted through the operational programs of producer organizations and supported by the System for Knowledge and Innovation in Agriculture through tailored advice and training. Co-financing the plans of livestock farms to meet the requirements for environmental protection and providing land for dislocation of farms will reduce the risks of pollution of resources.

**SG6. Contribute to the protection of biodiversity, improvement of ecosystem services and conservation of natural habitats and landscapes**

Agricultural activity depends on many different types of biodiversity[43], but also plays an important role in preserving the habitats and species found on agricultural land. The policy interventions that will be undertaken towards achieving the set goal are direct and indirect. The first includes financial support for the conservation and protection of indigenous breeding animals and plant varieties and the application of agri-environmental practices relevant to biodiversity, as well as the imposition of obligations on biodiversity producers that are part of cross-compliance.

On the other hand, indirect beneficial effects will be achieved through the support of livestock activities which with low-intensive grazing of animals contribute to the protection of biodiversity. The application of improved agro-technical practices (eg growing different crops, natural pest control, soil conservation measures) and technologies such as precision and digital farming that achieve solid yields with less use of water, fertilizers and pesticides, will be supported through the Knowledge and Innovation System (training, advice and research projects).

Due to the fact that the maintenance of several different features of the landscape on agricultural land contributes to the protection of biodiversity, by the end of the strategic period

[43] e.g. soil bacteria, genetic resources in relation to cultivated plants and animals, pollinating insects

the situation will be analyzed and the first features of the landscape will be introduced in the national agricultural policies.

**SG 7. Attracting young farmers and facilitating the development of businesses in rural areas**

Attracting young farmers to start an agricultural activity will be stimulated through a package of benefits offered through several policies, such as: additional direct payments, grant for investments to start an agricultural business with an increased amount, facilitated access to agricultural land and mandatory training and advisory support in the area of their activities. In order to support the businesses of young farmers, a favorable credit line will be introduced for all purposes necessary for starting or expanding businesses (buying land, investing in assets and machinery, etc.).

The children of the registered farmers will be awarded scholarships for education in the agricultural professions in order to continue with the activity of the economy, but also the application of new technologies, knowledge acquired in schooling.

Also, the measure for early retirement will be implemented, which will enable payment of funds to adult farmers who transfer to a defined minimum size of a young farmer, as well as an analysis will be made for the introduction of an obligation for mandatory inheritance of agricultural property by to one of the successors in order to preserve the functionality of the holdings without their dispersal.

**SG 8. Promoting employment, growth, social inclusion and local development in rural areas, including bio-economy and sustainable forestry**

Rural areas are characterized by higher poverty and unemployment rates than urban areas, especially among the young population. Rural development measures aimed at creating businesses or diversifying economic activities in rural areas that do not necessarily have to be related to agriculture (rural tourism, woodworking, services, crafts and processing) will continue to create jobs. , especially in areas where agriculture is predominantly an ancillary activity or a restructuring process is taking place. Starting a micro and small business in rural areas will be supported with financial support of 10,000 euros. Projects to support income diversification in rural areas will represent at least 35% of the total number of projects funded through Measure 7 of the IPARD program (compared to 23% at the beginning of the period). Additional incentives will be provided for the involvement of women from rural areas in these processes.

Direct employment support will be provided for identified categories of employees where the lack of labor force affects the sustainability of the activity, namely, compensation of part of the salaries of sheep and cattle breeders and managers of agricultural cooperatives and subsidizing the salary of 3,000 denars per newly employed worker under 25 years of age in an agricultural holding (which also contributes to the realization of SG 7).

Eliminating gender inequality and empowering women can increase agricultural productivity and contribute to the development of the whole community.In order to ensure gender equality,

the economic activity of women farmers will be supported with additional direct payments, with a grant for processing activities of the agricultural holding and benefits in the ranking of projects from the new IPARD program. Within the framework of the land policy, the status of women will be improved when registering changes in common property, such as in consolidation procedures.

Support will be provided to local development initiatives arising from the activities of local action groups through the LEADER measure.

**SG 9. Improving agriculture's response to society's demands for food health aspects, including food safety, nutritional composition and sustainability, food ending up as waste, and animal welfare**

The established food safety system will be raised to a higher level towards achieving a sustainable food system, which, together with the economic ones, should bring environmental, health and social benefits and ensure a sustainable existence for the primary producers. In the next period, food safety policies should ensure the provision of sufficient quantities of quality and safe food for the needs of domestic consumers and foreign markets, as well as animal welfare.

The implementation of food safety standards, which are already real obligations for the participants in the sector, is still a burden for most of them. Achieving these requirements is not only a matter of guaranteeing a high level of health care, but also of improved competitiveness and access to external markets and in that direction they will receive state support in achieving them.

The establishment of a system for the safe disposal of animal waste will ensure a high degree of environmental protection related to by-products of animal origin. In order to properly treat the problem of antimicrobial resistance, an analysis of the situation with this phenomenon in the country will be made and appropriate measures will be defined to deal with the dangers of it.

Habits for sustainable food consumption will be promoted by facilitating the transition to a healthy and sustainable diet, and a Law on Food Excess Management will be adopted. In addition to promotional campaigns, fruit and vegetable and school milk schemes will be implemented in that direction.

In achieving the goal, plant protection policies should make a significant contribution, especially through the implementation of monitoring programs and the establishment of integrated pest management, and will also encourage increased production of seeds and planting material of domestic origin, as well as protection and preservation of the genetic diversity of domestic varieties.

**Financial framework for the strategic period 2021-2027**

The achievement of the ambitious goals of the national agricultural policy in the next period will be supported by an increased amount of funds compared to the previous period, which from the current 138 million euros, will gradually reach the amount of 200 million starting from 2024.

In order to ensure increased return on government investment in agriculture and rural development, the overall projected increase in allocations for the period after 2020 will be aimed at supporting private and public investment, regulating agricultural markets, structural interventions and improving knowledge, innovation and digitalization. By the end of the strategic period, the relative share of funds for this type of policy interventions will double compared to 2020 and will amount to at least 35% of the total allocated funds to support agriculture and rural development or in an absolute amount of at least 70 million euros.

### II.3 Indicators and target values for the period 2021-2027

As a result of the implementation of the planned policy interventions, the sector is expected to achieve the set goals of further growth. By the end of the next strategic period, agriculture will achieve a net added value of 58.6 billion denars, which is 43% higher than the core value. In relative terms, the share of the gross value added of agriculture, forestry and fisheries in the country's GDP is expected to further decrease to less than 7% as a result of the growth of other more propulsive economic activities.

Direct payment measures, which ensure the sustainability of agricultural activity by supplementing revenues, are expected to participate between 10 and 12% in the total net value of agricultural production.

The growth of value will be realised in conditions of further restructuring of the sector by reducing the number of participants and increasing their production capacity and economic size. The positive achievements will be a result of the increase of productivity (+ 20% of labour and 35% of land) and improvement of the structure of the factors of production. Improved output performances should offset the problems caused by the reduction of labour engaged in production as a result of migration movements and structural adjustments.

These processes will be stimulated through larger investments in fixed assets whose value in 2027 is expected to be higher by 39% compared to the initial period, in which public capital investments in rural infrastructure and co-financing of private agricultural investments through measures should have their contribution.

On the other hand, the structural changes of the factors of production should be positively influenced by the support for young farmers, association, improvement of land holdings, improvement of varietal and racial representation, etc., by supporting structural policies and the new system for creation and transfer of knowledge. The planned investments in rural infrastructure should improve the living conditions and economic activities in rural areas and slow down migration, especially of the young population.

The value of annual exports of agri-food products in 2027 is expected to increase by EUR 200 million to EUR 835 million, with a parallel but slight increase in imports leading to a larger Import-export coverage for the period is 81% (unlike 73% in 2019).

The indicators and target values through which the performance of the sector and policies in the period 2021 to 2027 will be monitored are presented in Table 6.

Table no. 6. Indicators and target values for the strategic period 2021-2027

| Indicator | Initial value (year) | Target value 2027 (year) |
|---|---|---|
| **General economic indicators** | | |

| | | |
|---|---|---|
| Gross value added of agriculture, forestry and fisheries in GDP,% | 8.1 (average 2016-2018) | ≤ 7 |
| Net value added in current prices, denars | 40,817,000,000 (2017) | 58,570,000,000 |
| Net value added in current prices in denars per GRE | 295,775 (2017) | 432,000 |
| Net value added at current prices in denars per arable land, ha | 78,969 (2017) | 114,000 |
| Total factor productivity, FADN (SE132) | 2.42 | 2.52 |
| Investments in fixed assets agriculture at current prices, denars | 3,419,000,000 (2016) | 4,750,000,000 |
| Value of export of agri-food products, in euros | 624,503,315 (2019) | ≥835,000,000 |
| Value of import of agri-food products, in euros | 837,149,075 (2019) | ≤1,029,000,000 |
| **Structural indicators** | | |
| Number of agricultural holdings | 187.125 (2016) | 145,000 |
| Average size in ha per agricultural holding | 1.8 | ≥ 2.0 |
| Average economic size of an agricultural holding, in European units of size | 7.59 (2016) | 9.7 |
| Total irrigated land, in ha | 84,434 (2016) | ≥ 95,000 |
| Irrigated in relation to total arable land, in% | 16.3% (2016) | ≥ 18.3 |
| Number of agricultural cooperatives | 54 (2019) | 80 |
| Number of farmers involved in cooperatives | 721 | 9,600 |
| Average number of members per cooperative | 12 | 120 |
| Agricultural land under organic production (without pastures), in ha | 2,716 (2018) | 3,100 |
| Agricultural land under integrated plant protection, in% | 5 (2020) | 30 |
| GRE number | 138,000 (2017) | ≤ 135,000 |
| Employed rural population | Total: 348,397; Male: 225,567; Female: 122,830 (2018) | Total: ≥ 400,000; Male: ≥ 240,000; Female: .000 160,000 |
| Share of employed rural population in total employed population,% | Total: 45.9; Male: 49.2; Female: 40.9 (2018) | Total: ≥ 50%. |
| Population in rural areas under poverty risk rate,% | 24.2 (2017) | ≤ 20% |
| Number of holders of agricultural holdings by age | under 35 g: 7,254; between 35-54 g: 61,724; older than 55 years: 111,268 (2016) | under 35 g: 10,000; between 35-54 g: 50,000; older than 55 g: 70,000 |
| Young in relation to old holders of holdings,% | 6.52 (2016) | 10, +/- 2 |
| Women holders of holdings of total number,% | 10.40 (2016) | ≥ 15 |
| Young holders of holdings by level of education,% | Without education: 3; Primary, incl. Unfinished: 44; Intermediate, incl. And incomplete: 43; | Without education: ≤ 3 Primary, incl. Unfinished: ≥ 44 Intermediate, incl. And incomplete: ≥43 |

| | | |
|---|---|---|
| | High and higher: 8; Postgraduate: 0 | High and higher: ≥8 Postgraduate: ≥0 |
| Young holders of holdings with attended trainings in the last 12 months,% | 2 (2016) | ≥2 |
| **Implementation of policies for agriculture and rural development** | | |
| Degree of transposition of European legislation on agriculture and rural development into national legislation | Moderately prepared (2019) | Completely transposed |
| Degree of transposition of European food safety legislation into national legislation | Good level of preparation (2019) | Completely transposed |
| Share of the realised funds for the rural development policies in the total support funds paid, % | 18 (average for the period 2014-2020) | ≥35 |
| Share of production-unbound direct payments in the total amount of direct payments,% | 0 (2019) | ≥40 |
| Number of holdings with recorded non-compliances from the total number of on-site controls for cross-compliance in accordance with AFSARD,% | 32 (2019) | ≤ 25 |
| Number of recognised manufacturers' organisations | 0 (2019) | ≥10 |
| Area of allotted state-owned leased land, ha | | + 4,000 |
| Total consolidated land, in ha | 24 (2020) | ≥ 2,000 |
| Participation in IPARD projects for: | | |
| - compliance with EU standards from Measures 1 and 3,% | 42 | ≥60 |
| - achieving animal welfare from Measure 1,% | 1 | ≥3 |
| - reduction of GHG CO2 equivalent of Measure 1,% | 1.6 | ≥5 |
| - diversification of revenues in rural areas from Measure 7,% | 23 | ≥35 |

### II.4 Development goals and areas of intervention for the agricultural sub-sectors in the period 2014-2020

In order to directly target the previously identified needs and achieve the set goals, the vision of development and the envisaged policies and measures for the most important sub-sectors of crop and livestock production in the next strategic period will be presented.

**Livestock production**

In addition to the individual needs identified, all livestock subsectors need to support the investments needed in the process of restructuring farms, improving the racial composition and production technology, application of sanitary standards, animal welfare requirements and quality standards.

However, for most of the economies, access to state support for investments is possible only if their production facilities are legalised, which due to the generally non-urbanised rural area, in large numbers are listed as illegal facilities. In that regard, during 2021, a Law on Legalisation of Agricultural Buildings will be proposed and procedural obstacles that hinder the application of the Law on Agricultural Land in the area of construction and legalisation of agricultural land facilities will be removed. The changes will be appropriately promoted among farmers.

Also, in order to reduce production costs and ensure the sustainability of farms through their own production of animal feed, farmers will have access to state-owned agricultural land. The land will be advertised regularly through dedicated advertisements, several times during the year in all major livestock regions of the country.

**Cattle breeding and milk production**

The main goal in the next strategic period is the transformation of small and medium breeders of cattle into sustainable farms for milk and meat production that have over 20 dairy, i.e. over 50 fat cows, improved productivity and meet the prescribed standards. The key points in the restructuring of cattle production have been improved: milk yield, genetic quality of cows and fattening heifers, hygienic milk safety, quality of slaughtered cattle for meat and good farm management.

In the ongoing restructuring process, agricultural holdings with potential for development will be supported in consolidating, modernising and mechanising of farms in order to ensure a sustainable production structure. The holdings that are classified by the FVA as having to make changes in order to achieve the required standards will be supported with an increased percentage of co-financing and up to 90% in the realisation of an integrated investment plan.

Recognised organisations should be drivers of restructuring and modernisation of cattle breeding through the implementation of activities included in multi-annual operational programs such as: knowledge transfer, providing various services needed by members, improving genetic potential, market promotion and campaigns, etc. The implementation of the programmes will be supported by co-financing.

Due to the need for further improvement of the genetic potential of the sub-sector, the allocation of planned funds for procurement of high-quality steed heifers, heifers and bulls from dairy, combined and fattening breeds of cattle will be doubled. By 2023 at the latest, in addition to the defined economies with development potential, the measure will be implemented through the operational programmes of recognised organisations and integration projects in the value chain, which in addition to improving production productivity, should strengthen horizontal and vertical integration. Seed quality control measures will also be taken for artificial insemination of cows and the quality of imported high quality genetic heifers.

The income support of the producers will continue with modifications in order to be closer to the achievement of the set goals, i.e. to: the target category of holdings with defined size and heads that are under the control of the production features in the registry system, quality milk and young fat heifers after achieving a greater final body weight. The current subsidy for indigenous breeds and species of cattle (bush and buffalo) will also include ungulates, domestic horse and domestic donkey.

In order to improve the quality and safety of milk, during 2021 the process of the necessary legal changes and organisational activities (preparation of procedures, formation and/or appointment of bodies, trainings, etc.) will be completed to enable the start of the functioning of the system for regular quality control of milk by the end of 2022 at the latest.

Investment support will also be provided to operators in the raw milk processing industry. Larger dairies should strengthen market competitiveness and substitute imports of milk products by diversifying the product range, while small ones should specialise in product groups, standardise products and improve marketing. Support of the necessary investments, but also achieving vertical integration (contractual relations) within a complete functional group of dairy producers and buyers, will be realised through the implementation of integration projects in the value-added chain.

**Sheep breeding and goat breeding**

The goal in the next strategic approach will be to overcome the unfavourable trends evident especially in the last two years of the last strategic period and to provide conditions for long-term sustainability and development.

The application of modern methods and improved breeding technology for full fulfilment of the genetic potential for milk and meat production should be realised through the implementation of the activities from the breeding programs of the recognised organisations of breeders in sheep breeding and goat breeding. In that direction, the formation of new recognised organisations will be encouraged and a system of financial support for the implementation of the activities from the breeding programs will be established. Currently, the monitoring of the situation in sheep breeding and goat breeding will be realised by conducting the home bookkeeping and genetic selection, which with legal changes will become the responsibility of the recognised organisations themselves. In addition to improving the genetic potential of existing breeds, the introduction of high-productive sheep and goat breeds that can be procured by co-financing the costs from the rural development programme will be supported.

Recognised organisations will have the opportunity to implement multi-year operational programmes such as producer organisations for the implementation of activities that will address the main sub-sectoral problems.

Due to the current process of restructuring, operating conditions and income pressure of breeders, the need for income support is evident, which in the first two years will intervene within the existing measures. The additional correction of the amount of support will be realised from 2023 by introducing agro-ecological measures and/or their accreditation within the IPARD programme (eg. organic production) and expanding the support for biodiversity. Until that period, conditions should be created for the introduction of payments that will be based on a unit of pasture area. By the end of the strategic period, a process of transformation of part of the production-related payments into payments per area of used pasture will take place.

Improving the conditions for the activity, achieving the standards for food safety and improving the economic performance of the operation will be supported by co-financing the investments for construction of new and reconstruction of existing facilities for breeding in farms and repro centres, modernisation of systems for milking, feeding and watering and warehouses for animal feed and other auxiliary facilities, procurement of equipment for food preparation and

mechanisation, etc. The support will also refer to the use of renewable energy sources through investments in solar power plants and wind farms, especially in high-mountain farms.

The investments will be facilitated by offering pre-prepared typical projects for renovation and construction of dairy farms and with provided advisory support through the national advisory system in which the recognised organisations should participate as service providers. In addition to farms, investment support will be provided for reclamation and landscaping of state and private property.

Ensuring a higher degree of competitiveness of the Macedonian lamb depends on the construction and promotion of a recognisable brand in foreign, primarily European markets. In order to increase market share, support will be provided to lamb producers and exporters to find and access new non-traditional markets, such as markets in the Middle and Far East by concluding free trade agreements and providing contacts with importers there. The state will support the activities for branding of sheep products: cheese, yellow cheese, lamb and organic products and help in the promotion of the domestic and foreign markets.

Due to the recorded need for new information and advanced technologies, areas related to sheep and goat breeding will be included as one of the priorities in the Agricultural Knowledge and Innovation System which should deliver targeted training, advice and research according to the needs of farmers.

**Pig breeding**

In the next period, the sub-sector should provide stability in maintaining the self-sufficiency of domestic production by gradually creating conditions for increasing production and directing surpluses to the processing meat industry and exports in the region. The estimated total pork needs by 2027 of 33,280 tons can be met by producing 350,000 pork (227,500 domestically produced and 122,500 produced abroad) in a proportion of bacon (175,000 heads) and heavy pigs (52,500 heads), making would replace 30% of frozen pork imports and save 14m euros.

In order to achieve this goal, the genetic potential that will be realized in accordance with the activities provided by the provisions of the Law on Animal Husbandry should be promoted and expanded. The development of the sector depends on the realisation of the available support for co-financing of investments through the IPARD programme intended for: cost optimisation and expansion of production, meeting high environmental standards and reducing the impact of climate and green energy production. To prevent the risk of extinction of the domestic pig population from infectious diseases, primarily African swine fever, support will be provided to achieve appropriate biosecurity measures for preventive protection by producers.

In order to ensure market stability and eliminate the risks of serious disruption of sectoral production capacity caused by increased supply, a system will be set up to direct excess pork in processing facilities or their private storage. A market board will be established to implement the pork market regulation instruments and the SEUROP standard for slaughter line quality assessment will be introduced. The realisation of the European minimum quality standards and the provided support from the state for compensating the differences in the purchase prices for the domestic raw material, as well as the support for branding of completely Macedonian meat product in the next period should result in a final step forward towards satisfying part of the needs of meat processing sector with raw material of domestic origin and gradual substitution of imported frozen pork.

The brand of Macedonian quality fresh meat on the domestic and foreign regional markets will be strengthened through organised promotional activities that will be realised by recognised national associations of meat producers, supported by policies.

**Poultry breeding**

The main goal of the poultry breeding sub-sector remains satisfying the domestic market with eggs and gradually improving the percentage of coverage of domestic needs for poultry meat with own production. Due to the declining trends and market imbalances, the entities involved in the sector need further revenue support and investment support to achieve the required standards for animal welfare and modernisation.

In order to fully implement the minimum quality standards in the area of safe removal and treatment of class B eggs, the construction of a capacity for processing eggs into liquid egg products will be supported, which would also be used as part of the intervention system to remove the occasional excess of eggs in a market disturbance. In addition to monitoring the markets and initiating interventions, organised egg producers should jointly promote the correct use of eggs in the diet as food that is not harmful to human health and undertake marketing activities to place surpluses on regional markets that will be supported by policy measures.

In terms of meat production, in the next period it is expected that the steps taken to encourage the start of small self-sustaining poultry production businesses with an alternative approach will be fully regulated, further promoted and widely accepted by interested breeders. The started investment activities in establishing a serious production chain for broiler production are expected to materialise in the first commercially completed system for production of broiler meat in the country since independence.

In order to ensure regular control of the content of absorbed water in the imported frozen poultry meat, a dedicated laboratory will be established.

In the area of food safety, the ongoing operation of monitoring systems for Salmonella and other diseases important for the European market (New Castle) will be ensured in order to ensure the smooth export of eggs to the European market.

**Beekeeping**

The goals in beekeeping in the next period are a real increase in the number of bee families and yields that should result in a larger volume of honey production compared to the previous period, in parallel with dealing with the increased risks of climate change that will continue to have a strong impact on beekeeping.

Due to the recorded conditions of loss of income, the support of the income of beekeepers and co-financing of investment activities will continue in the next period that will gradually turn into support of European type. In order to provide focused action that will adequately address the challenges of the sub-sector, the required group of activities will be more closely defined within a special National Programme to support the sub-sector for a period of three years co-financed by the state.

The programme should address the identified needs for: knowledge transfer for beekeepers and beekeeping organisations to address challenges and improve operations with specific assistance to young beekeepers; pest and disease control of bees (such as the Varroa destructor tick, but also others that have emerged due to changing climatic conditions); encouraging migratory beekeeping; analysis of the quality of bee products in order to increase the market value; compensating for the losses of bees that exceed the biological percentage of losses by financing the purchase of new swarms or new bee habitats; realisation of specific research projects aimed at improving the quality of honey and other products in order to use the potentials of products on the market and market monitoring.

In order to expand production and the entry of new entities, the investments of companies that want to upgrade the volume of production through co-financing of investment plans should be supported. Increased funding for costs will need to be provided to start beekeeping for young beekeepers.

Due to the need to improve the marketing of honey, investments aimed at modernising the processing, packaging and distribution of products will be supported. The sale of honey, which is mainly carried out as sales from agricultural holdings, sales on green markets and at busy points of roads, should be properly regulated and conducted in accordance with legal norms.

Support will also be provided for the improvement and expansion of the bee pasture of indigenous plants characteristic for each region needed by bees and perennial honeysuckle plantations.

One of the important horizontal activities in the sub-sector is the establishment of an appropriate method for annual updating of the number of bee colonies in order to monitor their growth and proper application of support.

## Crop production

### Horticultural production

The sub-sector needs serious changes in order to take advantage of comparative advantages and retain and gradually improve competitiveness, especially in traditional markets. One of the priorities is to improve the marketing of horticultural products by improving the physical conditions for performing post-harvest activities, ensuring the flow of information on the needs of the markets to the buyers and from them to the producers (translated into contract production) and horizontal cooperation of the primary producers for concentration on the offer.

In addition to supporting individual investments, the realisation of regional market logistics centres will be supported, which should serve as drivers of the integration of the value-added chain for fresh vegetables, from providing seedlings, implementation of the necessary standards for the identified markets, to the purchase of products. The investments that should be implemented in the southeast and Skopje region with a loan from the World Bank, should include the production of seedlings as one of the critical points for achieving a sanitary-correct and uniform offer of garden products.

Contract production with buyers and the processing industry will continue to be supported by measures that are in line with the EU CAP. One of the successful policy instruments in EU

countries in intervention to strengthen the supply chain are the integration projects for strengthening the supply chains and the operational programmes of the producer organisations. The support of producer organisations will be available to cooperatives and other organised forms of producers to further enhance their market performance. Inter-branch organisations should help link stakeholder stocks across the value-added chain. As a result, it is expected to achieve uniformity and concentration of production and a more balanced distribution of value from the sale of products in the interest of primary producers.

All entities in the chain will be required to consistently implement the provisions relating to the minimum quality standards of agricultural products and comply with the legal provisions for market regulation, especially in the area of contract production. One of the priority areas will be the application of modern agro-technical solutions which, in addition to improved economic profitability, should also provide environmental sustainability of soil production capacity and water resources.

The application of appropriate packaging and promotional campaigns for specific markets will also be supported. In order to diversify the export destinations, the business entities should concentrate on the placement of the Macedonian vegetable production and outside the traditional markets of Southeast Europe with products that are demanded by the consumers in those markets.

In the next strategic period, special attention will be paid to the production in protected areas for the needs of which a study will be prepared with an action plan for revitalisation and long-term development that will use the available renewable energy sources (geothermal sources and solar energy). As a result, mapping of favourable areas should be done and measures should be taken to facilitate the entry of new entities in this type of production, and development options will be included for other competing products grown in protected areas, such as: ornamental plant, mushrooms, etc.

In order to offer new alternatives for agricultural businesses, substitution of less profitable crops or utilisation of areas that are not fertile enough, the development of floriculture and spices, medicinal and aromatic plants, as well as the development of organic production of horticultural crops will be emphasised.

The use of seeds of traditional horticultural species will be enabled through coordination and breeding protocols developed by an appropriate, newly established institution in charge of preparing a seed material base and creating a network of seed propagators in authentic conditions where the local variety originates.

All participants in the sub-sector have identified a need for new knowledge and innovations that will be created and transferred through implemented research projects, trainings, advisory support and demonstration holdings as part of the Knowledge and Innovation System.

**Fruit growing**

In order to maintain and increase production and competitiveness remains the need to raise new orchards and reconstruction of existing ones using varieties that will be proposed in the new variety list as suitable for cultivation in given production regions. In the new strategic period, the erection of new orchards on an area of about 1,000 hectares and the renewal of 1,500 hectares should be supported. In order to cover the import and use of the domestic potentials, the raising of strawberry fruit crops (raspberry, blackberry, strawberry, blueberry)

for which there is great interest on the domestic and foreign markets, as well as the nuts for which the current domestic production does not satisfies the needs and the rest is imported in large quantities.

In order to achieve the value of the investments, the plantations will have to be raised in areas with appropriate climatic-soil conditions, which will be proven by a prepared elaboration/positive expert opinion for the suitability of the location for plantations of the respective crops. Introduction of modern technologies (intensive plantations on slightly lush substrates) in order to increase yields and adapt to climate change[44] should be singled out as priority costs and supported with higher intensity.

In addition to supporting individual investments, a priority need has been identified for the construction of a logistics centre in the Prespa region to be used for the storage and marketing of apples and other fruit products produced in the region financed by a World Bank loan, which in management/ownership should to enable access to cooperatives with recognised organisational potential.

In order to concentrate the supply in the next period remains the support of the market organisation of fruit growers in cooperatives on a European scale. Additionally, support for producer organisations and cross-border organisations is provided. From the measures of the policy of organisation of the markets of the agricultural products in the next period will be implemented the school schemes where the fruit will be part of the planned procurements.

The application of innovative techniques in fruit growing, such as installation of solar panels to produce electricity needed for irrigation, technology for adaptation to climate change, monitoring and forecasting of plant health, etc., in addition to co-financing innovations will be stimulated through the elements of the System of knowledge and innovation in agriculture.

Due to the positive experiences from the past strategic period of significant increase in quantities and reduction of imports, the support of entities engaged in the production of domestic planting material will continue with the provision of other conditions necessary for increased production (lease of agricultural land intended for production of planting material, etc.). The ultimate goal will be in the next strategic period, domestic production to meet its own needs.

**Processed fruits and vegetables**

For the sake of sustainability in providing domestic raw material and strengthening the vertical integration of vegetable and fruit value chains by supporting contract production, direct payments for delivered vegetables and fruits for processing will continue with the possibility to be realised through cooperatives and producer groups. In general, the association of producers in cooperatives will help in the concentration of the offer of products and the possibility for a longer and stable procurement of the necessary repro-materials.

The processing industry will be supported in the implementation of more robust and thought-out marketing activities through modern (e-commerce, online tools, web portal for

[44] As adaptive technologies to climate change in orchards should be supported: technology for micro-irrigation, installation of anti-hail nets, technologies for protection of plantations from frost (air heating and artificial rain system), etc.

demand/supply) and conventional methods in the domestic and targeted international markets.[45] as well as in implementing the required quality standards and traceability systems.

Areas of improvement and adaptation of vegetable and fruit production to the needs of the processing industry, introduction of new varieties of vegetables suitable for processing (especially pepper), as well as introduction/adaptation of production technologies to extend the harvest season will be part of scientific research projects and trainings within the Knowledge and Innovation System.

**Viticulture and winemaking**

In order to increase the export of bottled wine, improving the international image of Macedonian wine by applying innovative marketing approaches adapted to modern trends in world markets, including connecting with wine and rural tourism remains a major challenge for the next strategic period. Organic wine production is also an opportunity to target specific segments of the international market.

Protection of geographical origin is a particularly important segment in order to increase recognition, increase its value and facilitate placement. The current protection system will be fully aligned with the EU legal framework in order for wines with a protected geographical name to be accepted by the EU and protected on the European market. This should improve the price and placement on the most important market for our wine. Due to the fact that the manner and procedures of protection with the new system will be more complex and more expensive, the users of geographical name will be stimulated by compensating production costs for preparation of a report on wines with geographical indication, for control and certification of wine production. In order to improve monitoring and management of the production potential of wine grapes and wines of protected origin, the existing information system should be upgraded to a sub-sectoral IT system in viticulture and wine production.

In order to accelerate and facilitate the process of structural adjustment and optimisation of the production potential for grape and wine production, modernisation of the production factors and introduction of new production practices, the income support (of the primary producers) and co-financing of the necessary investments will continue. The support will continue for the production of domestic certified vine planting material in order to further increase the supply of domestic origin.

In conditions of almost complete separation of viticulture from winemaking that creates differences in production planning and purchase, horizontal and vertical integration and trust between participants in the sector will be improved through: compliance with legal provisions and stimulating long-term cooperative relations, through the formation of wine cooperatives and provided favourable support for investments in small wineries by them and the establishment of producer organisations and inter-branch organisations to implement their common goals and activities.

The preservation of traditional grape varieties will be stimulated by increasing the areas with indigenous and local varieties.

[45] Participation in selected international fairs (one year - ANUGA, SEAL idr), Organizing B2B meetings with potential buyers in selected export markets (one meeting per year), Opening a promotional center for processing of selected market (s) in the region or EU (two in two selected countries)

**Cereals and fodder crops**

The income support of cereals and fodder crops actually maintains the existing level of production, especially in conditions of increased negative impact on the climate, which is mainly reflected in the reduction of productivity. Due to the importance of wheat to guarantee the security of supply with the basic food product, the support through direct payments will continue in the next period by allocating higher amounts for the categories of producers that achieve higher yields.

Maintaining the optimal level of wheat production from domestic production in the current conditions of at least 60% coverage of domestic consumption is expected to be achieved by producers who have the size of production capacity per agricultural holding sufficient for cost-effective production (from 5-50 ha ), which should increase the average yield over 4,000 kg/ha. Achieving these goals is conditioned by the use of certified seed, application of appropriate agro-technical measures in the given conditions of production and observance of the minimum conditions for good agricultural practice and environmental protection. Such producers will be additionally supported with 100 euros per ha due to higher investments and provided results.

Due to productivity constraints, small producers with areas less than 5 hectares that can not be objectively adapted to the type of technologies required for intensive agricultural production will improve the income situation from their limited land resources by gradually reorienting to a more intensive type of production, such as fruits and vegetables, part of oil crops, aromatic, spice and medicinal crops, etc. The restructuring process will be driven by support policies.

In conditions of market disruption and fall in the purchase price below the amount of product costs, income support interventions will be applied (intervention purchase for commodity reserves and storage assistance).

In order to increase the average yield of corn and meet the needs of existing areas, special support measures will be introduced accompanied by an advisory package for adapting to advanced technologies.

Support with higher amounts in relation to the basic area payments for crops will be provided for the production of animal feed and for basic and certified seed material for cereals. The increase in the supply of animal feed will be stimulated by providing land to farmers for the production of fodder crops and by providing income support, increased by 10% compared to the previous strategic period.

Ensuring stability in the production and marketing of rice will be improved through: improving the variety composition according to market demands, introducing technologies that will reduce costs and fragility and increase yields, modernise processing facilities and build brand recognition Kocani (Macedonian) rice in foreign, especially regional markets where it has already built a positive image in the past.

**Tobacco and industrial crops**

According to the adopted seven-year "Tobacco Production Strategy with Action Plan", the state support of the income of the agricultural holdings that are engaged in tobacco production will continue, balanced and sustainable development in the tobacco production regions will be

encouraged and the establishment of producer organisations will be supported in accordance with European experiences.

By the end of the strategic period in 2027, the adaptation of the system for direct payments into production-unrelated payments is envisaged by determining the amount of basic income support by production areas with similar socio-economic or agro-environmental conditions. Direct payments to be determined according to historical payments made in the period to be negotiated with the EU.

The more promising development of the industrial crop sector in the next period is a matter of increased yields through the application of agro-technical measures (especially irrigation), selection of appropriate varieties for labour-intensive crops, greater certainty of purchase and modernization of mechanisation in sunflower seed and soybean production by of the business sector. Some of the industrial crops that are drought resistant and can be grown in conditions without irrigation, open opportunities for crop rotation, and in certain locations can be a good alternative to non-competitive cereals.

With the additional interventions undertaken by the policy to stimulate the interest of the producers, and with a secured and agreed purchase, the areas under poppies can reach up to 2,000 ha. Additionally, poppy is a crop that is traditionally grown in dry conditions, enters the field crop rotation and provides an opportunity to produce cold pressed oil. However, the main factor of development remains the interest of pharmaceutical companies to conclude agreements with manufacturers.

**Organic production**

Despite the increase in the past period, the engaged production capacities for organic production are below the desired projections of the policy for share of cultivated areas under organic production of 2% of the total cultivated agricultural land in the country and 2% certified animals in organic livestock (including beekeeping and fishery) of the total livestock in the country, which remains a goal for the next period. A more ambitious move is possible only if the organic producers are seriously organised in the performance in the domestic and foreign markets where there is a greater demand for this type of products and provide a higher market value of their investments. Organic production must valorise its added value primarily in the market, not through and because of increased revenue support. In order to increase market consumption, the focus of policies to support recognised organisations of organic producers will be to support joint activities to finalize organic production in the formal trade channels, improve the marketing of organic products in the country and abroad and increase public awareness of organic food.

In the next strategic period, organic production will be one of the areas of the Knowledge and Innovation System which will increase the awareness of producers about the availability of permitted means of use in organic agriculture by publishing the lists of permitted preparations available in the country, then through research on the potential of natural resources and/or protected areas for organic agricultural production in the country, etc.

In order to stimulate the trade with seeds, fertilizers and pesticides for organic production, the possibility of reducing the value added tax from 18% to 5% will be analysed.

The processing industry will be supported to increase the quantity and range of processing of organic agricultural products that will contribute to the growth of organic primary production

and increase the added value of products. In order to develop the organic agricultural processing sector, it is planned to increase the amount of support for processing of organic products and products in transition and the support for trade in fresh and processed organic products in transition of domestic origin.

In order to strengthen the confidence of consumers of organic food, it is planned to increase the control of pesticide residues through the monitoring system and regular laboratory tests. Intensified information will be provided on the results of the monitoring of pesticide residues in fresh vegetables and fruits produced in a conventional manner, as well as on the measures taken to control organic production.

The minimum percentage intended for organic products will be determined for the products that will be purchased for school schemes, and the possibility of applying the EU experiences to support the placement of organic production through the public procurement system will be considered, taking into account not only the price of food products, but also the impact of procurement on the environment and society.

Cost co-financing support will be provided for arranging special locations for the sale of organic products within consumer centres (supermarkets, department stores, etc.) and other outlets, including from the doorstep, for which a legal basis will be provided. .

## II.5 Types of policy interventions

Pursuant to Article 3 of the Law on Agriculture and Rural Development, the achievement of strategic and specific goals in the period 2021-2027 will be realised, mainly through the measures and instruments of the national agricultural policy for: direct payments, regulation and support of agricultural markets and rural development.

Additionally, the goals will be realised through the policies for sustainable management of natural resources, food safety, as well as the policies for advancing knowledge and innovation in agriculture.

The policy interventions in agriculture and rural development for the strategic period 2021-2027 are presented in the following.

### II.5.1 Interventions in the form of direct payments

#### 5.1.1 Need for income support and structure of direct payments

According to the analysis from PART I, the current types of agricultural policy interventions in the form of direct payment measures provided support to the income of agricultural holdings by an average of 34% of net value added (in 2017, FADN) and the same in many agricultural sub-sectors are a factor that enables the profitability of production. The supplementation of the income of the agricultural holdings through direct payments largely determines the profitability of the agricultural activity and for a large part of the participants in the sub-sectors it is an

element of the decision for engaging in agriculture. This is especially true if you compare the level of income and wages in the agricultural activity in relation to the national average in relation to other economic branches in the country. The average salary in agriculture, fishery and forestry for the period 2014-2019 is 25% lower than the average salary in the country, while the difference is even greater if we take the agricultural incomes of the holdings that are lower by more than 35% (Economic accounts for agriculture).

Having in mind these findings, direct payments continue to be an essential part that guarantees the sustainability of Macedonian agricultural production. At the same time, the wide range of applied measures and sub-measures of direct payments cause technical difficulties in the speed of implementation of the measures and the amount of transaction costs for administration of the measures, which presupposes the need for changes in the direction of simplification. Also, in the next period when the pre-accession process is expected to intensify, the structure of national direct payments should be more closely adjusted to the payments made in the EU CAP where the dominant form is the support of farmers' income unrelated to the type of production, with particular emphasis on supporting practices that contribute to environmental protection and climate change mitigation.

The development of national direct payments in the next period is planned to take place in that direction through a gradual process of transformation of the existing dominant production-related payments into annual payments per area that do not refer to an individual type or quantities of production. This level of payments should represent the basic income support for contributing to the sustainability of agricultural activity. Part of the support will be redistributed from the larger ones, to the holdings that have development potential and represent a desired category in the structure of agricultural holdings, as well as to certain categories of beneficiaries, primarily young farmers who are the basis for the future development of rural areas.

Small agricultural holdings that play a significant role in rural employment will be offered the opportunity to replace the current various direct payments with a fixed amount of support in order to more evenly distribute support and reduce administrative costs.

In addition to production-unrelated support, annual payments relating to specific types of agricultural production per unit area, livestock or unit of product will be approved in order to more closely target identified problems. These payments should be gradually transformed into basic income support for sustainability, and the rest that will remain product-related should be acceptable under the CAP.

Also, in the next period, conditions will be created for the gradual introduction of some of the support schemes beneficial for the climate and the environment in the form of annual payments per hectare as a supplement to the basic payments or compensation for higher costs and loss of income from applying for the acquired obligations for delivery of public goods by farmers.

Due to the already provided significant level of income support in the past period, the amount of direct payments will generally remain unchanged, except in a situation of serious disruption of market relations that would have the effect of reducing revenues.

According to the above, the income support of agricultural holdings in the strategic period 2021-2027 will be based on a structure of direct payments that will be realised on several levels

which in addition to achieving the Specific Objective 1 should contribute to several of the other specific objectives.

The types of interventions in the form of direct payments that will be implemented in the next period can generally be divided into two major groups of payments: product-related and product-unrelated payments. The following forms include the group of non-productive direct payments that will be introduced for the first time in the direct payment policy and should gradually increase their share:

- Basic income support for sustainability,
- Additional support for income redistribution for sustainability and additional income support for young farmers and
- Climate and environmental support schemes (eco schemes).

The structure of direct payments in the strategic period 2021-2027 by types of interventions in the form of direct payments is presented below.

**Basic income support for sustainability**

In order to guarantee the minimum level of support for agricultural income, as well as to achieve the strategic goal of providing support for sustainable income and satisfactory standard of living of agricultural holdings, an annual amount of production-unbound payments for sustainability of agricultural activity will be determined, that is, the so-called basic income support for sustainability.

This basic and widest level of support will be paid as a single amount per hectare of cultivated agricultural land in the amount of 12,000 denars, regardless of the type of cultivated crop, i.e. the type of land use (arable agricultural land, perennial crop). To provide the full amount of support, the applicant must meet all the required cross-compliance requirements and use certified and safe seed material. The support will be additionally conditioned by the mandatory application of basic agro-technical operations and the vitality of a minimum number of perennial plantations.

Starting in 2022, the support will be provided for all areas that are above the minimum provided in accordance with the existing sub-measures for direct payments per arable agricultural area for all crops, including tobacco for growers who have already digitised their areas in SIPP. The rest will join payments of this type in the coming years of the strategic period, but not later than 2024.

Basic income support for sustainability will be the basis for a gradual transformation of existing production-related payments and will reach the maximum level with EU accession defined in the negotiation process.

Within the production-unrelated direct payments for basic income support will be included support for the smallest agricultural holdings whose amount of support in the last three years was not higher than 10,000 denars. In order to reduce administrative costs and simplify procedures, as well as provide additional social support for this most vulnerable group of rural

population, these farms in the next period will receive direct payments in a fixed amount of 10,000 denars per hectare regardless of the size of the available facilities and previously used types of direct payment sub-measures. These holdings produce limited quantities of surplus agricultural products intended for the market from the limited engaged production capacities and the agricultural activity enables them to supplement their total revenues realised from other activities. Further increase in the scope of the measure will not be undertaken in order not to hinder the restructuring of the sector towards diversification and consolidation, which requires a smooth allocation of resources.

**Additional income support (complementary payments)**

Having in mind the unfavourable structure of agricultural holdings and the need for transformation in order to improve the age structure of farmers, consolidation of capacities, professionalisation and specialisation in performing the activity, in the upcoming strategic period will be provided additional support for agricultural holdings whose holders are young farmers, have a medium size of engaged capacity and development potential, as well as those who provide the dominant income from agricultural activity, as:

- Additional support for income redistribution for sustainability. Payment should enable redistribution of support to medium-sized agricultural holdings that have estimated development potential. The holdings that cultivate an area of agricultural land of size as shown in Table 6 are identified as such holdings. Payments still differ according to the type of production and the determined annual amount per hectare of arable land and their further transformation into a single payment of this type unrelated to production will be realised gradually.

- Additional support of incomes of young farmers. Additional direct payments to young farmers will be granted in order to renew the generations in rural areas and attract young farmers to the sector, as the development of new economic activities in the agricultural sector and the sustainability of rural areas directly depends on the motivation of this age group to join agricultural activities. The support will be provided to young farmers up to the age of 40 who are starting an agricultural business for the first time, are eligible for basic income support for sustainability and are active farmers by profession, as well as have formal agricultural education or appropriate training or skills.

In order to stimulate the expansion of the activity, the targeted additional support for the holdings managed by the young farmers will be granted unrelated to the production in the amount of 10% of the approved amount of direct payments in one calendar year. The payments will be realised for a defined period of five years after the beginning of the agricultural activity. If the holder of the agricultural holding is a woman, then the support is increased by an additional 5%.

Table 6 Additional support for income redistribution for sustainability

| Type of production | Area of agricultural holding | Amount of redistributional payments MKD/ha |
|---|---|---|

| | | |
|---|---|---|
| defined field crops with achieved level of productivity | 5-50 | 6,000 |
| horticultural crops | 1-5 | 6,000 |
| apple | | 9,000 |
| other orchards (except walnuts, chestnuts) | | 6,600 |
| walnuts, chestnuts | | 3,000 |
| wine grapes | 1-10 | 8,000 |

- Additional support of the incomes of specialised agricultural holdings. The support will be provided for holdings whose agricultural activity is predominant activity and which provide the dominant income from performing agricultural activity. Those kind of holdings are the holdings:

- which have the form of a legal entity established by the holder or a member of a family-farm with the entire agricultural property of a family-farm, except for housing or residence of agricultural producers and

- whose holder is a registered performer of agricultural activity in accordance with the Law on Performing Agricultural Activity.

The amount of additional support will be 5% for a legal entity registered in the Single Register of Agricultural Holdings (hereinafter ERCS) as an agricultural holding established by the holder or a member of a family farm and a minimum of 25% of the total amount of the calculated direct payments under other direct support schemes.

Farmers who are insured under the Law on Health and Social Insurance without a legal form will continue to use additional support until the transformation of the status in terms of formalisation of their agricultural activity.

Additionally, in the next period, the legal-formal status of the family agricultural holdings will be further regulated, which best corresponds to their current level of economic development and social status. This will be achieved by transforming the status of Individual Farmers registered under the "Law on Performing Agricultural Activity" into Family Agricultural Holdings with legal status.

This form would cover households with a defined annual minimum amount of average agricultural income. Such farms that earn a significant or most of the income from performing agricultural activity will be additionally supported in order to stimulate them to remain in that category. Simultaneously with the positioning of this category of holdings as the most attractive, the transfer of family holdings from the other lower income categories without regulated legal status will be stimulated. In that direction, for this target category will be provided and benefited social contributions in relation to the companies for its active member.[46].

[46] That is, the members who are engaged only in agricultural activity and are unemployed and have no other non-agricultural income.

### Climate and Environmental Support Schemes - Eco Schemes

In order to make a greater contribution of direct payments to the achievement of the second strategic goal - "Application of environmental practices in production that lead to reducing the impact of climate change and adaptation to them", from 2023 will be introduced the first support schemes to encourage security of public goods through agricultural practices beneficial to the environment and climate, so-called eco schemes. The establishment of environmental schemes is voluntary for farmers who are committed to implementing commitments to agricultural practices that are beneficial to the climate and the environment.

The amounts of direct payments will be approved as compensation for the commitments undertaken for the introduction of these practices that exceed: the mandatory requirements prescribed by the cross-compliance system, minimum requirements for the use of fertilizers and plant protection products, animal welfare, and others mandatory requirements and are different from the obligations for environmental management, climate and others supported by rural development policy.

Support for eco-schemes will take the form of an annual payment per hectare, which is awarded as additional payments to the basic income support or payments that fully or partially compensate the additional costs for the users and the lost income as a result of the implemented obligations.

In order to implement the support, a list of agricultural practices beneficial to the climate and the environment will be additionally prescribed, for which direct payments can be approved (until 2022), and which should contribute to the realisation of the fourth, fifth and sixth specific goal of the strategy. The introduction of support for the maintenance of permanently grassland or the maintenance of ecological areas will depend on the application of the regulations related to Natura 2000.

### Product-related direct payments

In order to target the previously identified weaknesses in the agricultural subsectors, in the next period the support will continue to be provided per unit area, head or unit of product that is related to the type of agricultural production. In addition to the role of income support, these payments are awarded for: achieving specific agricultural policy goals and assisting the sub-sectors involved that are particularly important for social, economic or environmental reasons or specific types of production in overcoming the difficulties they face in the process of improving their competitiveness, long-term sustainability or quality.

Due to insufficient profitability and other factors, there is a risk that the participants in the sub-sectors that are in the process of restructuring without the provided support will reduce or completely abandon the production which will have a negative effect on the economic, social and environmental balance. The support measures are set in a way to influence the increase of productivity in production (contribution to SC 2), promotion of vertical integration and creation of greater added value (contribution to SC 3), application of product quality standards, etc. In that context, the sub-sectors of the following are included:

- production of cereals which is crucial for food safety and where the engaged production facilities have insufficient productivity, due to which most of the small farms involved are in transition,

- tobacco production which takes place in a traditional way in the regions with limited alternatives for other agricultural and non-agricultural activities and provides broad social security,

- livestock production which are strongly related to the sustainability of rural areas, especially in hilly and mountainous regions and the size of the trade deficit, while meat and milk products in the next period are in the phase of introduction of minimum quality standards,

- production of wine grapes, vegetables/fruits (and their processed products) and milk due to the need to strengthen the contractual and other aspects of vertical integration and improvement, i.e. introduction of product classification,

- production of seed and planting material for agricultural and horticultural crops and vine and fruit planting material in order to encourage domestic production with proven quality, as well as support for artificial insemination of animals to encourage improved genetic qualities. Production input support is also provided to cover the cost of fuel for agricultural land processing and

- cultivation of medicinal, aromatic and spice plants in order to support the revitalisation of the developing subsector which has comparative advantages and potential for substitution of other unprofitable agricultural businesses and income diversification.

Due to the evident complexity of the direct payment scheme in the next period it will be possible to gradually change the existing measures that will promptly contribute to this form to reduce the share in the total amount of direct payments, as well as to simplify the manner of their administration. In that direction:

- part of the measures per unit of product will be transformed into measures per head or area, and then into measures that are not product-related,

- measures related to one type of production will be reduced and integrated and

- conditions for the introduction of alternative forms of direct payments will be created as a substitute for product-related direct payments that are not allowed by the EU CAP, such as agri-environmental measures for tobacco, sectoral interventions (beekeeping, fruit and vegetables), payment by pasture area, quality support schemes (milk), state aid, etc.

The envisaged changes should enable the transfer of the applied measures to the so-called blue box of support measures and in that context improve the fulfilment of the obligations undertaken with the accession to the World Trade Organisation in relation to the internal measures/support measures.

### 5.1.2 Users and restrictions

Income support will continue to be provided for the benefit of agricultural holdings engaged in agricultural activity, including those engaged in non-agricultural activities outside their holdings

as their multipurpose activities often strengthen the socio-economic fabric of rural areas. However, in order to further improve the performance of agricultural policy, income support will be directed to the above defined categories of real farmers.

In order to avoid the excessive administrative burden caused by processing a large number of small amounts of support and providing an effective contribution to support the objectives of agricultural policy, direct payments will be awarded over a defined minimum area available to agricultural holdings.

In order to ensure a fairer distribution of income support, the amounts of direct payments over the amount of EUR 300,000 will not be paid, while for most payments the gradual decrease with increasing the size of the engaged capacities remains. Exceptions to the reduction remain the agricultural sub-sectors which are realised in areas with difficult production conditions and are of great importance for the sustainability of rural areas due to the lack of other alternatives for employment. Such sub-sectors are sheep breeding, goat breeding and the free system of beef production. The adjustment to the manner applied in the CAP to reduce payments that exceed certain amounts after deducting labour costs will be considered in the second part of the strategic period.

Direct payments will be paid in accordance with a predefined "Calendar for subsidies" with a certain strict application dynamics and deadlines for payment of subsidies. The time of payment of direct payments will be adjusted according to the needs of farmers for financing agricultural activities depending on the type and characteristics of agricultural production. A change in the dynamics in order to continuously receive support throughout the year will be possible for milk producers, for whom starting from 2022, the payment will take place on a monthly basis, while payments in the poultry industry will be provided on a quarterly basis.

The award of direct payments will be conditional on the fulfilment of the cross-compliance requirements, i.e. the minimum requirements for good agricultural practice and environmental protection described in more detail in the section dedicated to the elements common to several interventions.

### II.5.2 Market regulation policy

#### 5.2.1 Need for market regulation and policy approach

Most of the incomes of the farmers as in other economic activities are provided from the placement of their products on the market. Frequent unpredictable changes and disturbances in the relationship between supply and demand with the impact of prices and incomes of farmers, which were not absent in the past, only confirmed the need for policy interventions to achieve stability and predictability of agricultural activity, in order to ensure sustainable development.

In the next strategic period, the policy of regulation of the markets with agricultural products will be focused on protecting the stability of the markets from disturbances, encouraging cooperation between stakeholders on horizontal and vertical basis through producer

organisations, citizens' associations and inter-branch organisations, on improving the minimum product quality, as well as other interventions that should contribute to achieving the objectives of the national agricultural policy.

Policy interventions implemented through producer organisations, in addition to the primary contribution to agricultural competitiveness, will support the achievement of more specific goals such as improving revenue, maintaining market stability, meeting consumer expectations and maintaining agricultural diversity. Because the process of existence of market-based producer organisations is in its infancy, the measures and policies of market organization in the first period will be adapted to the closest existing forms of organisation of business entities that have adequate organizational and operational capacity.

The market regulation policy for the next period will be presented in the following several areas:

- Internal market,
- Support schemes,
- Emergency measures,
- Schemes for quality of agricultural products
- Promotion of the Macedonian agricultural production and
- Foreign trade

### 5.2.2 Internal market

The regulation of the internal market will include several types of policy interventions that should achieve the policy objectives defined previously, namely: interventions in the markets with agricultural products, assistance for storage and regulation of the relations of the entities in the purchase of agricultural products.

#### Interventions in agricultural markets

The system of interventions in the markets with agricultural products that aims to stabilise the agricultural markets and prevent the escalation of the market crises will be used only as a protection mechanism, only in conditions of crises related to serious market disturbances, and not as a permanent direct measure of price support. Due to the complexity of this type of intervention and the general openness of the Macedonian market, especially to the regional markets, the interventions will be limited to defined products and strictly designated situations, as well as organised using the existing infrastructure of state and private entities.

The measures will especially refer to the markets which so far have proven to be most susceptible to frequent influences from external markets, primarily cereals, and additional market regulation measures will be introduced for some of the products of animal origin that show cyclical instability such as eggs and pork, and how:

- Intervention purchase of wheat from producers with a certain maximum size will be implemented for the needs of commodity reserves, under conditions and procedure prescribed by the Law on Agriculture and Rural Development. The procedure will be revised and simplified in order to provide a faster response in the event of a market surplus;

- Pork market interventions will be applied in defined conditions of surplus of domestic production which can cause a serious drop in price with consequences for the structure of the subsector. The intervention to remove meat from the market will be performed in order to direct it to processing by covering the difference between the lower price of imported meat and the higher price of home-produced fresh meat and
- Interventions to remove excess eggs from the market in order to maintain the stability of the selling price. The cyclical surplus that occurs every year in certain parts of the year as a consequence of the reduced demand can be directed to the appropriate capacity for processing eggs into liquid egg products which should be realized through the instrument state pre-financing of investments of common sub-sectoral importance.

The interventions will be initiated by the body appointed as a board for the market of the respective product that will currently monitor the situation or by recognised organisations of manufacturers, associations or inter-organizational organizations as part of the activities of their operational programmes.

The necessary legal changes will be implemented during 2021 in order to enable the functionality of the system by the end of 2022.

**Product storage support**

The purpose of the measure is to stabilize the markets in conditions of manifest surpluses in the market by encouraging operators to temporarily store their products instead of selling them on the market. In such conditions, it will be possible for small and medium farmers to store their products, especially cereals (wheat, rice, etc.) and meat for which there is a market surplus, such as pork and lamb.

The storage will take place for a certain period prescribed in the bylaw[47] at a privileged, lower price in state warehouses or by reimbursing costs incurred for storage in approved private warehouses.

**Regulation of the relations of the subjects in the purchase of agricultural products**

In order to regulate market relations and eliminate entities with speculative intentions, the provisions of the Law on Agriculture and Rural Development will be strictly observed in the area of regulating the conditions and the manner of conducting trade in agricultural products. Purchase of agricultural products can be performed only by entities that meet the material and technical requirements in accordance with the law and bylaws, registered in the MAFWE, which submit reports on the planned and realised purchase and on concluded agreements with farmers.

In order to facilitate the records, by the end of 2022, an electronic system for online entry of data related to the register will be developed.

[47] „The Decree on the procedure for granting financial support for storage of agricultural products "(Official Gazette of RM, no. 126, July 8, 2016)

In order to improve the relations of the participants in the value added chain and production planning, the provisions of the law on mandatory contracts for the purchase of agricultural products will be consistently implemented, some of which were concluded before the purchase and with a contract price included. By 2023 at the latest, this legal obligation will be part of the mandatory requirements for direct payment measures per unit of delivered product.

In addition to these provisions, the implementation and obligations of the participants in the market of agricultural products arising from the sub-sectoral laws on tobacco and winemaking will be monitored.

### 5.2.3 Assistance schemes

The tool for assistance schemes will be provided to improve the supply of fruit and vegetables and milk and dairy products in educational and other institutions of the social and educational system, the so-called fruit and vegetable scheme, and the school milk scheme. In addition, in order to facilitate the achievement of the general objectives of a more competitive and market-oriented sector and to reduce the fluctuations in producer incomes related to market crises, assistance will be provided to certain agricultural subsectors such as fruits and vegetables, beekeeping, wine and wine grapes and meat and milk production.

#### Fruit and vegetable scheme and school milk scheme

The school fruit and vegetable and milk schemes aim to promote greater consumption and healthy eating habits of students through the free distribution of fruit, vegetables and milk to schools and other social and educational institutions, while also influencing the increased demand for domestic products. The distribution program is complemented by educational measures that teach children about agriculture and promote healthy eating. In addition to fresh fruits and vegetables and drinking milk, the scheme may include processed products such as juices, soups, yogurt and cheese to provide a varied diet and address the specific nutritional needs in their educational programmes.

The measure will include support for the purchase of fresh fruits and vegetables and dairy products produced in the country, their packaging and distribution to the population under 18, people exposed to social and health risks and vulnerable groups of poverty that are part of public education, health and social systems. In terms of availability for regular distribution, market surplus and durability, the scheme may include apples, plums, pears and peaches, vegetables, milk, cheese and some other dairy products, as well as processed fruits and vegetables.

Prior to the implementation of the 2023 scheme, an analysis will be made that should specify the details of the intervention for the preparation of the "Programme to promote fresh fruits and vegetables and dairy products consumption", as well as to identify the need for the scope of changes and amendments to the legal framework.

#### Sectoral interventions

Within the policy for regulation of the markets of agricultural products and due to the previously recorded specifics and needs, a sub-sectoral approach to implementation of defined types of interventions will be provided for the following sub-sectors: fruits and vegetables, wine (and wine grapes), beekeeping and meat and milk.

The interventions in the selected sectors will be implemented through approved operational programs of **producer organizations** recognised according to the legally prescribed criteria, which cover a period of three to seven years. Due to the fact that the level of development of market forms of organisation of agricultural producers in the country is extremely low and it is not expected to significantly improve in the next period in terms of greater share in total turnover, as a transitional form, the users of the support for the implementation of operational programs will be enabled to be a form of association of citizens under the Law on Associations and Foundations that are recognised as socio-economic partners, as well as recognised breeders' organizations under the Law on Animal Husbandry.

Stakeholders who are not market organisations of producers will need to focus on the interests of a particular sub-sector and demonstrate adequate capacity to carry out complex activities that will have an impact on overcoming problems or situations at the national level.

The operational programs will include a selection of interventions within the defined goals and priorities in the national strategy and they should be approved in an appropriate procedure. The realisation of the activities, especially those that include investments in tangible and intangible assets will be conditioned to contribute to the beginning of a joint market activity of the user members by the end of the operational program.

In general, the support of producer organisations will be achieved through an operating fund established by them, which in addition to being financed by contributions from members of the producer organisation, will be supplemented up to 50% of the actual costs by financial support programmes. Financial assistance will be limited to 5% of the value of the market production of the producer organisation. The limit of 50% can be increased up to 100% in case of withdrawal of products from the market for the needs of free distribution to charities and foundations, penitentiary institutions, schools, and public educational institutions.

In order to motivate for significant market participation, financial support for producer organisations in the first 5 years of implementation of the strategy will be able to amount to 80% of the financial contributions to the operating fund, with 100% coverage of part of the eligible costs and without limitation of the value of the marketed production for the entities that do not realise joint market activities.

In the next period, special importance will be put on strengthening the capacity and providing support to producer groups in producer organisations, as well as for the recognition of **cross-border organisations** that would be desirable to be formed at the regional level between traders and producers or processors and producers of agricultural products and it will be supported by policy measures. Cross-border organisations can implement a wide range of measures related to market research of a particular product and influence on it by raising awareness, better coordination of product placement on the market, preparation of standard contracts, better use of product potential, innovative research, quality improvement, consumption promotion, risk prevention measures and better management measures.

At the localised level of a specific supply chain consisting of a group of primary producers, processors and/or buyers of agricultural products, support will be provided for their joint implementation of **integrated projects for strengthening the supply chain of agricultural**

**products.** The project submitted by the partner organisation may include interventions in the physical capital of the participants, procedures for the introduction of standards, trainings and mandatory services from the advisory system. The general goals are to promote more balanced relations and partnerships and to concentrate the supply of agricultural products, especially higher quality products.[48]. The support of the co-financing of the costs from the State will be up to 80%, and the participants are obliged to maintain contractual relations for at least 5 years after the completion of the project.

Overcoming some of the identified problems at the sub-sectoral level in the area of market stabilisation, vertical integration and application of quality standards is associated with meeting infrastructure requirements, i.e. investments in large capital facilities of sub-sectoral importance. In order to support the construction and at the same time ensure the involvement and ownership of the process by the participants in **the sub-sector, state pre-financing of investments will be enabled, which will overcome problems of a sub-sectoral nature**. The investments will be fully financed by the State, and implemented by legal entities formed by officially recognised and functional groups of the largest producers at the national level. The amount of private co-financing (at least 20%) will be returned to the State in a period adjusted to the time of implementation of the investment and business development, but not longer than eight years. Upon completion of the investment and payment of the funds from the private financing, the investment will become the property of the legal entity established by the national group of producers.

Potential facilities supported through the instrument in cooperation and willingness to participate by the representative participants in the sector would be: egg processing plant in liquid product, slaughterhouse for precise confection of domestic fresh pork, capacity to deal with excess milk or milk of inadequate quality, then larger purchase and storage or common processing facilities, etc.

For financing the measures from the market regulation policy from 2022, after the legal adjustments being made, funds will be allocated in a special Programme for financing the measures from the market regulation policy.

Sectoral interventions for defined products are shown below.

**- Interventions in the fruit and vegetable subsector**

Macedonia has a comparative advantage in the fruit and vegetable subsectors, which are traditional and regionally recognizable agricultural products. However, due to structural deficiencies, insufficient transmission of market signals and information to all participants, and lack of actions to change and resolve emerging production and marketing problems, the subsector shows serious signs of gradual decline in competitiveness in traditional markets and insufficient vitality to conquer new ones. The sub-sector is under increasing competitive

[48] More specifically, commonly defined goals may include: expanding production or introducing a new product, improving and certifying product quality, applying techniques to reduce the negative effects of climate change, saving energy and producing energy from renewable sources, agricultural management (direct sales, marketing and logistics services), as well as innovation and transfer of modern technology.

pressure from regional economies and the domestic market and is negatively affected by climate change.

Hence, in the following period, it is necessary to set a targeted approach to overcome the identified challenges that should lead to achieving improved production and marketing performance, reducing environmental impact and resilience to the negative consequences of climate change. More specifically, it is necessary to improve production planning and its adjustment to demand, especially in terms of quality (but also quantity). Manufacturers need to optimise production costs and stabilize production prices and concentrate the supply.

Existing production practices and varietal composition should be assessed in terms of economy, compliance with market preferences, pest protection and resilience, environmental and biodiversity protection, sustainable use of natural resources and contribution to climate change mitigation and adaptation. For the key products from both subsectors - peppers, tomatoes, cucumbers and cabbage, and for apples, peaches and plums, research will be conducted in the period 2021-2022 and recommend sustainable methods and innovative production and marketing practices that should enable development and strengthening the disturbed market position.

One of the areas that should be emphasised is increasing the market value and improving the quality of the products, including quality protection (protected designation of origin and protected geographical indication). In order to improve the market recognition of the products from the fruit and vegetable subsector, support will be provided for positioning vegetables and fruits in fresh and processed form on targeted markets and enhanced promotion.

In the next period, it is necessary to achieve improvement of the horizontal integration of all stakeholders in the sector, and then their vertical integration. Lack of information from the markets and the selection of the appropriate range of supply and the necessary changes in all areas[49] should be improved through closer cooperation and exchange of information, implementation of joint investment, scientific and other activities to improve the situation, up to formal integration in cross-border organisations. Efforts for closer cooperation between all stakeholders and the implementation of priority activities will be supported by policies.

The lack of information, scientific knowledge and innovative practices will be supported through the Knowledge and Innovation System which will include advisory services, training and placement of applied demonstration practices in demonstration farms in the largest production regions.

The supply of fruits and vegetables for the processing industry should be provided from the aspect of supply stability and standardised from the aspect of quality, primarily through strengthened contractual relations and realisation of dedicated research projects.

Due to the certainty of the variability of the fruit and vegetable markets, several instruments for crisis prevention and risk management will be put into operation, aimed at avoiding and dealing with crises in the fruit and vegetable market and measures to increase the consumption of products from the fruit and vegetables subsector.

[49] in the areas of: optimal economic management, quality improvement and strengthening of horizontal and vertical integration, sustainable pest control techniques, sustainable use of pesticides and contribution to adaptation and mitigation of climate change

Based on the identified specific needs for the sub-sector, support will be provided through the following types of intervention:

- establishment and capitalisation of mutual funds of recognized producer organisations,
- support for investments in tangible and intangible assets in order to achieve a uniform and concentrated supply, more efficient management of the placement of quantities on the market, i.e., activities to increase the sustainability and efficiency of transport and storage of products from the fruit and vegetable sector,
- implementation of quality standards,
- transplantation of orchards if it is mandatory due to health or phytosanitary reasons upon the instruction of the competent authority,
- withdrawal of quantities of products from the market and their free distribution to defined users or distribution to other markets,
- green harvest[50] as well as harvest insurance to preserve producers' incomes,
- improving water use and management, water conservation, drainage and other methods aimed at mitigating climate change,
- energy saving, energy efficiency and increasing the use of renewable energy,
- reduced environmental impact, organic production, reduction of waste production and improvement of waste management,
- advisory services and technical assistance, in particular on sustainable pest control techniques (preventive protection and eradication of the most prevalent pests and plant diseases), sustainable use of pesticides and integrated pest management,
- implementation and management of phytosanitary protocols imposed by third countries in order to facilitate access to the markets of those countries, and
- training of other producer organizations and associations or individual producers.

**- Interventions in the beekeeping subsector**

Recognising the importance of beekeeping for the sustainability of overall crop production and biodiversity and for humans in general, the next strategic period will include targeted interventions in the beekeeping sector, especially in terms of treating unusually large losses of bee colonies due to climate change.

The interventions will be aimed at taking measures to restore and compensate for the losses by encouraging the breeding of honey bees in as many locations as possible using genetic material from the indigenous subspecies as the most adaptable to climate change (specifically the indigenous subspecies Macedonian honey bee) and its characteristics aimed at increasing productivity.

[50] which includes the complete harvesting of immature products which are not intended for the market and which were not damaged before the green harvest, whether due to climatic reasons, disease or otherwise; non-implementation of fruit and vegetable harvesting which consists of interruption of the current production cycle even though the product is well developed and has a sales quality

The eligible financing measures are the following grouped into eight sets:

- Technical assistance to beekeepers and beekeeping organizations, including: organisation of courses and workshops, printing of educational material, purchase of equipment for primary honey processing as well as specific assistance for young beekeepers,
- Control of pests and diseases in bees, mainly aimed at controlling the Varroa destructor tick, but also other pests characteristic of tropical regions that are a real threat due to climate change. Emphasis is placed on the means allowed in ecological production,
- Rationalisation of migration beekeeping costs by supporting investments in equipment that facilitates migration, mapping of locations suitable for migration, preparation of registers for migration traceability, etc.,
- Supporting laboratories for analysis of bee products in order to help beekeepers to place their products on the market and increase their value by supporting analysis of the physico-chemical properties of honey and bee products. The measures can also be used to determine the botanical origin of honey, which can achieve a higher price when selling it as a varietal honey,
- Renewal of the bee stock by compensating the losses of the bees by financing the purchase of new swarms or new bee habitats,
- Cooperation with specialised bodies for implementation of programmes for applicable research in the field of beekeeping and bee products with the support of specific research projects aimed at improving the quality of honey,
- Monitoring of the bee products market and prices, and
- Improving the quality of products in order to use the potential of products on the market.

The implementation of the measures will be realised through the National Programme for support of the sub-sector for a period of three years with clearly defined goals and measures for their achievement. In the programmes, in addition to the basic data for the sub-sector, a description of the method by which the real number of bee families is edited and updated every year is mandatory in order to monitor the situation and properly direct the support.

**- Interventions in the subsector production of wine and wine grapes**

Due to the identified importance of wine grape and wine production for the agricultural sector, a special set of measures will be intended for this sub-sector in order to achieve improved international recognition and competitiveness, and contributing to the improvement of sustainable production systems and reducing the impact on the environment.

In order to increase the share of quality wine in exports, wine producers should improve production and sales performance and adapt them to market demands and improve and harmonise relations with grape producers who contribute high, above 80% in the total supply of raw material input in the production. The measures should include the establishment of more stringent conditions for cooperation and long-term production contracts, which will provide an opportunity to influence the quality of grapes and the quantity of supply under tight market conditions. In order to prevent market crises and contribute to restoring the balance of supply

and demand, the established forms of formal cooperation will be recognized as bearers of state support for overcoming the problems at the same time of their occurrence.

Overcoming the structural weaknesses of the segmentation of the supply of wine grapes from the demand will be treated by stimulating the organisation of inter-branch organisations and the realisation of projects for integration of the supply chain that should strengthen the links between different entities and strengthened vertical integration. At the same time, the opening of small wineries will be stimulated, especially wineries formed by cooperatives formed by individual grape producers who have a certain production capacity and market potential, previously proven in the joint sale of wine grapes.

Vertical integration for quality protection will be enabled by amendments to the Law on Wine in 2021 with which the holders of a protected geographical indication will be given the opportunity to be the producers of grapes and wine themselves and who will jointly build a brand of origin, manage and protect a particular geographical indication with the support of the State. This should increase the value of the wine, and thus the value of grapes, and pave the way for the development of branded products recognisable in the national, regional and international markets. In order to stimulate the production of organic grapes and organic wine, the same amendment to the law will allow the declaration of organic wine.

The protection of the geographical origin is a particularly important part of improving the market position of the wine because it contributes to at least 10-20% increase in the value of the wine and at the same time facilitates the placement on the market. After the harmonisation of the legal framework for protection of the geographical name of the wine and the establishment of the new protection system, the procedures of the operators (preparation of a report, control and certification of production and registration in the international register of protected geographical name) will be subject to support.

The restructuring of the sub-sector will be supported by co-financing eligible investment projects. Support will be allocated for co-financing the costs of restructuring and conversion of vineyards into orchards, including transplantation of plantations when it is ordered by the competent authority after mandatory rooting for health or phytosanitary reasons and for the normal restoration of vineyards by raising on the same plot with the same grape variety due to the renewal of the unfavourable age structure of a large part of the plantations in the country. The financial assistance for the restructuring and conversion of vineyards will not exceed 50% of the real costs of restructuring and conversion of vineyards or 75% of the real costs of restructuring and conversion of vineyards in less developed regions. The assistance may take the form of compensation paid to producers for loss of income due to the implementation of the intervention as a contribution to the costs of restructuring and conversion. In that case, the producers' compensation for loss of income can cover up to 100% of the corresponding loss.

Co-financing will be provided for equipment and mechanisation for grape growers, as well as for tangible and intangible investments in processing and infrastructure facilities in wineries and marketing. In particular, investments in the development of innovative products and by-products for wine production, processes and technologies, and other investments that add value at any stage of the value chain, including the exchange of knowledge, will be encouraged.

Due to the sensitivity of wine to market disturbances with significant impacts of reduced consumption and consequent supply saturation, but also due to losses that occur as a result

of natural disasters, adverse climatic events, diseases or pests, measures will be developed for the sector to resist the preservation of the income of primary producers and winemakers.

In order to manage the risk in the sub-sector viticulture and winemaking will be regulated, and in exceptional cases of crisis on the market will support the introduction of green harvest, i.e. complete destruction or removal of bunches while they are still in their immature stage, thus reduces the yield of the corresponding area to zero, which excludes the remaining clusters of plants. The financial assistance for green harvest will be 50% of the total amount of direct costs of destruction or removal of the bunches and of the loss of revenue associated with such destruction or removal. Support will also be provided for distillation of low quality grapes, stimulation of the production of vinegar, distillate or grape juice and appropriate support for their placement on the market.

As part of risk management, co-financing of cost of the insured yields against losses due to adverse climatic events, natural disasters, plant diseases or pest infestations will continue. Support will be up to 80% of the amount of insurance premiums against losses resulting from natural disasters and 60% for other risks. As in other sub-sectors, temporary assistance will be provided to cover the administrative costs of establishing and capitalizing primary funds of primary producers organized as producer groups and organisations. In order to stimulate the taking of protective measures against the increased impact of climate events, the financial support for investments in the purchase of plant protection equipment will be financed by an amount of support increased by 80%.

In conditions of even stronger competition as a result of reduced consumption with the global COVID -19 crisis, Macedonian wine still lacks recognition which is a necessary element in marketing, especially in this product, due to which the previously provided support will be increased in volume and changed in content. The following activities implemented by recognized economic partners should increase the recognition of Macedonia as a wine country and provide increased access to Macedonian bottled wine on international markets:

- promotion, advertising and implementation of information campaigns to emphasize: the specifics of the Macedonian indigenous varieties, especially Vranec, the quality of the wine and the other accompanying offer that complements the terrier package (culture, history, tradition and tourism), the protected names of quality and organic production. Information activities intended to encourage responsible wine consumption and to promote quality schemes covering designations of origin and geographical indications may also be carried out on the domestic market,
- participation and organisation of international trade and promotional events and master classes and providing access to electronic trading platforms,
- preparation of marketing studies for new markets, necessary for the expansion of sales, as well as studies for evaluation of the results of the promotions, and
- preparation of technical files that include laboratory tests and assessments related to oenological practices, phytosanitary and hygiene rules, as well as other requirements from the countries for import of Macedonian wine.

The financial assistance for activities that should facilitate access to foreign markets and provide enhanced promotion will amount to 50% of eligible costs.

In the following period, a sustainable system should be developed at the disposal of the remnants of grape and wine production and their use for industrial and energy purposes in a way that ensures wine quality and at the same time the protection of the environment.

In order to proper monitoring and analysis of the situation and planning of future development and provision of reliable data, an integrated sub-sectoral IT system in viticulture and wine production will be established, interoperable with other registers in the sector, which in addition to basic data on primary production and processing (areas, varieties, method of cultivation, number of producers, production volume) would also integrate sales and consumption data. Development of the system software solution will be realised in the period 2022-2023.

**- Interventions in livestock subsectors for production of meat, milk and eggs**

Livestock subsectors focused on meat, milk and egg production face an intensified restructuring process, low competitiveness, poor coverage of the domestic market (excluding pork and eggs) and severe import dependence, insufficient level of horizontal organization of entities and non-existent or non-partner relationships in the value chain, as well as unintroduced minimum quality standards.

The implementation of the legally prescribed minimum quality standards will be supported in the meat production sub-sectors based on a more detailed defined approach appropriate to the market conditions. In the case of eggs, this presupposes the need for a national capacity for the treatment of eggs that should not be found on the market. Market surpluses of fresh pork rarely contribute raw materials to the fully imported-dependent meat processing industry, for which they will carry out activities for planned production towards the creation of a type of final product fatteners for the meat processing market[51] and enabling other prerequisites. Establishing stable cooperative relations between a group of broiler breeders and integrators (buyers or slaughterhouses) is especially important for the broiler meat production subsector, and there is a need to direct fattened heads in domestic slaughterhouses to cattle breeding.

In order to ensure revenue sustainability and provide the necessary level of consumer protection in terms of food safety, alternative breeding systems for laying hens (free breeding systems in the facility, in the yard-outlet or combined) for egg and broiler production will be further regulated and turnover. For such production systems that can satisfy part of the market segments will be treated with a dedicated package of necessary support.

In the livestock sub-sectors, the initial forms of sub-sectoral association at the national level will be supported in the organization of a well-thought-out marketing approach for the promotion of a healthy and reliable product of domestic origin, as well as regulation of procedures for dealing with market disruption risks.

The need to improve genetic potential and specialisation and knowledge transfer for improved production practices and innovations are common to all of these subsectors, and through operational programs complementary activities of breeding program activities can be included to maximize the effects.

Policy interventions will also address the serious threats to the sector from the danger of the spread of infectious diseases (African swine fever, etc.) frequent with climate change, for which

[51] with a final weight of 105-130 kg (fatteners for industrial processing)

appropriate measures need to be taken. The measures would include precautionary biosecurity and other activities undertaken by farms, information campaigns aimed at restoring consumer confidence, overcoming the effects of restrictions arising from the imposed veterinary restrictions on the movement of animals and products, etc.

All sub-sectors will be supported by activities aimed at creating and providing knowledge, modern technologies and digital tools necessary to maximize the positive aspects of the ongoing restructuring process.

In order to target the stated sectoral needs in the next period, the following types of interventions will be supported:

- investments in tangible and intangible assets for:
  - more efficient management of the placement of the quantities on the market and directing towards the processing capacities in the direction of production of a rounded Macedonian product with added value and protected quality,
  - implementation of quality standards,
  - increasing the sustainability and efficiency of transport and storage of products, research and experimental production,
  - preventing damage caused by adverse climatic events and promoting the use of varieties and management practices adapted to changing climatic conditions,
  - energy saving and increasing energy efficiency,
  - procedures aimed at environmental protection,
  - animal health and welfare, and
  - reducing waste production and improving the use and management of by-products and waste,
- advisory services and technical assistance to overcome identified deficiencies, including adaptation to and mitigation of the impact of climate change,
- training, including exchange of best practices,
- promotion, communication and marketing, especially activities aimed at raising consumer awareness of the quality, health and nutrition aspects of domestic products,
- implementation of quality standards,
- measures to deal with the threat of occurrence and consequences of diseases that must be reported from the list of the World Organization for Animal Health with a serious impact on the production potential and existence of subsectors (outside the activities of FVA programs, such as African swine fever and others), and
- implementation of traceability and certification systems, in particular monitoring of the quality of products sold to end consumers.

### 5.2.4 Measures for emergency situations

In conditions of increased risks after the agricultural production due to the unfavourable climatic events and the movements on the markets with agricultural products, special attention

will be paid to the provision of appropriate risk management tools. Support is provided to help farmers manage the risks of production and income associated with their agricultural activity that are beyond their control.

In the next period, the support for the insurance premiums for agricultural production set on a broad basis will continue, as it was in the previous period, as well as the establishment and capitalization of mutual funds established by groups or organizations of producers. Mutual funds will cover both types of risks, those related to production losses and revenue stabilization.

The support will be granted to cover losses that are at least 20% of the average annual production or income of the farmer compared to the previous three-year period or a three-year average calculated from the previous five-year period excluding the years with the highest and lowest amount. The maximum amount of support will be 70% of the eligible costs.

Before starting the implementation of the support in 2023, the methodology for the calculation of the losses and the conditions under which the compensation is activated and the rules for constituting and managing the mutual funds will be regulated.

One of the main instruments in the area of emergency measures will be the establishment of a new reserve fund for crises in the agricultural sector that should support the sector in conditions when crises affect the production and / or marketing of agricultural products. The Crisis Reserve Fund can be used to finance exceptional market disruption measures. The financing of the fund will be related to the withholding from direct payments and it will be set up every year. All money in the reserve fund that will not be used for a certain period of time will be paid to farmers.

In case of danger of serious disturbances in the market of agricultural products, which may jeopardize the goals of the national agricultural policy, the Government may introduce special measures for protection of the market in the period until the disturbance or danger of disturbance of the market passes, such as prescribing additional import duties above the minimum price at the border and tying the quantities of import of certain products with the purchase of agricultural products produced in the country.

In conditions when due to significant market disturbances, the minimum level of income of agricultural producers is not achieved, assistance will be provided in the form of increased amount of direct payments to existing measures or new temporary measures of direct support will be introduced according to the characteristics of the event.

Additionally, in case of serious crises of unforeseen surplus of agricultural products that can be processed, such as raw milk or wine grapes, an instrument will be arranged to regulate the surplus by organizing the purchase of products, their processing and distribution.

### 5.2.5 Minimum quality standards and quality schemes for agricultural products

The Law on Quality of Agricultural Products prescribes provisions that regulate the markets of agricultural products in the area of minimum standards for quality, classification, packaging, quality marking, transport, storage of products and information. However, the real implementation by the operators in most of the sub-sectors is insignificant and, in that direction serious efforts should be made in the next strategic period, especially for the key sub-sectors.

The implementation of the minimum quality standards for vegetables and fruits should ensure compliance with the standards in force in the EU and other surrounding markets, which will directly contribute to the protection of consumers and improve their export competitiveness. In order to implement the provisions of the law, the following activities will be undertaken:

- identification of the situation by applying the minimum standards (2021),
- conducting a campaign and indicating / advising the operators on the steps that need to be taken in order to comply with the requirements of the law (2022) and a campaign for consumers (2025),
- providing additional support measures in the production and especially in the post-harvest activities for purposeful investments in facilities, installations and equipment for application of the required standards that will be realized as integration projects or through producer organizations (2021 legal preparations and implementation of measures from 2022), and
- conducting regular supervision and monitoring of the introduction of standards by the State Inspectorate for Agriculture.

Compliance with the prescribed provisions for minimum milk quality is directly related to enabling the placing of milk on the market and the level of the purchase price. In the coming period, the milk control monitoring system will be completed by clarifying the identified deficiencies through legal interventions and by imposing the prescribed obligations on all involved in the system according to the concept (authorized accredited laboratories, reference laboratory, sampling, training quality controllers of milk, dairies and primary producers).

The improvement of the milk quality should start with the improvement of the hygienic conditions and practice in the farm, primarily by educating the breeders for the introduction of hygienic practices and application of good farm practice. Overcoming the weaknesses that affect the lack of hygiene in the farm, by providing a closed system from milking to milk transportation and rapid temperature reduction, will be improved through individual investments of the farms themselves, but also through joint ventures in raw milk collection canters with support provided through cross-border organizations, producer organizations and localized integration projects.

According to the provisions of the Law on Quality, all entities that purchase raw milk on the market must record the total quantity of purchased milk and submit monthly data to the information centre for control milk quality, quantities, purchase prices and further movement of products. The database in the dairy sector should integrate data from all registers in the field of dairy production, for which a change in the legal framework will be prepared, a software solution for monitoring the quality of milk will be prepared and responsibilities of the participants in the system will be delegated.

In addition to institutional changes and investment ventures, changes aimed at improving the quality of milk will be made in the measure for direct payments per liter of purchased milk, which will be based on the classes of milk: 1 denar for second class, 2 denars for first class and 5 denars for extra class.

The measures taken should ensure an increase in the quality of milk for at least 10% annual increase of the purchased milk from extra class after the introduction of all elements of the system with a trend of higher percentage growth.

In order to introduce **the minimum standards for quality of pork and beef** in the following period, conditions will be created for the functioning of the system for evaluation of pigs and cattle after their meat and slaughter of carcasses on the slaughter line. The classification of carcasses should also facilitate the purchase of domestic meat by the meat processing industry as a substitute for imports. The implementation of the grading system will include the realization of several related steps such as:

- Defining the approach in introducing standards appropriate to market conditions,
- Determining the Macedonian formula for evaluation of the slaughter line according to the SEUROP trade classification of halves,
- Purchase and installation of the necessary equipment and software in registered slaughterhouses that slaughter more than 100 pigs or more than 10 cattle per day,
- Training of authorized slaughter line quality controllers, and
- Creating an independent body to control the quality of the hot halves on the slaughter line.

SEUROP slaughter line standards in sheep breeding due to the specifics of the Macedonian lamb market and the demand for "light lamb" will be subject to gradual application in consultation with lamb breeders and exporters as part of the development of an appropriate marketing strategy for strengthening and promotion of the Macedonian lamb brand.

Preparatory activities (amendment of legal acts, provision of detailed plans and financial resources) will start in 2021, and the wider implementation of the system by expanding the activities of market participants will be realized from 2023, supported by funds from the Instrument for Pre-Accession Assistance to the EU (hereinafter IPA).

According to **the regulation of the eggs market**, eggs of class B (cracked, broken, dirty, etc.) cannot be intended for direct human consumption and can be used only for the food and non-food industry after their proper treatment. In order to overcome the current problem of lack of capacity for proper treatment removal from the market of this class of eggs will be supported the construction of capacity for processing eggs into liquid egg products for the needs of the entire subsector. The estimated value of the investment is 21 million denars.

Regarding the regulation of the poultry market, among other provisions, in order to implement the "The Rulebook on the method for absorption of water in slaughterhouses and the method for determining the average water loss during thawing "shall establish a laboratory for regular control of the content of absorbed water in imported frozen poultry of about 30,000 tons as it is imported annually to meet95% of national needs[52].

### 5.2.6 Quality schemes and market standards

The additional value of agricultural products on the market will be provided by **protecting the quality of agricultural products** through the application of the designation of origin, the geographical indication and the designation for guaranteed traditional specialty in accordance

[52] According to the rulebook, the allowed amount is 1.5% for air cooling, 3.3% for air cooling with water spraying and 5.1% for water cooling by immersion, while unofficial information points to drastically higher amounts of water in frozen chicken products. of over 15% water after thawing.

with the provisions of the Law on Quality of Agricultural Products. The products that stand out with their peculiarities as a result of the influence of special natural or human factors on a certain geographical area and whose production, processing and / or preparation takes place in a traditional way will be supported in the process of protection of those peculiarities.

Support will be provided continuously for co-financing the costs of registration in the register of users of protected labels, the costs of laboratory analysis, control and certification of protected labels by the authorized verification bodies. The raw material used for a product with a protected geographical name will be subject to additional financial support per unit of product, and the costs of labelling and marking of products with a protected trade mark will be co-financed.

In order to provide greater added value of the product in foreign markets and promotion of new European markets outside the existing ones, activities will be encouraged and supported to promote and protect the geographical origin of some of the most important Macedonian products with already recognized export potential (such as Macedonian lamb, Kocani rice, etc.). The popularization of product protection will be realized through activities of interested associations of producers in order to motivate the joining of producers to the initiative, and at least two national campaigns for promotion of the process will be realized, one intended for producers and a campaign for consumers for popularization of already protected products.

In order to implement it in accordance with the above objectives, but also its further harmonization with the European legislation, the Law on Quality will be amended by mid-2022.

In addition to the basic minimum standards for the quality of agricultural products on the European market, exporters are required to meet additional and **higher market standards**, especially when it comes to fresh fruits and vegetables. Exactly these standards, together with the structural problem of the impossibility of continuous supply of large quantities of products are the reason for the difficult access of our products to the selective European market, especially in the dominant marketing channel - large market chains. In order to encourage domestic products, primarily those of fresh vegetables and fruits to introduce higher quality standards, in the coming period, measures will be implemented to cover the costs of certification and analysis for manufacturers who introduce systems and quality standards GLOBALGAP.

Support will be provided for the introduction of sanitary-hygienic checks according to the standard TN-STANDARD A75-S041 in the processing industry in terms of compliance with hygiene requirements, especially with the appearance of the COVID-19 pandemic, as well as upgrading existing and introducing new safety mechanisms for traceability of the raw material in the stages of production and trade.

### 5.2.7 Promotion of the Macedonian agricultural production

Macedonian agri-food export of fresh products is limited to value-added products or products with lower level of processing and a small number of destinations. Therefore, the priority in foreign trade is the diversification of export destinations and product range, and in that direction, in the following period, the national promotion of Macedonian products in new or insufficiently represented and alternative markets will continue.

Some of the more important markets where the presence of Macedonian products is insufficient, and which have a large potential for absorption and / or are fast growing markets [53] are China, the markets of the former Soviet Union countries, first of all Russia, part of the underrepresented markets of the EU, then the United States and the countries of the Middle East. In order to facilitate access to targeted foreign markets, the already concluded bilateral free trade arrangements will be promoted and new ones initiated.

The development of appropriate recognition of the products of individual producers will be supported by co-financing part of the costs of branded and modern packaging that has a higher price, and is a condition for placing products especially in more selective markets.

In order to improve the national consumption of domestic agricultural products, the specificity of the declaration of production of domestic origin in relation to that of import will be regulated. A special category for marking will be fresh domestic products (milk, pork, beef and broiler meat, egg) and food products obtained by processing raw material of domestic origin. In the national promotion for popularization of the domestic production and consumer protection, as partners will be included the consumer associations in the country with which together will design activities for consumer education.

The promotion of the quality of domestic products will be popularized through national events organized for given products of a revival and competitive nature, which will present the best achievements in the specific subsector. The support of the promotion will be especially focused on products with protected quality, sustainable traditional values and organic production.

In order to improve the placement of the production of fruits and vegetables, the activities of producers for direct marketing of their products will be supported in accordance with the modern trends in the markets with agricultural products for which technical support and support of the necessary investments will be provided. This is especially the case in conditions of expected impact of COVID-19 in the first part of the strategic period.

### 5.2.8 Foreign trade

Foreign policy interventions that are part of market regulation and concern trade with third countries, such as import and export certificates, import duties, administration of tariff quotas, will be properly regulated in accordance with the regulations of the common organisation of the EU market by the end of the strategic period and implemented by the MAFWE after the integration of competencies within the Ministry.

### II.5.3 Rural development policy

[53] Due to the following factors: the large number of consumers, the constant increase in the purchasing power of the population and the growing interest in the defined agri-food products and the demonstrative resistance of these economies to the impact of the global economic crisis.

### 5.3.1 Areas of interventions of rural development policy

In the next strategic period, the measures and instruments of the rural development policy will be focused on the following areas.

**Environmental protection and conservation, conservation of natural resources and adaptation and mitigation of the effects of climate change**

A clear strategy and policy for natural resource management are essential for sustainable environmental management and long-term and sustainable economic growth. Adequate policy framework and incentive programs contribute to greater accountability and more rational use of natural resources, as well as more active participation in the implementation of activities related to environmental issues. Developing countries, generally do not have clear policy frameworks that will properly address environmental issues in economic activities, including, above all, the agriculture. It is the responsibility of the State to ensure that appropriate legal frameworks, enforcement mechanisms and incentives are in place and that they are consistent with international obligations. In this sense, this strategy pays particular attention to the reforms that need to be implemented in order to promote sustainable agricultural practices (agri-environmental measures, forestry, integrated natural resource management, integrated plant protection, soil fertility, sustainable water management, organic agriculture), effective implementation of the laws for prevention of pollution, preservation of land and water, control of non-selective conversion of agricultural land for other purposes, protection of forests and areas with natural resources of high value.

In order to target the stated sectoral needs in the coming period, the following types of interventions will be supported:

- Support for sustainable use of agricultural land for:

  • Introduction of the principles of good agricultural and hygienic practice in performing agricultural activity and compliance with the standards prescribed in the national legislation.

  • Assistance for the preservation of rural areas and their traditional characteristics by maintaining the traditional production methods of certain crops, reimbursement of costs for employees engaged in traditional livestock and - maintenance of high pastures and meadows and supporting traditional sheep breeding.

  • Assistance for the conservation of the genetic diversity of indigenous agricultural plants and indigenous livestock breeds, for the breeding and reproduction of indigenous plant species and livestock breeds and activities for the establishment, monitoring and analysis of conditions with indigenous agricultural plants and indigenous livestock breeding and of mandatory genetic reserves;

- Introduction and maintenance of organic production;
- Support for sustainable use of forest land, through:

  • Afforestation of agricultural land around forest land, in national parks, in erosive areas along the river bank.

  • Forest cultivation by applying higher standards for environmental protection

• Rehabilitation of forests and introduction of measures for forest protection;

- Introduction of soil conservation activities (tillage techniques to prevent soil erosion, green cover, straw cover and manure);
- Introduction of activities for conservation of natural habitats of animals important for biodiversity (leaving winter stubble, adapting the mowing periods);
- Support for the maintenance of landscape features (stone walls, terraces, borders) and
- Support for pasture conservation (limitation of animal density rate by capacity) and pasture creation (including conversion of arable land to pasture).

The agri-environmental measures will be financed using the National Program for financial support of the rural development, until the moment of accreditation of the agro-ecological measures by the European Commission for financing under the IPARD Program.

The activities that in the part of the support of the investments for adaptation and mitigation of the climate change will be mainly treated through the measures of financial support of the rural development are described in section 5.6.4 Adaptation of the agricultural sector to the climate change. They will be provided with a higher percentage of co-financing of eligible costs in the next strategic period.

From the aspect of the IPARD Program 2014-2020, investments for production of energy from renewable sources are supported, while investments that contribute to energy efficiency, production and use of bio-energy, waste and wastewater treatment and treatment of manure have an increased rate of co-financing of + 10%.

**Promotion of agriculture, natural and human resources in** low**-**potential areas

Some countries create programs by proposing measures that can be implemented by more farmers in order to cover a larger area. Although such measures are simple to apply in production, as they require minimal adjustments to agricultural practices, the financial compensation for them is relatively low. On the other hand, in practice, very often the national agri-environmental programs include both types of measures.

A significant part of the rural area of Republic North Macedonia faces low agricultural productivity and socio-economic marginalization, caused by geographical or other constraints. At the same time, these areas often fall into the category of areas of high natural value and are characterized by greater application of traditional agricultural practices that contribute to better protection of the environment. Farmers in these areas need help to stay in the agricultural sector, to continue to use the land and maintain it in good production conditions, to contribute to the preservation of rural areas, to apply and promote traditional production systems.

To meet this priority, the interventions that will be implemented are based on:

- Assistance for performing agricultural activity in low-potential areas for agricultural activity;
- Support for equalization of the economic conditions of the agricultural producers in low-potential areas with those of the producers in other areas;

- Support for revitalization and preservation of pastures (as an element of landscape and production resources).

The support will be based on compensation for higher production costs, i.e. lost revenues due to unfavourable production conditions. The purpose of the support will be to ensure the competitiveness of agricultural production in these areas as well.

Low-potential areas financial support is implemented through the National Program for financial support of rural development. These measures are designed to protect specific areas and are more complex, with higher requirements and can be implemented by a smaller number of farmers, so the financial support for them is correspondingly higher. Applicants for the measures from the National Program and the IPARD program are scored higher if the investment is in an low-potential area, and some of the investments have an increased co-financing rate of + 10%.

In order to implement additional modular support in low-potential areas with the European support, it is necessary to approximate national legislation to the European legislation by the end of 2023 at the latest.

**Investments**

The current state of physical resources (mechanization, equipment, plantations, livestock and facilities) is unfavourable. They are technologically obsolete to the extent that they cannot ensure productivity growth of the agricultural sector and meet environmental and hygiene standards. In addition, a successful response of the agricultural sector to the challenges of climate change is impossible without technical and technological improvement of resources, use of new better varieties of plants, which should contribute to changing the production structure, production technologies and the application of agro-technical measures.

In that sense, it is necessary to provide rational, standard solutions for technical-technological innovation of mechanization, equipment and capacities, adapted to the size of the agricultural farm, standards for health safety and animal welfare, as well as climate change. Investments in new plantations must be accompanied by recommendations for regionalization of fruit and wine production areas, while in livestock production, attention must be paid to improving the racial composition of livestock and improving selection.

For the restructuring of the agri-food sector - dealing with the unfavourable structure and modernization of the sector, the following interventions are envisaged:

- Investments for modernization and diversification of the technological process of the existing agri-food businesses, through:

  • Supporting investments in modernization of crop production. Support for exploiting the potentials of production in controlled conditions.

  • Support for the reconstruction of vineyards and orchards provided for other crops that are different from the existing one, as well as reconstruction of permanent orchards and vineyards.

  • Supporting investments in modernization of livestock production.

These investments are supported by the National Program for Financial Support of Rural Development and the IPARD Program, with a clear demarcation in terms of the eligible costs of the proposed investment, as well as in terms of the minimum investment threshold. In the next strategic period, it will be negotiated to increase the minimum investment threshold through the IPARD III Program, from the current 3,000 euros to 10,000 euros.

- Supporting investments in modernization and technological improvement of the production process in the processing capacities of agricultural products. Support is needed to improve the performance of food production and processing in terms of productivity and efficiency in terms of rationalization of installed facilities, their efficient use and to eliminate supply chain irregularities manifested in agricultural markets.
- Investments for modernization of the physical post-harvest and marketing infrastructure, investments in the establishment and modernization of fruit and vegetable purchase centres. Modern technology needs to be supported through the various phases of the vegetable distribution chain to improve stock quality. This ranges from investments in new refrigeration technologies, field investments immediately after harvest, to sorting, storage, packaging, transport equipment and facilities.

These investments are supported by the National Program for Financial Support of Rural Development and the IPARD Program, with a clear demarcation in terms of the eligible costs of the proposed investment, as well as in terms of the minimum investment threshold. In the next strategic period, it will be negotiated to increase the minimum investment threshold through the IPARD III Program, from the current 10,000 euros to 50,000 euros.

- Support of investments for increasing the economic value of forests - for implementation of activities for forest improvement in accordance with the plans of the Law on Forests
- Supporting investments in infrastructure to create preconditions for agricultural development and protection against natural disasters, as follows:

  • investments intended for infrastructure for access to agricultural land,

  • activities for consolidation of agricultural land and improvement of agricultural land,

  • transformation of non-agricultural or agricultural uncultivated land into arable land (with exemption from rent in the first year and reduction within 5 years),

  • activities for protection of agricultural production damaged by natural disasters, which refer to cleaning of the canal network for drainage and irrigation and regulation of riverbeds for flood protection,

  • investments intended for electricity supply and water supply,

  • investments intended for water economy (construction and renovation of irrigation systems with emphasis on micro-accumulations and micro-irrigation systems).

The financial support of these investments is through the National Program for financial support of rural development, where the end beneficiaries are LSGUs, MAFWE and PE for pasture management and JSC Water Economy of the Republic of North Macedonia - state-owned and public water companies.

Support for technical and technological improvement of the agricultural sector will be provided with incentives for modernization of facilities, machinery and equipment, increase of the basic herd and improvement of the racial composition of livestock, as well as incentives for revitalization of old and new perennials. Special attention should be paid to the implementation of innovative technological solutions and production systems.

In addition to investments in improving the condition of physical capital, considerable attention should be paid to improving the standards, both in terms of adjusting the legislative framework and in terms of establishing an effective control system.

Radical interventions in the technical and technological improvement of the agricultural sector require the mobilization of a number of other entities - advisory services, scientific research institutions and other stakeholders. It is necessary to apply a wide range of general measures to support agriculture, as well as the establishment of all types of administrative and technical support to encourage cooperation between them.

**Young farmers and starting businesses in rural areas**

In order to revive the rural areas, one of the priorities is to support young farmers to start and modernize existing businesses in the agricultural sector. Young farmers have an advantage for investment support under the National Program for Financial Support of Rural Development and the IPARD program, by granting additional points, and some of the investments have an increased co-financing rate of + 5%. The National Program for Financial Support of Rural Development supports the encouragement of agricultural production of agricultural holdings whose holders are young farmers, in the amount of 1,200,000 denars. The implementation of these investments will lead to increased competitiveness of agriculture as a sector, and will also lead to the fulfilment of government priorities in terms of promotion of knowledge and development of human potential in rural areas.

With the adoption of the Rulebooks[54] for doorstep sale of products of plant and animal origin[55] by the Food and Veterinary Agency, small producers will have the opportunity to start their own businesses and realize direct sales of agricultural products and processed products.

According to Article 26 of the Law on Innovation Activity, 1% of the total value of the Program for financial support of rural development is allocated for starting businesses in rural areas by introducing innovations in agriculture. In the next strategic period, the focus will be on projects that offer innovative solutions in agricultural businesses and digitalization of agricultural processes.

**Risk management instruments**

[54] Rulebooks on conditions and hygiene for the production and marketing of food of non-animal origin intended for direct supply, in geographical or economic constraints, as well as general and special requirements for the application of traditional methods of production, processing and distribution of food with traditional ingredients.

[55] Rulebooks on conditions and hygiene for the production and marketing of food of non-animal origin intended for direct supply, in geographical or economic constraints, as well as general and special requirements for the application of traditional methods of production, processing and distribution of food with traditional ingredients.

Long-term stability of the available financial resources to support rural development, as well as equal and unhindered access of all potential beneficiaries to the financial market, are the basic preconditions for growth of investment activity in the agricultural sector. Without specific financial products and services that provide insurance against production and market risks and motivate agricultural holdings for new investments, rural households, agricultural holdings and other economic entities remain lending under the terms of commercial loans.

The absence of competitive savings instruments and other financial services in rural areas leads to less profitable forms of savings, which further reduces the prospects for their development.

Interventions to establish a more efficient funding model are based on the following objectives:

- Establishment of a guarantee fund in the service of agriculture and rural development;
- Support for interest rate subsidies. The National Program for Financial Support of Rural Development supports interest rate subsidies in the amount of up to 75% of the rate which is a maximum of 8% of commercial loans to support IPARD projects with 50% co-financing.
- Improving the insurance and risk management system adapted to the solutions allowed by international agreements.

Establishing an efficient agricultural support system requires significant institutional adjustments towards building and reforming financial organizations in the service of agriculture (establishment of guarantee funds) and financial products (Establishment of a National Agricultural Insurance Fund, Agricultural loans with facilitated criteria). In this strategic period, it is necessary to adjust the legal framework to facilitate the provision of loans, to enable dialogue and promote innovative solutions in the financial market, but, above all, to provide effective and stable budget support.

**Cooperation**

Cooperation between all stakeholders in the value chain has led to increased market opportunities, economic development and overall production in the agricultural sector, while improving the competitiveness of the agricultural sector in line with EU accession requirements. The purpose of this priority is to support investments that will strengthen the position of all participants in the value chain, promote contractual vertical and horizontal integration between stakeholders in order to support transparency, stability, fairness of markets in the interest of increase the competitiveness of all participants individually and the chain as a whole.

Interventions supported to achieve this priority are based on:

- Support of investments for horizontal integration of the entities in the agri-food sector, through:

  • Supporting the economic association of agricultural holdings for joint agricultural activity. This investment supports the establishment and operation of agricultural cooperatives.

• Introduction of support for higher forms of association of farmers - producer groups and organizations. Producer groups enable farmers to face market challenges together and strengthen bargaining power vis-a-vis processors and traders. This investment will support the activities of the Operational Program of producer organizations, especially in the area of joint economic activities on a larger scale, promotion and marketing, environmental protection and market stabilization.

- Investment support for vertical integration of all stakeholders in the value chains in the agri-food sector.
- Support for the establishment of cross-border organizations.
- Investment support for the establishment of Local Action Groups. All types of local partnerships related to promoting and activating local values and products, improving the social status of vulnerable parts of rural communities and addressing social exclusion, will be promoted and financially supported in cooperation with other state bodies. In addition, the elaboration of local development strategies and action plans to address development problems and achieve better links between urban and rural areas will be encouraged.
- Support for investment cooperation for development of new products, processes and technologies in the agricultural and food sector (integrated projects) in order to improve the relations between farmers and processors, to raise the level of innovation in the agricultural and food sector, to improve marketing and increase sales of agricultural products and improve consumer perception of high quality local food products.

These types of investments are supported through the National Program for Financial Support of Rural Development.

**Transfer of knowledge and information**

The creation and transfer of knowledge and technology in agriculture are recognized as extremely important for increasing the competitiveness of Macedonian agriculture and priority in the next strategic period and hence the need to establish a comprehensive system of knowledge and innovation as described in part II 6.

The envisaged activities of setting up the system and its functioning will be financed by the rural development policy measures.

- Investments in establishing an efficient advisory system in agriculture, and
- Arranging the elements of the system of mandatory trainings for farmers. The need refers to facilitating the transfer of information and knowledge to all adults engaged in agricultural, food and forestry activities, in order to create an appropriate level of technical and economic knowledge that requires the evolution and specialisation of agriculture and forestry. The evolution and specialisation of agriculture and forestry requires an appropriate level of technical and economic training, including expertise in new information technologies such as appropriate awareness of product quality, research results and sustainable management of natural resources and application of production practices compatible with maintenance and landscaping and environmental protection.

**Diversification of the rural economy and preservation of cultural and natural heritage**

Diversification of economic activities and incomes transform the rural economy by moving away from the activities of the primary sector in agriculture, industry and tertiary activities. Greater supply of jobs and employment opportunities in activities outside agriculture, open space for structural change and growth of agricultural productivity. At the same time, by diversifying the rural economy and reducing the dependence on agricultural income, conditions are provided for a more stable income of those agricultural farms whose survival in agriculture is uncertain. In this way, rural areas become less economically and socially vulnerable. On the other hand, the diversification of economic activities in rural areas expands the range of services available to the rural population, as well as services and products based on traditional knowledge, technologies, natural resources and cultural heritage, which rural areas provide to the market.

The competitiveness of the country's rural areas is limited due to inadequate quality and access to basic infrastructure and services for the economy and the rural population. The physical accessibility of rural areas has deteriorated due to the poor quality of local roads, which are important for connecting settlements within municipalities. The main problems of the rural population are often related to water supply and sewerage, electricity networks, heating and waste collection and disposal.

In addition to the traditionally required investments in improving infrastructure, it is necessary to renew other public facilities in rural areas for the general upgrading of rural livelihoods, to improve the economic and social attractiveness of villages and small towns.

In order to target the stated sectoral needs in the next period, the following types of interventions will be supported:

- Supporting investments for improvement and development of rural infrastructure, through implementation of projects for energy supply and energy efficiency, water management, waste management, village reconstruction, investments in road infrastructure and services for the rural community. Beneficiaries of the measure are: the municipalities (for settlements with less than 10,000 inhabitants), the Public Enterprise "National Forests" and the Public Enterprise for Pastures. This measure is financed through the Program for financial support of rural development. It is measure 6 of the IPARD Program 2014-2020 since the beginning of the implementation of the Program (2017). The internal procedures for its implementation in AFSARD are ready. In order to transfer the right to manage the assets from the Measure (accreditation) it is necessary to provide an adequate number of trained employees in AFSARD.
- Improving the position and role of the rural woman through non-repayable financial support for starting an additional activity of a female member of an agricultural holding registered in the SAHR. The approved investments are financed by the Program for financial support of rural development in the amount of up to 180,000 denars. This support will increase to 600,000 denars with the start of implementation of IPARD III.
- Providing support for diversification of economic activities in rural areas. Priority needs are to provide funding for projects of alternative economic activities in rural areas, including alternative economic activities of agricultural holdings, which will ensure diversification of farm income. Such projects should not only focus on agricultural

economic activities but also support for the production of specialised food characterized by a traditional taste of rural areas, promotion of rural tourism, valuing the natural advantages and traditional aspects of rural communities and promotion of crafts aimed at to craft activities and craft services, which contributes to increasing the competitiveness and added value of rural economies, improving the quality of life and at the same time creating job opportunities. These interventions receive financial support through the IPARD Program. In the next strategic period, negotiations will be held to increase the minimum investment threshold, from the current 1,500 euros to 5,000 euros. In this way, the workload of AFSARD will be greatly reduced, without reducing the utilization of funds. Projects up to 5,000 euros could be covered under the National Rural Development Program, so that smaller processors, given the differences in the procedures for the implementation of the two programs, would "easier" to realize their investments.

Support for rural economic development and the protection of natural and cultural heritage will become increasingly important in the future, not only through a greater focus on rural development policy, but also through the establishment of mechanisms for better coordination with other public policies. Rural development policy measures will encourage the start of new, non-agricultural activities of farm members, investments in physical capital (equipment, facilities, infrastructure) and the improvement of human potential. Providing a range of value-added assistance to local products, including support for business networks, marketing of collective products and services, branding of local products, improving the quality of local products and developing craft capacity. These types of assistance will be financially supported.

In parallel, information campaigns will be supported to raise awareness, distribute information and provide agricultural advisory support to farms interested in expanding non-agricultural activities. In addition, various types of investments and advisory support in agriculture will be provided for those interested in establishing micro-legal entities, tourism development and related activities, which will enable rural areas to offer more attractive jobs for the younger and more educated population. Improving the quality of life of the rural population will be encouraged by supporting the arrangement and restoration of the rural environment, preservation of cultural heritage and natural wealth, through projects for protection, preservation and promotion of local architecture, landscape and other cultural, historical and natural values.

### II.5.4 Elements common to multiple interventions

#### 5.4.1 Conditionality by meeting the standards of cross-conformity

The harmonization of agricultural and livestock practices with the basic standards for environmental protection, climate change, public health, animal health and welfare and plant health will continue to be stimulated through compliance with the requirements of the cross-compliance system. The exercise of the right to direct payments to support income is subject to mandatory compliance with the defined requirements related to the application of standards and procedures in production that are part of the cross-compliance system and are included

in the "Rulebook on the list of special minimum requirements for good agricultural practice and protection of the environment" (Official Gazette of the RM 43/2013, 178/2015).

The conditionality of the support is aimed at the development of sustainable agriculture through better awareness by users of the need to comply with the basic standards described in the list of legal management requirements (hereinafter referred to as the LMR) and standards for good agricultural and environmental conditions (in hereinafter GAEC) which are part of the Rulebook.

The relevant application of standards imposed by the conditionality of direct payments will contribute to achieving the second strategic goal - "Application of environmental practices in production that lead to reducing the impact of climate change and adaptation to them."

The following changes in the national system of direct payment conditionality will be implemented in the upcoming strategic period:

**- Expanding the scope of application of policy conditionality and improved application of requirements.** Starting from 2022, the conditionality with the fulfilment of the prescribed obligations will also refer to the direct payments from the rural development policies that support the undertaken obligations of the farmers for protection of the environment and the climate (agro-ecological measures).

Regarding the improved application of the existing requirements, special attention will be paid to the part of the obligations related to the mandatory records of the application of plant protection products.

**- Reduction and exclusion of direct payments in case of cross-compliance.** In order to properly and increase the application of the minimum requirements for environmental protection and good agricultural practice, will prescribe the manner of determining the non-compliance with cross-compliance and the amount of the percentage of gradual reduction until the complete exclusion of direct payments depending on the size and frequency of non-compliance with standards. Pursuant to Article 57 paragraph (6) of the Law on Agriculture and Rural Development, by the end of 2021, a "Rulebook on the manner of determining non-compliance with cross-compliance and the amount of the percentage reduction of direct payments" will be adopted.

**- Updating and supplementing the list of special minimum conditions.** The list of special minimum requirements will be supplemented by new ones arising from Annex III of the last draft EC regulation COM (2018) 392. The amended list should better take into account the environmental and climatic challenges facing Macedonian agriculture and provide higher level of ambition regarding environmental protection and climate-related challenges. This will make the national agricultural policy more compatible with the expectations of the society in relation to the previously mentioned important areas.

More specifically, the GAEC framework will need to provide for the so-called greening practices of direct payments for the period up to 2020, mitigation and adaptation to climate change, the need to improve the sustainability of farms, especially in terms of soil nutrient management and water challenges, and based on specific soil and climatic conditions characteristic of Macedonian agriculture, as well as the protection and quality of biodiversity. The update of the list of SSS should include changes in national legislation in the field of environment, public health, animal health, plant health and animal welfare which imply precise obligations for farmers.

The addition of the list will be realized by the end of 2022 at the latest.

**- Providing adequate institutional capacity.** Institutional capacities for programming the cross-compliance system in MAFWE, for control of the fulfilment of the requirements for cross-compliance in the Agency for Financial Support in Agriculture and Rural Development (hereinafter AFSARD), as well as for supporting the farmers in their achievement in the Agency Encouraging the development of agriculture (hereinafter NEA) will be strengthened by introducing dedicated work responsibilities and strengthening their knowledge and skills in the field. During 2022, a functional legal-regulated system for inter-institutional coordination will be established (MAFWE, AFSARD, advisory services, Ministry of Environment and Physical Planning,

According to the new rulebook, AFSARD will update the forms that need to be filled out by farmers for records of compliance with the requirements, as well as the user guide for direct payments.

**- Support activities in the application of the requirements.** Compliance with cross-compliance requirements will be a regular area of advisory services provided through the national advisory system within the Agricultural Knowledge and Innovation System. According to the rulebook on the list of special minimum requirements, advisory service providers should provide support to beneficiaries of financial support who are required to meet the requirements. The councils will be implemented on an ongoing basis through regular field activities for a large number of farmers and specifically for persons who have been found to be in non-compliance with the AFSARD controls.

In order to popularize the application of cross-compliance, a brochure - Manual for application of the minimum conditions for good agricultural practice and environmental protection will be updated and distributed to the users and a regular public campaign will be conducted through the local televisions and radios and the Macedonian Radio Television.

### 5.4.2 System of agricultural advisory services

In order to improve the sustainable management and overall performance of agricultural holdings and rural businesses and to achieve the objectives of the strategy, advisory services will be provided to the beneficiaries of the national agricultural policy through a formal system.

The agricultural advisory system will include the economic, environmental and social dimensions in the management of agricultural holdings and land and will enable the transfer of information on modern technological achievements and scientific innovations. State-supported services should help farmers and other beneficiaries of national agricultural policy support to become more aware of the relationship between farm management, land management and the application of certain standards, especially those on the environment and climate.

The institutional set-up and the integration of the system of agricultural advisory services in the extended system of knowledge and innovation in agriculture are discussed in point II.4 Elements that should enable the modernization of national policies.

### 5.4.3 Integrated administration and control system

The Integrated Administration and Control System (ISAC), which aims to facilitate and improve the system of direct payments from the first and second pillars of the EU CAP, including verification of the accuracy of those payments, is functional by providing support for the implementation of national policies to support agriculture and rural development. The system, established and managed by the MAFWE, in the past period enabled credible and accountable implementation of the support policies with procedures in all phases of the administration and control based on evidence.

The data from the Land Parcel Identification System (hereinafter LPIS) will be regularly maintained and updated. Based on the provided new aerial recordings, orthophoto maps, digital field model in 2017, digitalization of the physical blocks (initial layer) was made, and in the following period, the started updating of the reference SIPP plots of the farmers will continue. The LPIS is adapted to support measures that are part of the "greening" which includes pasture maintenance and ecological areas, but lacks regulation defining the ecological areas as well as measures for the use of financial support related to pastures. LPIS is also adapted for measures that are in line with compliance with NATURA 2000 areas as well as areas with disabilities.

In the following strategic period, the priority remains to ensure the continuity of the achieved functional sustainability of the process of registration of agricultural holdings and updating their data in the ERCS, as well as entry of graphic data on arable land in the Land Parcel Identification System. Additionally, as a novelty, a geo-spatial application for financial support will be introduced, through which the location for which the support will be paid, will be spatially marked.

Starting from 2021, the basis for calculating the financial support by area of agricultural land will be the SIPP reference plot, while the cadastral database will be used as a control mechanism for the maximum allowed area for approving direct payments. In that direction, the reference plot in SIPP will be changed in order to simplify the process of maintenance and use of the system. This change will also fully harmonize the use of the Geo-Spatial application as part of the elements for administering financial support applications.

The main priority is to upgrade the existing ISAK elements in accordance with the harmonized norms with the EU and to achieve further integration of the system. Based on the recommendations from the EU, the ERCS and LPIS registers will be taken over under the responsibility of AFSARD through the establishment of a new sector which in addition to these registers will be responsible for managing the Geo-spatial application. To implement this activity, the necessary upgrade and change of all ISAK components will be performed.

ISAK software, including ERCS and SIPP registers, will be regularly maintained and upgraded to further improve their functionality as well as to implement changes to direct payment policies in order to separate production-type support. As part of the regular maintenance and updating of SIPP, the procurement of new orthophoto maps is understood as a basic prerequisite for maintaining a quality system. ISAK software should expand its functionality to implement all procedures in the area of direct payment policies, primarily in terms of cross-compliance payments and agri-environmental measures and especially in terms of supporting the processes in the implementation of rural development program measures and the IPARD program.

In addition to the introduction of agri-environmental measures, other measures in the field of rural development and cross-compliance will increase the need for further integration of SIPP data with other registers and databases in the field of environment and agriculture. This would include the so-called NATURA 2000 areas that need to be further defined, marking Areas with Disabilities in line with EU requirements, marking zones that are sensitive to nitrates.

For efficient management of the LPIS system, the competent organizational unit will significantly increase the human resources from the current three to at least 7 full-time employees with appropriate qualifications.

### 5.4.4 Preparation of a general plan for the functioning of the agricultural sector in crisis situations

Due to the speed of development, the magnitude of the consequences and the global scale, the impact of the Coronavirus on overall life is incomparable to any crisis in recent history. Like other economic sectors, participants in the food production and distribution system were affected by this pandemic, although the effects were generally assessed as milder than the most affected industries. On the other hand, the crisis in the simplest way reflected the primary importance of food production as an activity of national strategic interest, at a level equal to the public health and security services that are on the front line against the virus.

Due to the vital importance of food production, the participants in the sector should provide ongoing and uninterrupted production with the full support provided by the competent institutions. The food supply sector must maintain a regular (or at least optimal) level even in crisis situations, at the same time following all the necessary instructions for protection of the occupational health of the involved workforce and administrative workers. In order to ensure the security and resilience of the infrastructure of the food and agriculture sector in crisis situations, it is necessary for all stakeholders and especially the competent public institutions in agriculture and rural development to clearly be aware of the responsibilities and to undertake pre-planned and predictable coordinated activities will give the best answer to the imposed restrictions.

MAFWE will prepare a general plan for the functioning of the sector in crisis situations in accordance with the positive national legislation in this area. The plan, in addition to establishing a sectoral institutional set-up for crisis management, determining the adapted way of functioning of the services in given conditions, guidelines and protocols for performing the current activities of the participants in the sector in crisis, transparency and information sharing, should include a plan for sufficiency and urgency in the food supply with an action plan (Food security and Food Emergency) which will be adapted for specific future crisis situations.

The preparation of the plan should be realized by the middle of 2023 based on the analysis prepared by the technical support.

### II.5.5 Food safety policies

The basic approach to food safety is the continuation of the concept of full and integral coverage of the food production process from the fields to the table, i.e. the complete chain - from the primary food production to the final consumer. The food safety policy and strategy contribute to the goals of the national agricultural policy and the national health policy, primarily in terms of providing a sufficient amount of healthy and nutritious food for the population. The

high level of food safety is an important precondition for increasing the competitive position of agri-food products on the domestic and foreign markets.

If in the previous strategic period 2014-2020, the national food safety system is completed from the aspect of the institutional-regulatory framework, in the next until 2027, the fulfilment of the criteria by all entities in the integrated food safety chain should be improved and guaranteed and upgrade the system of official controls. This is because operators, primarily primary producers, still do not adequately meet the food safety requirements related to biosecurity measures, animal welfare criteria, raw milk safety standards and veterinary public health, then the implementation of good manufacturing practices and harmless removal of by-products of animal origin, as well as proper plant protection.

National food safety policies in the coming period will take into account the principles on which the European Food Safety Strategy - Green Agreement is based, with which Europe should become the first climate-neutral continent by 2050. Through a new, sustainable and inclusive growth strategy that stimulates the economy, improves the health and quality of life of people and cares for nature, the following goals should be achieved in particular:

- Sustainable food production system,
- Promoting sustainable food consumption by supporting the transition to a healthy and sustainable diet,
- Stimulating sustainable food processing, wholesale, retail, catering and food serving practices and,
- Providing sufficient quantities of quality and safe food for the needs of domestic consumers and creating products with added value and placement on foreign markets.

MAFWE, FVA and other institutions involved in the system in the following period will continue to improve the already achieved state of food safety policies and will timely address the unfulfilled goals and weaknesses, as well as potential challenges and difficulties that could have a negative effect on sector and, more generally, human and animal health. The strategic approach to food safety is defined in the following areas:

- improving the food safety and veterinary health system,
- establishing a sustainable food system, and
- strengthening the plant health system.

Due to the connection from a health aspect and the importance for the overall system of plant production, special attention will be paid to the domestic production and regulation of the turnover of seed and planting material.

### 5.5.1 Improving the food safety and veterinary health system

The main strategic documents that set the guidelines for the development of the system of animal health and welfare and food safety are the Food Safety Strategy 2020-2025 and the Animal Health Strategy.

The current legal framework covers the entire food safety chain, including animal feed and primary agricultural production, establishing a satisfactory high level of consumer protection. The high standards that are part of the relevant EU legislation are continuously transposed

into national legislation. In addition, the national food safety and veterinary policy will ensure consistency with other international organizations - WTO, OIE, IPPC and Code Alimentarius.

Improving the functionality of the food safety system, above all, should ensure timely and efficient management of food safety risks for consumers. According to the new approach, each segment is properly controlled and should meet the appropriate criteria. The system of official controls ensures the implementation of the obligations of food operators by covering all potential risks from starting materials, raw materials, agricultural production, to food processing and its transport, sale and use.

**Food safety** is based on uniform horizontal and vertical food hygiene regulations for all types of food (animal food, plant food, other foods) at all levels and in all segments of the food safety chain, including primary production. The primary responsibility lies with the food operators themselves by systematically implementing HACC-based internal control systems and good agricultural and production practices at the primary producer level. The administrative bodies exercise the control function by conducting official controls, monitoring programs and special control systems as well as the establishment and functionality of the control systems for the use of pesticides, veterinary medicinal products and monitoring the presence of residues in food and animal feed.

**Animal food safety** is the second pillar in the integral segment of food safety. Healthy and quality animal feed has a serious impact on animal health and consequently on the safety of the food consumed by humans. Animal feed also has a major impact on the efficiency of operations as the largest item in livestock production.

In the coming period, the system that includes special strict rules for hygiene and monitoring of animal feed will be strengthened and improved, through:

- banning the use of certain products in animal nutrition and defining the maximum level of undesirable substances by mandatory registration of all animal feed operators and fulfilment of certain conditions for production, trade and traceability systems;
- establishment of appropriate hygienic criteria for production and trade of animal feed with implementation of good hygiene practices and HACCP;
- establishing national monitoring programs for animal feed safety for certain biological, chemical and other hazards;
- improving existing animal feed control systems for certain areas of particular interest for the safety of animal feed and feed,
- establishment of special new specific animal feed control systems, i.e. system of control of undesirable substances in animal feed and system of control of additives used in animal nutrition and medicated animal feed and operational functioning of the RASFF system, as well as with simultaneous connection and improvement of the feed control system for animals at the level of primary agricultural production and
- ensuring adequate traceability and declaration of feed.

**Animal by-products** are an important economic factor in the agri-food sector and additional added value, but at the same time they pose a risk to human health and animal health protection if special control systems are not established for their management during generation (i.e. production), trade, use and harmless removal. The strategic document in the by-products segment is the "Strategy for management of animal by-products" and the relevant

documents for environmental protection, and the mentioned matter is regulated by the Law on animal by-products.

In the coming period, the strategy is expected to be fully implemented with the construction and operation of a facility for processing and harmless disposal of by-products at the national level that would fully meet EU criteria and requirements, which would enable the production of technical products, energy or other purpose or mandatory non-hazardous disposal at the same time as the establishment of the system for collection and transportation of by-products of animal origin to the specified facility. As part of the functioning of the animal by-products management system, co-financing of the costs of individual agricultural producers for disposal of unprocessed animal by-products, primarily carcasses, which pose a serious potential danger to human and animal health, will be provided.

**Veterinary medicines** are arranged in two groups of activities. The first is medical protection and therapy of animals and the second is to provide protection of public health by providing food free of residues of veterinary medicinal products and in the last period, the activities of reducing antimicrobial resistance.

In that direction, the existing systems for protection of human health against the presence of residues in food of animal origin will be improved through strict procedures for approval of veterinary medicinal products, appropriate use of veterinary medicinal products and the system of increased pharmacological vigilance and anti-resuscitation program.

**Animal health care** is an important factor that contributes, and in some cases determines the level of food safety and economy of agricultural production. Important aspects in this regard are: preventing the spread of certain infectious diseases in animals, adequate protection of humans against infectious diseases transmitted from animals to humans, to ethical issues such as humane treatment of animals.

Animal health measures regulate the specific elements necessary for the prevention, control and monitoring of certain infectious diseases that are of national interest or of interest to the EU, in order to access the market of EU member states.

National control plans include a detailed plan for monitoring, control and eradication as well as the implementation of biosecurity measures at the farm level. In the coming period, the priority of zoonoses, which pose the greatest risk to human health but which are largely reduced to a minimum) will shift to economically important infectious diseases in animals (classical swine fever, African swine fever, New Castell).

The existing approach to compensation for killed and / or dead animals for control and suppression of infectious animal diseases, which causes a significant financial burden on the Animal Health Program, does not affect the level of prevention and greater responsibility for health of animals in breeders. In the coming period, the possibility of establishing a sustainable solution of cooperation between the public and private sector in the form of public-private partnership between animal breeders and the State and other financial institutions and insurance companies will be analysed in order to equal and realistic distribution of responsibilities and costs. By establishing earmarked funds for the payment of funds for confiscated and non-harmful animals in case of occurrence of particularly infectious diseases in animals, funds would be provided for payment of compensation for control and eradication of infectious diseases with solidarity approach to all breeders who are members, and the

savings would be more efficiently used to finance veterinary services in order to improve preparedness, reduce the risk of occurrence, prevent the outbreak and spread of infectious diseases.

**Farming registration system and animal identification** is a basic element for effective control of animal health and welfare, but also for the traceability and safety of food of animal origin. In the coming period, the system will include all types of animals and it will be functionally connected with the food traceability system in a comprehensive and consistent traceability system in all phases of production and trade.

**Animal welfare** is integrated in the system of animal health and food safety in a way that provides an appropriate balance between the requirements and criteria for animal welfare as well as health, economic and social aspects, but also aspects of environmental protection.

At the moment, only a part of the farms meet these standards, and a special problem occurs with the larger commercial facilities for industrial breeding. The importance of meeting animal welfare standards is especially emphasized in exports to the EU member states. The application of the legal provisions related to animal welfare in the next period will be a challenge in the sub-sector of poultry and pigs regarding the method of breeding. The adjustment to these provisions by the operators remains to be subject to financial support of the required investments through the IPARD program which will continue in the following period.

**Food safety in the area of primary crop production** would be implemented by introducing procedures of good hygiene practice and good agricultural practice at the level of agricultural holding. In the following period, the mechanisms for protection of people against food residues will be established by introducing the maximum allowed level of pesticide residues in products of plant and animal origin and their control, as well as adhering to the criteria for proper use of pesticides. At the same time, a control system for residues of active substances in products of plant and animal origin resulting from unauthorized and illegal use, contamination from the external environment or the use of pesticides in third countries will be established.

In support of achieving the export potential, in the following period, the obstacles to the access of Macedonian products to foreign markets will be overcome. More specifically, the retention of the current status of an exporter of animal products will be supported[56], and the acquisition of the status will be extended to other products (pork and live animals in the EU markets), as well as to new attractive markets. This requires meeting certain criteria and requirements of the national veterinary service and the animal health status, as well as infrastructural-operational interventions for facilities and primary producers.

Meeting the required standards in the field of food security, animal welfare and veterinary health by agricultural holdings will be supported through the agricultural policy measures listed in PART II, primarily to co-finance the costs of necessary investments and provide advisory support and training.

[56] EU for beef, sheep, poultry, milk and milk products, eggs, honey, fish and fish products, US for milk and dairy products, Russian Federation and EAEU for milk and dairy products, China for sheep and Middle east for mutton.

Policy implementation will be improved through the integration and interoperability of the system of records and databases in the relevant institutions. The system would provide functional data for improved implementation, timely intervention response and undertaking the necessary adjustments to agricultural policies. The establishment of laboratory facilities for control of parameters arising from legal obligations will also be supported.

### 5.5.2 Activities for establishing a sustainable food system

Improving the response of agriculture to society's demands for the health aspects of food, including the nutritional composition and sustainability of food and food that ends up as waste, would take place through several sets of activities.

The development of an emergency plan for providing food supply and food safety would be a priority activity in the coming period. In that direction, a Program for promotion of agricultural and food products will be prepared in order to strengthen the contribution to sustainable production and consumption.

In order to prepare the draft legal framework for sustainable food systems, a review of the relevant legal acts will be conducted for:

- plant protection products intended to facilitate the placing on the market of plant protection products containing biologically active substances,
- feed additives to reduce the environmental impact of livestock,
- sustainable use of pesticides to significantly reduce the use and risk and dependence of pesticides and improve integrated pest management,
- food contact materials to improve food safety, ensure the health of citizens and reduce the environmental impact of the sector, and
- marketing standards for agricultural, fishery and aquaculture products to ensure food waste reduction and supply of sustainable products.

At the same time, an initiative to improve the corporate governance framework will be promoted, including the requirement for the food industry to integrate sustainability into corporate strategies with initiatives to: for certain nutrients, developing good manufacturing and trade practices for responsible business and food chain behaviour, and reducing food waste. In addition, rules will be introduced in the single European market for dealing with food fraud.

An end-user-oriented portion will develop nutrient profiles to limit the promotion of foods rich in salt, sugars and fats, adopt a food declaration framework to encourage consumers to make sustainable food choices, and Mandatory marking of food packaging is organized with data on the basis of which consumers will be able to make a health-conscious choice (indication of origin for certain products, rules for date marking - "usable until" and "best before" the dates). In that direction, the minimum mandatory criteria for sustainable food will be promoted in the procurement in schools and public institutions through school schemes, including organic products.

A particularly important component of achieving Strategic Goal 9 is the reduction of food waste, which is important for the national food safety system. Activities to prevent the creation, i.e. reduction of the amount of food waste contribute to improving the food security of the population, especially the vulnerable categories through donations, the sustainability of the

food chain and have an indirect impact on the economy and environmental protection. The focus of the activities is on preventing the generation of food waste at each stage of the chain and food donation. In that direction, the national institutions will undertake activities for preparation and implementation of the Program for reduction of food waste and providing ways for food waste to be used for other purposes and promotional measures,

Regarding the regulation of the trade and use of Genetically Modified Organisms in agriculture and food, after the appropriate analysis, a solution will be determined and implemented by establishing an integrated control system that would be most appropriate for the country and conduct a public campaign.

### 5.5.3 Strengthen the plant health system

The basic approach in the field of plant protection is to improve the national systems for efficient and sustainable functioning of the competent services regarding the protection of plant health and plant products against harmful organisms, enabling trade in accordance with the provisions of the International Plant Health Convention and reducing the risks and impacts of the use of phytopharmaceuticals on human health, animals and the environment.

National phytosanitary legislation is continuously aligned with relevant EU legislation, transposing the latest acquis to establish rules for phytosanitary risk assessment and to take effective and timely measures to reduce these risks, as well as to meet the requirements for growing and exporting products on the European and international market. The same applies to the legal framework in the field of phytopharmacy.

In the established approach, following the latest changes in the phytosanitary legislation of the EU, the competent bodies of the phytosanitary system will focus on finding appropriate solutions and answers for efficient implementation of the phytosanitary regulations, measures and standards in order to create preconditions for:

- providing a sufficient amount of healthy and high-quality food, which would result in raising the standard and quality of life of the population, and
- raising the awareness of agricultural producers and other stakeholders that have an impact on the health of plants, in order to preserve the health of plants in agriculture and forestry and to improve the standard of the population of rural areas.

**Improving the phytosanitary system**

One of the main elements of the phytosanitary system is the monitoring of the health condition of the strategic agricultural crops: seed and mercantile potatoes, fruit species and vines, outdoor and indoor vegetable crops, ornamental and forest plants and tobacco. In preparing the monitoring programs and in selecting the harmful organisms to be monitored, the risk of their occurrence and their impact in case of occurrence is taken into account. Consequently, based on social, economic, natural, environmental and other factors, monitoring programs will be categorized by priority on an annual basis. In the coming period, the list of priority quarantine harmful organisms under monitoring that pose a threat to agricultural production, as well as

agricultural products that are of strategic importance for the domestic and foreign markets, will be expanded.

On the basis of phytosanitary monitoring, the status of plant health is determined, i.e. the presence of harmful organisms in a determined area / region and their distribution. Regular upgrading of plant health status will facilitate the fulfilment of export criteria to EU markets and beyond.

**Plant protection products**

Only those phytopharmaceuticals containing active substances and other constituents approved by the EU and registered in another country of Southern Europe, i.e., showing potential efficacy and effectiveness in combating harmful organisms, will be released for plant protection use in this part of the continent.

The activities that will be implemented in the field of the marketing and use of phytopharmaceutical products are included in the "National Action Plan for sustainable use of phytopharmaceutical products" which will be adopted during 2021. The action plan will set out the goals, directions, measures, indicators and deadlines for achieving sustainable use of phytopharmaceutical products in order to reduce the risks and impact of their use on human health, animals, as well as the impact on the environment.

The quality and proper use of phytopharmaceutical products is regularly controlled through the implementation of the "Program for monitoring in the field of production, processing, storage, distribution, use and compliance of plant protection products and residues of phytopharmaceutical products" and through the implementation of official controls in the specified area. In the coming period, it is planned to intensify the number of inspections within the monitoring program and the official controls.

Encouraging the development and introduction of integrated pest management and the use of other alternative approaches or techniques, in order to reduce the need to use phytopharmaceutical products, is one of the main areas where the activities of the competent services will be focused Integrated pest management involves the production of healthy crops with the least possible disturbances of agri-ecological systems and promotes and encourages natural pest control mechanisms. Priority is given to biological, physical and non-chemical methods, as well as plant protection products with low risk to human, animal and environmental health, i.e. replacement of plant protection products with mechanisms for natural regulation of harmful organisms that are economically important for crops.

In order to more successfully follow the principles of integrated plant protection by all agricultural producers, a system for forecasting and signalling the occurrence of economically significant pests will be established using a network of agrometeorological stations and informing farmers about the timely use of appropriate measures for plant protection. The system will enable the reduction of costs of plant protection, environmental protection and production of safe and healthy agricultural products.

According to the concept, only trained professional users, distributors and advisors with a certificate as proof of attending training and passed exam will be able to use and work with pesticides. Also, training systems of competent institutions responsible for certification of

equipment for application of phytopharmaceuticals will be established. Use will only be possible on equipment for professional use which has successfully passed the control test and which has a certificate of conformity.

An important aspect to ensure proper use of phytopharmaceuticals is to raise the awareness of all stakeholders about the importance of their proper use in terms of protection of human and animal health, as well as environmental protection. Agricultural producers are obliged to keep records of the used phytopharmaceuticals in terms of area, agricultural crop, dose / concentration, for which trainings will be conducted for professional users.

An important part of the system for sustainable use of phytopharmaceuticals is the monitoring established as a national system of control and supervision of phytopharmaceuticals which includes analysis of active substances and analysis of residues of the prescribed number of culture samples for pesticides that were pre-selected for that year.

### 5.5.4 Domestic production and trade of seeds and planting material

According to the identified needs, the main goals in the field of production and trade of seeds and planting material in the following strategic period remain:

- encouraging the production of seed material from field plants, seedlings from fruit plants and vines and production of seedlings from garden and ornamental plants of domestic origin
- regulation of the trade of seed and planting material in accordance with the national legislation harmonized with the relevant European regulations and
- protection and preservation of the genetic diversity of domestic varieties.

The interventions for each of the defined goals are presented in more detail below.

**Encouraging the production of seeds and planting material of domestic origin**

In order to encourage the production of seed material from field plants, seedlings from fruit plants and vines and production of seedlings of garden and ornamental plants of domestic origin, in the following period will be taken measures that are implemented within several of the policies which are part of the national agricultural policy, as follows:

<u>- Providing income support to agricultural holdings that produce seeds and planting material.</u>
The policy of direct payments will provide production-related support to the income of producers of seeds and planting material for crops and horticultural crops and vine and fruit planting material that are registered in the registers of suppliers of seeds or planting material in MAFWE. In order to encourage domestic production with proven quality, direct payments will be awarded for standard or higher category of certified material and pre-basic and basic seed material, as well as for certified material and standard material (SAS) of fruit plants and vines. Support will be provided per unit of product in order to guarantee the commitment of manufacturers to achieve the required quantities.

Also, income support per unit of product will be provided for seedling producers produced in sanitary-safe conditions.

- Technical support for raising stem plantations of fruit plants and vines. In order to start creating home plantations of domestic origin, technical support projects will be implemented supported by the EU for training of experts from scientific institutions and producers of planting material for production and raising of basic stem plants.

In case of expressed interest for investing in raising new plantations through a public-private partnership, state-owned land will be offered and other necessary logistical support will be provided.

- Introduction of breeding programs for creating new varieties. Support for the introduction of selection programs for scientific institutions will be provided through donor projects or projects funded through the Agricultural Knowledge and Innovation System.

Within the FAO project for creating a favourable environment for improved resilience of the seed and seedling sector to climate change, an analysis of the legal status of the sector, its adaptability to climate change will be prepared with proposals for improving the situation, seed and seedling propagation, conduct trainings for farmers and professionals, as well as develop a website and newsletter to inform users.

**Regulation of the trade with seed and planting material in accordance with the national legislation harmonized with the European regulations**

Interventions in order to better regulate the trade of seeds and planting material will be implemented in accordance with the Law on Seeds and Planting Material for Agricultural Plants, and other acts that in the next period will be further harmonized with the relevant European regulations. In order to further improve the situation, steps will be taken to improve the situation with the production and trade of seedlings for garden and ornamental plants, to help register domestic varieties and to improve the status of floriculture in the field of raw materials.

- Production of seedlings from garden and ornamental plants. A key element in the production of garden and ornamental plants is the use of quality seedlings which is carried out in special sanitary-safe conditions under the supervision of experts from scientific institutions in the field of gardening and floriculture. In the process of production and trade with seedlings of garden and ornamental plants, a system of registration of entities with this activity will be established, which will prevent unfair competition. Also, in the following period, due to the emergence of increased trade of seedlings in the markets, regular controls will be organized on the production and trade of seedlings of garden and ornamental plants.

- Financial support for conducting the DUS test. In order to speed up the process of certification and placing on the market of domestic varieties of seeds and seedlings from the national variety list and because the examination procedure is performed in foreign institutions, financial support will be provided for the preparation of DUS test in the amount of 50% of the test value per variety.

- Reduction of VAT from 18% to 5% for raw materials in the field of horticulture.

In order to stimulate the development of production of seedlings from ornamental plants that have the potential for additional employment, the possibility of reducing the applied VAT rate of 18% for the funds used as raw material will be analysed.

**Protection and preservation of the genetic diversity of domestic varieties**

Protection and conservation of indigenous varieties of agricultural plants that are a national treasure and a source of genetic potential for the creation of new varieties will be implemented through the following activities:

- Support for the production of seed material from indigenous varieties. According to the Law on Seeds and Seedlings for Agricultural Plants, the procedure for registration of an indigenous variety in the national variety list is performed by submitting an application to scientific institutions based on research results or data obtained during the production and use of the indigenous variety. In order to be propagated and commercialized on a larger scale by placing them on the market for the production of indigenous plants, the registration in the national variety list and the production of these varieties will be subject to financial support.

Support for the production of seed material will be granted per unit area, while the enrolment of the indigenous variety will be financed by scientific institutions in the amount of 50-100% for the production of research results or data by indigenous variety.

- Preservation of seed and planting material of variety and indigenous variety in gene bank. The rich agro-diversity available to the State will be maintained, reproduced and prepared for long-term storage. A sample of seed and planting material of variety and indigenous variety registered in the national variety list will be kept and maintained as a reference sample in a state-owned gene bank.

The conservation of seeds and planting material through storage and maintenance will be performed by scientific institutions authorized by MAFWE which will be supported by MAFWE programs by the number of varieties in the gene bank.

### II.5.6 Policies for natural resource management and mitigation of the impact of climate change

Sustainable management of natural resources is a guarantee for ensuring long-term development of agriculture and the rural areas themselves. The Macedonian model of agricultural development should increasingly be a model of sustainable agriculture that takes care of the protection of the environment and biodiversity.

Acceptance of the ecological approach in the practice of agriculture by Macedonian farmers with the preservation and promotion of natural resources will be one of the policy priorities in the coming period. In the next period, the agricultural holdings should significantly implement the concept of "green" agriculture as a logical and natural way of carrying out their agricultural activities. In this regard, they will be stimulated through measures of several types of agricultural policy interventions, such as the conditionality of direct payments by meeting the requirements for cross-compliance, agri-environmental measures including organic production, support for the protection of biodiversity, etc.

Agricultural activities and rural areas are under pressure from the adverse effects of increasing climate change. Hence, the management of natural resources is necessary to be reorganized in a way adapted to the new conditions to mitigate the negative effects of changes in the course of agricultural activity and of course, as much as possible by ensuring their long-term sustainability. The activities undertaken in that direction, primarily investment activities will be supported by policies with an increased rate of co-financing of costs.

### 5.6.1 Water resources management

The long-term goal of investments in the water economy is to increase the irrigated area in the country to the level of installed capacity of 144,000 hectares and gradually expand the hydro systems to achieve the goal of irrigating the maximum possible irrigated area which is half of the arable land, i.e. about 250,000 ha. These investments should have a direct impact on increasing yields and the physical volume of agricultural production and resilience to the impact of external climate risks.

**Investments in construction of new facilities and rehabilitation and reconstruction of existing water management facilities**

In the following period, the realization of the activities will continue in accordance with the "Plan for investment in water management infrastructure for the period 2015-2025" according to which the possible irrigation area should be increased by about 32,000 ha.

Through the support provided from budget funds, the construction of capital projects in the water economy will be continued, the realization of which is in progress, as follows: Konsko Dam, Recani Dam and hydro system (hereinafter HS) Raven - Recica, as well as starting the construction of Dam on river Slupchanska which should be realized in the period 2021-2024.

Within the program, in addition to the investments with budget funds, the investments supported by non-budget funds for the construction of: irrigation system within the project "Irrigation of the South Vardar Valley" - second phase financed by a loan with KFW; construction of small irrigation systems up to 300 ha within a Project funded by IPA funds; as well as construction of four irrigation systems along the river Vardar in accordance with a loan agreement with KFW (HS Lisice, HS Konsko, HS South Vardar - third phase and HS Pepelishte). In the following period, the activities for providing financial resources for the construction of the second phase - irrigation system and third phase - energy from HS Zletovica will continue.

The implementation of investments should increase the share of irrigated agricultural land in relation to the maximum possible irrigated area (about 250,000 ha), from the current 33.7% to approximately 40%, i.e. 95,000 ha in 2027 compared to about 80,000 ha in 2016 year[57].

In the period of implementation of the new national strategy, the realization of the "Plan for investment in water management infrastructure 2015 - 2025" will be completed and an

[57] The data for the irrigated areas in 2016 are taken from the SSO, which includes the data for the irrigated areas obtained from JSC Water Economy and the public water companies Strezevo, Lisice and Zletovica

appropriate analysis will be made for the directions of further investment in water management infrastructure.

### Focus on policies for rational and efficient water use

Water is a scarce and sensitive resource that must be used rationally and efficiently, especially in the context of the intensified impact of climate change. Mitigating the negative effects of climate change through adaptation measures is also one of the goals of investment in water management. The adaptation measures include construction of new water management facilities, as well as undertaking investment activities for rational and efficient use of irrigation water.

In that regard, with the support of FAO, the preparation of "Irrigation and Drainage Strategy of the Republic of North Macedonia" is envisaged, which will define the orientations and directions for development, taking into account the degree of utilization of the systems and efficient and rational use of irrigation water in the next ten-year period from 2021 to 2031.

The second project in this direction is "Introduction in the Real Estate Cadastre of all constructed water management facilities and infrastructure and digitalization of irrigation and drainage systems and their connection with the existing databases and software solutions of MAFWE. The activity will enable diagnosing the condition and problems with the irrigated and drained agricultural land covered within the systems and creating policies and measures to overcome the problems in the sector.

In order to efficiently and rationally use water and reduce the negative effects of the impact of climate change in the strategic period, action plans will be adopted to: reduce water losses in irrigation and drainage systems; promotion and application of modern irrigation systems; and for the preparation of development plans for each of the irrigation and drainage systems.

### Institutional reforms in water management and drainage

The model of centralized management of irrigation and drainage systems through the establishment of JSC Water Economy in state ownership with 14 subsidiaries and the abolition of water communities did not contribute to improving the ongoing maintenance and investing in improving and expanding the systems.

After a complete analysis of the experience from the application of the centralized model, a model of reorganization of the existing system will be proposed in order to decentralize the management which will improve the efficiency, planning, management, monitoring and control of water resources, including protection and adapting irrigation and drainage interventions to specific local conditions.

According to the experience from their work in the previous period, the role and competencies of the water communities in the new system will be determined.

### 5.6.2 Land resources management

Agricultural land is the main natural resource in agricultural production. In the following period, the interventions of the agricultural land management policy will be directed in the following areas:

- Providing improved access to agricultural land for interested users as a prerequisite for greater agricultural production and encouragement of new businesses and employment,
- Improving the unfavourable structure of agricultural land, primarily in private ownership, in terms of size limitation by agricultural holding and spatial growth of plots and
- Protection of the quality and fertility of agricultural land for the sake of resource sustainability.

**Providing improved access to agricultural land**

State-owned agricultural land will be made available to interested farmers through lease and sale procedures in accordance with the two relevant laws, while identified private uncultivated land through special procedures will be offered for short-term lease. The return of abandoned land to arable land will also be supported. The interventions in that direction are the following:

- Allocation of state-owned land on lease. The remaining free agricultural land in state ownership of about 6,000 ha, will be allocated for lease to interested farmers up to 10 ha for larger capital-intensive investments, attracting foreign investment, dislocation of farms and production of feed for breeders of livestock. Smaller plots of agricultural land that are not part of a rounded block can be allocated for the production of intensive crops in order to increase the area of the adjacent private plot, for which a special facilitation procedure will be arranged.

At the same time, there will be intensified control over the manner of land use in relation to the concluded obligations from the contracts and in case of identified irregularities, the contracts will be terminated in order to assign new, serious users.

In order to ensure the proper purposeful use of the land in accordance with the production possibilities, the purpose of the land leased for perennial crops will have to meet the agro-ecological conditions determined by the soil map of the country and other soil-climatic conditions, which should be confirmed by a convenience analysis prepared by an expert in the procedure to be regulated by the end of 2021.

In order to provide sufficient resources for fodder production, regular announcements will be published for granting leased land for fodder production for serious meat and milk producers in all livestock regions in the country, as well as plots for dislocation of farms from urban environments.

The establishment of an Integrated Agricultural Land Management System will enable the initiation of a procedure for leasing state-owned free land by interested farmers.

- Sale of state-owned land. In order to improve the climate and security for investment in agriculture, the sale of state-owned agricultural land will be continued, which will be implemented for the free areas specified in the Sales Program, as well as through an initiative

by interested land tenants up to a certain size. In both cases, the procedures should contribute to the above-mentioned land policy objectives.

- Utilization of uncultivated agricultural land. At the same time as there is interest in new entrants entering the agricultural business, almost a third of the agricultural land is abandoned. In order to identify the abandoned land, the legally prescribed procedure will be implemented on the basis of which the owner will be able to further choose between cultivating the land, taxing it according to the Law on Property if it remains uncultivated or giving consent to MAFWE to publish it for the purpose of leasing to interested users (certainly by acquiring the lease in favour of the landlord). The procedure will be further regulated during 2021.

- Support for investments made on agricultural land provided by transformation from non-agricultural land or agricultural-uncultivated land. Usually, the high costs of bringing non-agricultural or abandoned agricultural land into arable land alienate investors, which will co-finance activities for the preparation and transformation of arable land into 65% of eligible costs, and investors will be exempt from rent in the first year with gradual increase to the full amount in the fifth year.

**Improving the unfavourable structure of agricultural land**

Agricultural land consolidation policies directly intervene in addressing the root cause of the unfavourable structural arrangement of the agricultural sector - small and fragmented land parcels.

Within the established institutional and legal framework, in the coming period, the regular implementation of the policy will continue in ten consolidation projects throughout the country, based on the prepared feasibility studies. The consolidation procedure will cover 4,500 ha through the two allocation procedures, with and without changing the boundaries of the cadastral parcels in the following consolidation areas: Egri, Logovardi, Optichari, Trn, Dabjani and Zabeni in the planning region of Pelagonija, Sokolarci, Spanchevo, Chiflik and Cheshinovo in the Eastern region and Kozle in the Skopje region.

In order to improve the consolidation projects, the following activities will be implemented in the next period:

- preparation of a multi-year Consolidation Program for operational and financial planning of future activities,
- conducting public awareness campaigns on the process at the national level and targeting those areas where there is justification and feasibility for future consolidation procedures,
- implementation of multi-purpose agricultural land consolidation projects in the construction of line infrastructure facilities, conservation of protected areas in the field of cultural heritage or environmental protection, which will achieve additional goals in addition to consolidation, and will preserve or improve the existing structure of private agricultural holdings and avoid expropriation proceedings,
- using the consolidation procedure in overcoming the problems with the denationalized land,
- flexible management of state-owned land in the consolidation area for lease or sale in order to maximize the consolidation effects in the new spatial plan; and

- analysis and further regulation of the procedures for exchange and completion of the arondation processes in order to improve the land structure and reduce the legally unfinished arondation processes. Procedures need to be made flexible in order to achieve consolidation goals more effectively.

### Protection of the quality and fertility of agricultural land

Soil protection is the basis for sustainable agriculture. In order to protect and prolong the productive function of the soil as a non-renewable resource, activities will be supported in the direction of appropriate cultivation with maximum care to improve fertility and structure, reduce erosion and pollution.

The protective measures will be implemented through consistent respect of the special minimum conditions for good agricultural practice and soil protection that are part of the cross-compliance, through training and advice provided to farmers, implementation of research projects to prevent erosion and subsequent investments for their rehabilitation and with regular controls by the State Inspectorate for Agriculture for compliance with legal obligations.

### Institutional aspects in agricultural land management

The current management of agricultural land in the country is disintegrated between the MAFWE and the Public Enterprise for Pasture Management and within the Ministry in two separate sectors. In order to effectively and integratedly manage the land resources in the country and achieve the set goals of the land policy, a single body for integrated management of the agricultural land will be established, responsible for the implementation of the overall land policy - lease of state-owned land, including pastures, sale of agricultural land, consolidation and protection, facilitation and regulation of the agricultural land market. The competent body in the form of the Administration within the MAFWE will be established by the first half of 2022.

The integrated management of the large number of alphanumeric and graphic data implies the establishment of a Basic Register of agricultural land for recording the data falling within the competence of the body[58]. The register of agricultural land supported by the need for ICT will be interoperable with the regional units of MAFWE and the relevant institutions - the Agency for Real Estate Cadastre and the Ministry of Finance. For all activities falling within its competence, internal procedures will be established and human capacities will be strengthened, and intervention will be made to improve the legal framework. The deadline for action for these activities is one year from the establishment of the body for integrated management of agricultural land.

[58] for: the established leases on state agricultural land related to the collection of rent, sale of state land, abandoned land, checking and correction of technical errors during registration in the Agency for Real Estate Cadastre, determination of the rights over the real estate that remained with unregistered rights, notation co-ownership relations between private individuals and the state, establishing a system for determining the changes caused by natural and artificial conversion of agricultural land as well as the areas that are subject to exploitation of mineral resources in accordance with law.

Additionally, by the end of 2022 at the latest, the competence of the MAFWE over the maintenance and financing of the soil map of the country will be legally regulated. Consequently, the soil system will be connected to laboratories that should be authorized to analyse the chemical and physical composition of the soil, due to the ongoing collection of data from the conducted analyses and will be updated with new data.

**Investments for grazing and infrastructure solution of pastures**

In order to provide favourable preconditions for the development of animal husbandry, investments will be made for inland cultivation and infrastructural settlement of the pastures as a basic natural resource for its development. Through an annual program for investments in pastures, the funds from the pasture will be partially returned to the farmers in the form of investments, and additional funds will be provided by the Rural Development Program. Priority will be given in particular to the construction of drinking water, supply water, access infrastructure and electrification, as well as maintenance and improvement of pastures.

### 5.6.3 Forest management

Forests play a key role in reducing carbon emissions, maintaining biodiversity, carbon sequestration (storage), protecting ecosystems and economic valorisation of resources for rural development. From an economic and social point of view, forestry is an integral part of rural development. Investments in the development and protection of forest areas contribute to the growth of the potential of rural areas while simultaneously protecting ecosystems and increasing the potential for the production of renewable raw materials for the green economy. Hence, the strategic goal of the State in the field of forestry is:

*"to increase the contribution of the forestry sector to the national economy and rural development through sustainable forest management, providing renewable resources and protection of the local and global environment, which will improve the quality of life of all citizens."*

As part of the vision for the development of forestry in the coming period, the areas under forests should be constantly increased through afforestation of bare lands with quality planting material of indigenous species. The cultivation and protection of artificially raised forests will be timely and appropriate, thus ensuring biologically and economically quality forests. Degraded forests need to be intensively transformed into higher form of cultivation.

Regarding the use of the forest fund, the biological capacities will be respected and the possibilities for excessive use will be limited, which will protect the economically and ecologically valuable species, i.e., the biodiversity.

Particular attention will be paid to increased investments in afforestation, adequate forest protection, rehabilitation of burned forests and forests affected by drought due to climate change, calamities, etc., conversion and transformation of forests into better quality, modernization of infrastructure in forests, but also the accompanying facilities for collection, processing and packaging of other forest products, in creating a healthy civic awareness and responsibility towards forest resources, further strengthening the institutional capacity, raising the quality of conditions and contents for mountain and rural tourism and level hunting attractive to more foreign tourists.

**Policies and measures for sustainable development of forestry**

In the next strategic period, the following measures will be implemented for sustainable development of forestry, which should contribute to achieving the strategic and specific goals:

- Ongoing implementation of projects for annual afforestation of bare and erosive lands and implementation of cultivation measures for afforested areas. In addition to the national budget, the co-financing of afforestation activities is planned to be realized through the funds from the IPARD program for the period 2021-2027 through the measure Establishment and protection of forests which should be introduced with a modification of the program. The aim of the measure is to increase the forest fund in order to adapt to the challenges of climate change and provide assistance in the prevention and restoration of forest fires. Reforestation through afforestation will also support the protection of land resources and wildlife;
- Continuation of support through the IPARD program 2014-2020, Measure 7 - Diversification and development of businesses in rural areas to co-finance investments in the economic activities of private forest owners and private facilities for primary processing of wood and wood products and processing of secondary forest products;
- Improving the technology of production of forest assortments in order to reduce the percentage of felling waste from the gross cut timber through additional training of cutters for production of better quality structure, as well as stimulation and subsidizing of companies that will process and finalize this felling waste;
- Improving the openness and accessibility of forests for cultivation, protection, use and improvement of conditions for tourism development, investing in regular and continuous construction and renewal of the forest road infrastructure network in the country through the implementation of an investment program for this purpose;
- Implementation of measures for conservation of the natural forest gene pool;
- Promotion and implementation of breeding measures, especially the conversion from low-stemmed to high-stemmed plantation forests;
- Strengthen the prevention and control of abiotic and biotic damage in forests and upgrade the measures for protection of forest biodiversity. Based on detailed analyses by expert services, the Ministry will prepare an annual report on the health status of forests with recommendations for measures to be taken to prevent the spread or eradication of certain pests and diseases of forest tree species. Preventive measures with aerial control against pests and diseases of coniferous forests and crops every three years will be funded by MAFWE;
- Differentiation of forests and forest land from land for other purposes such as: pastures, recording of changes by purpose and demarcation by ownership implemented through the "Forest Fund Record Improvement Project 2014-2018", coordinated by MAFWE, and realized by the Public Enterprise National Forests, and
- Promoting the process of certification of wood and wood products produced in a sustainable way, a project for development of national standards for sustainable forest management according to international standards (e.g., PFC, FSC).

It will also take active action to prevent water and wind erosion (forest belt protection system), avalanche protection, landslides, desertification and drought, protection of water resources and catchments, including river basins, prevention of floods, increasing biodiversity and helping to adapt to climate change, including the creation of green corridors for wildlife migration.

With the negative impact of climate change, i.e., with the increase of temperatures and decrease of precipitation, the risk of forest fires has increased. Timely and efficient detection of risks of this type in the next period will be one of the priorities of all involved institutions. In that direction, relevant measures will be implemented for prevention, establishment of protective infrastructure and system of coordination of activities, as well as restoration and rehabilitation of the forest potential of the burned forests. The established information system for early notification, alarm and suppression of forest fires will be maintained by the Crisis Management Center in order to timely prevent large-scale damage.

By respecting and consistently implementing the legal regulations in the country, illegal logging and other harmful activities in forestry should be reduced to a minimum. In the following period, the State through a modern quarantine service will provide effective preventive protection against introduced pests and pathogens. By setting up such a system in case of reproduction of pests or phytopathogens, the responsible institutions will react quickly and adequately in the application of environmentally friendly control measures.

### Institutional aspects in forestry

Strengthening of the capacities in the field of institutional set-up is envisaged for the bodies and services in charge of protection and preservation of forests - the State Inspectorate for Forestry and Hunting, the Forest Police and the forest guard service within the public enterprise National Forests. Particular attention will be paid to strengthening the capacity of the Forest Police in accordance with the changed status of the staff, through internal reorganization, modern equipment and enhanced training.

Due to the long-term weaknesses in the functioning, which are primarily due to the insufficiently efficient concept of organization, in the next period it is necessary to find an appropriate model and to transform and reorganize the public enterprise National Forests. The reforms should enable increase of the efficiency in the implementation of the competencies of the enterprise which are of exceptional importance for the development of the sector.

The planning and implementation of policies in the sector is difficult to implement without the establishment of a single Forest Information System. The main purpose of web-based system is a simplified and functional communication of the entities participating in the system, organized forestry database that will help in planning, sustainable administration t and forest management, as well as wood mass monitoring using Geographic Information System and remote sensor techniques. The system will provide data for reporting in the field of forestry in accordance with the positive European norms and rules for modern and development forestry.

The activities in the area of strategic planning and legal regulation of the activity will be supported by the IPA 2019 funded project "Support to forestry reforms". The result is expected to be the adoption of a new Law on Forests in line with EU law and forestry requirements by 2022, the establishment of the Forest Information System, strengthening the prevention and control of abiotic and biotic damage to forests and upgrading measures to protect forest biodiversity, as well as the implementation of a forest certification program.

### Raising hunting and hunting tourism to a level attractive to foreign guests

Macedonia has natural and other preconditions to be a popular destination for highly commercial hunting tourism, which can achieve a significant foreign exchange inflow. The numerical condition of the game in the country is in capacity (normal numerical condition of the unit area) in accordance with the special hunting economic bases, but it is also necessary to work continuously in order to improve the trophy value of the game.

In order to improve the situation in hunting, a "Study for development of hunting tourism in the Republic of Macedonia with an action plan for the period 2016-2025" was prepared. According to it, the sustainable development of hunting and hunting tourism is in function of defining the space of the country as a modern developed region with high standards of environmental protection and its sustainable use. Game management should be based on a balanced approach to environmental protection, hunting development and hunting tourism, and for proper implementation of the goals, the adoption of a new Law on Hunting in 2021 is envisaged.

In order to ensure sustainable use and management of hunting grounds, science-based methods for game management will be introduced and a system for coordination between institutions and hunting associations / concessionaires will be established. In order to monitor the situation, it is planned to establish a database on the number of game by hunting grounds by regions and hunting economic areas and provide its constant updating. The concessionaires will be regularly controlled in the implementation of the undertaken obligations according to the concession agreements and the hunting economic bases.

One of the important priorities that should provide economic valorisation of hunting resources in order to develop rural areas and encourage the development of hunting tourism will be achieved by subsidizing the promotion of Macedonian hunting facilities and attracting foreign guests and investors.

### 5.6.4 Adapting the agricultural sector to climate change

Agricultural production is inextricably linked to external weather influences which make agriculture most sensitive to current global climate change of all other economic sectors. The risks of adverse effects from rising temperatures, changes in the amount and distribution of precipitation and the increased frequency and severity of extreme weather disasters for the agricultural sector are becoming a particularly sensitive issue for our country, which is in a zone where significant climate change and its impact on wildlife are expected. Agriculture is the key economic activity of most of the Macedonian rural population, so the impact will be especially felt by those with mainly agricultural incomes and more vulnerable social categories with a relatively lower ability to adapt to change and the high share of food in their costs.

In addition, agriculture is considered as one of the important sources of greenhouse gases, especially livestock production which is the largest emitter of methane globally.

Hence, in the area of climate change policy, efforts will be focused on taking measures and activities to mitigate the impact of the Macedonian agricultural sector on climate change, as well as adapting the sector to the current negative effects of the changes themselves. The undertaken activities should contribute to the achievement of the second strategic goal for "application of ecological practices in production that lead to reduction of the impact of climate change and adaptation to them".

Due to the benefits of preserving the growth and yield of crops and the positive impact of income, it is expected that measures to adapt to adverse climate effects will be more easily accepted by farmers, while the introduction of measures to mitigate the impact of climate change will be stimulated by most of instruments of national agricultural policies. Because greenhouse gas emissions from agricultural and forest land use tend to decrease, the selected climate mitigation measures are the ones that have the greatest impact on the environment and potential to be used as adaptation options.

According to the "Second Biennial Report on Climate Change of the Republic of Macedonia" to monitor the implementation of the obligations of the UN Framework Convention on Climate Change, eight mitigation measures are included, three measures in the sub-sector "Livestock" and "Land Use" and two in Forestry. To them, the "Third Biennial Report on Climate Change of the Republic of Macedonia" added three new measures, one for the livestock subsector and two new measures for the Land Use subsector, so that the report includes a total of 10 measures shown in Table 8. The measures included in the "National Energy and Climate Plan until 2030", in the part of the "Decarbonisation Dimension", refer to the improvement of the practices for livestock nutrition and fertilizer management in the farms, for livestock breeding, land conversion which will reduce the soil erosion and will increase the organic matter in the soil and the creation of carbon dips, as well as forest fire management and afforestation of forest land that will contribute to additional absorption of greenhouse gases.

Part of the fertilizer management measures are the current obligations of growers included in the "List of special minimum requirements for good agricultural practice and environmental protection" which will be updated in 2022, in order to supplement new climate and environmentally sensitive requirements. The IPARD program will continue to support investments that should enable safe management of manure and the same verified with a report on environmental protection to meet the standards are subject to co-financing with increased intensity of public assistance in relation to other investments. In the IPARD program for the period 2021-2027, the possibility of further increasing the additional percentage for such investments will be considered. Investment support also includes photovoltaic irrigation power supply installations.

The mentioned list for special minimum conditions includes the request for plowing more on the slope of the terrain for erosive or surfaces with a slope of 15% and more, and in the following period the change of the condition will be considered in order to reduce the slope of 5-15 %. The closure of the inter-row distance in the perennial orchards in fruit and viticulture will be part of the support which in the following period on a voluntary basis and not necessarily related to the sloping areas will be provided within the agro-ecological measures.

Table No. 8 Overview of climate mitigation measures by three sectors from the sector Agriculture, forestry and other land use

| Livestock | Forestry | Land use |
|---|---|---|
| – Reduction of $CH_4$ emissions through enteric fermentation in dairy cows<br>– Reduce $N_2O$ emissions by managing dairy cows | – Introduction of integrated forest fire management to reduce the number of forest fires and the damaged area | – Conversion of land use for crops on a slope above 15% |

| | | |
|---|---|---|
| – Reducing $N_2O$ emissions through fertilizer management in pig farms | – Afforestation | – Contour cultivation of agricultural land on sloping terrains (5-15%)<br>– Landslides in orchards and vineyards on sloping terrains (> 5%) |
| – Reduction of $N_2O$ emissions from dairy manure in farms with less than 50 livestock units | | – Use of biocarbon as a carbon sink in agricultural land<br>– Irrigation using a photovoltaic system |

From 2023, it is planned to introduce the first support schemes to encourage the provision of public goods through agricultural practices beneficial to the environment and climate, the so-called eco-schemes. The use of direct payments for environmental schemes will be voluntary for farmers who are committed to implementing practices that are beneficial to the climate and the environment.

The applicability of the measure "Use of bio-carbon as a carbon sink in agricultural land" which is under research will be analysed in the period after 2026 due to the need to provide more accurate data for it, which means that the eventual implementation would be in the next strategic document.

In order to support farmers, foresters and other stakeholders to promote and facilitate implementation, climate change measures will be included in the Agricultural Knowledge and Innovation System which includes a set of procedures for creating and transferring knowledge in agriculture, i.e., research projects, advisory services and mandatory trainings.

Targeted measures in the "Dimension of decarbonisation" will be implemented in order to reduce the number and volume of forest fires and improve forest quality through integrated forest fire management and afforestation of uncultivated forest land with high yield and quality tree species. The main goal of the involved institutions will be to reduce the average annual burned area by 6,000 ha from about 11,000 ha as they are burned during a year. In addition to the protection, it is planned to increase the areas that will be afforested, as a priority - the burned areas and the areas with degraded forest.

Regarding the measures for adaptation of agriculture to the more pronounced climate change, as the most appropriate[59], measures aimed at several of the most affected sub-sectors will be supported, in:

- orchards, measures for: use of hedges / UV protection nets, use of suitable drought tolerant substrates, changes in planting depth and use of different materials[60] when planting for water conservation, application of pruning techniques and use of specific protective materials (calcium carbonate) to prevent sunburn, as well as inter-row mulching with peat and sawdust to reduce soil temperature and water conservation.

59 tested in the period 2012-2016 through the project "Adaptation to Climate Change in Agriculture" supported by the United States Agency for International Development (USAID) and implemented by the Rural Development Network

60 Trichoderma spp., Zeolit/Zeofit and Hydrogel

- viticulture, is the application of the system of T-pruning of the vineyards, application of UV-protective network and application of calcium carbonate, while in
- gardening, application of the fungus Trichoderma harzianum, use of UV protection nets in the production of open field and plastic tunnels to prevent damage from burns and achieve a better yield.

In addition to implementing the mentioned capital investments in irrigation and drainage, in order to effectively manage water in agriculture will be stimulated to set an irrigation schedule optimized according to local conditions and crops, based on meteorological parameters of meteorological stations with additional sensors installed. Irrigation and fertilization practices through the drip system will also be improved for efficient use of water and fertilizer and conservation of soil water. This technology is quite widespread, especially in the production of vegetables, fruits and grapes, but lacks the proper use of irrigation systems and the use of injectors for regular application of fertilizers through the irrigation system. In areas without irrigation, adaptation should be oriented towards mitigating the negative effects of drought and heat stress on crop development and yield by changing existing varieties in line with future climate regimes to new temperature and precipitation trends, changing inefficient practices, and through investments in equipment and knowledge.

In the area of livestock production, adaptation will include improved breeding structure, improved management of the microclimate in the farms by implementing cooling systems in the breeding of dairy cows, pigs and poultry in order to reduce heat stress during the summer months and sustainable pasture management.

Additionally, the broad support of agricultural production insurance from the negative effects of natural disasters and adverse climatic events will continue, and the damage would be reduced with the functionality and timeliness of early warning and weather information systems for monitoring and detecting new pests and diseases in crop production, livestock and forestry and through improvements in sanitary and photo-sanitary interventions.

### II.6 Elements that should enable the modernization of national policies

Farmers operate in a rapidly changing economic, technological and natural environment as a result of declining resources and environmental pressures, population migrations, changing societal expectations, the rapid rise of new digital technologies and the increasing impacts of climate change. In such conditions, farmers and forest growers need new knowledge, new skills and innovative ideas for the development and management of production systems.

Providing a connection to the most adaptable to the current changes means in the following period to pay serious attention to the elements that support the modernization of national policies that should improve the effectiveness and efficiency of policy interventions in order to achieve strategic goals. These are: encouraging, sharing and using knowledge, innovation and development of digital technologies in agriculture and rural areas. Continuous transfer of knowledge in agriculture is a prerequisite for effective restructuring of the sector, which, supported by policy interventions, should lead to the achievement of the ultimate goal - increasing competitiveness and sustainable development of rural areas.

Due to the complete lack of a systemic approach in the field of knowledge and innovation in agriculture, forestry and rural areas decades ago, the focus in the next strategic period will be on establishing the necessary infrastructure and integrating limited capacity. The model of

integrated Agricultural Knowledge and Innovation System (hereinafter AKIS) to be established in the country will promote targeted cooperation between a group of stakeholders - farmers, forest breeders, advisory providers, entrepreneurs, consumers, researchers and etc., who jointly implement a project. The system should enable the creation and sharing of knowledge in an open way with the provided space for contacts of the actors to meet and develop ideas through the formation of the so-called Agricultural Innovation Partnership Operational Groups. The groups will support the development of innovative solutions with a bottom-up approach in order to make agriculture smarter, more efficient and more sustainable.

The establishment of the national integrated AKIS according to European standards will be regulated by a special Law on System of Knowledge and Innovation in Agriculture which will cover the components, planning, implementation and financing of the system, organized through a separate Program for knowledge and innovation in agriculture.

In the next strategic period, within the new AKIS, the following four main groups of activities will be implemented that should enable the fulfilment of the envisaged goals in this area, as follows:

- Increasing the flow of knowledge and strengthening the links between research and practice,
- Strengthening advisory services for agricultural products within the AKIS,
- Improving interactive innovation through Operational Groups for Agricultural Innovation Partnerships,
- Supporting the digital transition in agriculture, and
- Introduction of a system for compulsory training and education in agriculture.

### II.6.1 Increasing the flow of knowledge and strengthening the links between research and practice

Developing basic scientific research requires a developed scientific infrastructure, professional staffing capacity and significant financial resources. Due to the really limited resources, the scientific research in agriculture in the following period will be focused on the transfer of advanced and modern technology created in other countries with developed research activity and their application and adaptation to the Macedonian conditions of production.

A priority in the next period in this area is the introduction of a systemic approach in the implementation of scientific projects supported by the measures of national agricultural policy which should include regulation of selection procedures, monitoring of implementation and evaluation of the effects of scientific research projects in agriculture.

The selection of areas and topics of research in agriculture will be based on projects of practical and applicable importance to farmers themselves and other participants in the sector that target solving or mitigating key problems and challenges in the sector, i.e., the general areas identified in the National Agriculture Strategy and rural development. The long-term systemic solution within the AKIS provides for an open approach in defining innovation projects by the Operational Groups themselves formed to find a solution to a particular priority issue. However, in order to plan agricultural research and more closely reflect sub-sectoral priorities, existing sub-sectoral groups will provide formal verification of priority areas, which will be further

approved by the Agriculture and Rural Development Council before being published by AFSARD.

According to the defined strategic goals, farmers and other participants in the vertical chain at the sub-sectoral level through the sub-sectoral groups will decide on the research to be conducted based on their real needs to overcome specific problems in the production and marketing of agricultural products. The sub-sectoral standing groups will develop an operational technical support program, including with research projects identified as relevant and necessary for the development of the sub-sector. The proposal of technical measures for each sub-sector is submitted to the MAFWE no later than September 30 in the current year for implementation in the following year.

The analysis of the current situation highlighted the lack of connection of agricultural producers with knowledge makers. Knowledge building and sharing needs to be in an open way that creates space for the involved entities to meet, develop ideas and generate innovations accessible to all.

Strengthening the links between research and practice in the next period will be improved by: directing researchers to create specific results in accordance with the needs of the sector that are easily understood by participants, encouraging direct contacts between researchers and participants in the real sector, organizing trainings by researchers at regular national thematic meetings to share innovative results and research, linking researchers 'work to the activities of demonstration farms where they will present their results and informally obtain information on farmers' needs, and introduce incentives for researchers for interactive innovation through specific training, career development or contractual commitments.

### II.6.2 Strengthening advisory services within the Knowledge and Innovation System

The role of agricultural advisors within the AKIS is particularly important, as they are one of the main sources of information for farmers' decision-making.

Advisors should have access to the latest knowledge. They need to regularly upgrade their skills in production technology and marketing, farm management, interactivity and digital systems. Advisors should establish systemic links and closer interactions with researchers, which is why their involvement in innovation development is necessary, as well as have a system of knowledge sharing, training and attendance at thematic or cross-sectoral events to upgrade their knowledge. Of course, their key role remains direct contact with farmers in both directions - providing information on the needs and opportunities of farmers and involving farmers in innovative projects and knowledge transfer.

The efficiency and effectiveness of the advisory services in the country will be upgraded through the establishment of a national Agricultural Advisory System integrated in the entire Knowledge and Innovation System that will enable wider dissemination of knowledge and innovative applications. The establishment of an effective national advisory system in agriculture should enable the increase of the coverage of the users of advisory services financed by the public sources of financing, improvement of the quality of the provided services, as well as full harmonization of the advisory activities with the priorities and goals of the agricultural policy, the traceability of their implementation.

The main principles of the Agricultural Advisory System are pluralism in the provision of state-funded advisory services with full involvement of private service providers who will be provided with support in their establishment, as well as an approach based on the choice of service providers by the users themselves. The implementation of the tips will be supported by evidence to improve the traceability and efficiency of the system.

The planning of the advisory system in agriculture will be implemented by adopting a Program for advisory services from the advisory system in a period of three years which defines the type of advisory services financed or co-financed by the state by users, providers, methods of performing services, as well as the percentage of financial support with an indicative budget. NEA as a public provider of advisory services will appropriately adjust the annual work programs and its organization.

In order to fully meet the expectations of the demand for advisory services, it is necessary to increase the number of professional and motivated advisory service providers, able to provide a flexible mix of services. In addition to improving the professional capacity and number of NEA, this will be achieved through the involvement of private service providers. The costs of the establishment and operation of private providers related to meeting the required conditions, training and taking the professional exam will be subject to financial support.

The recognition of private advisory service providers in the system will be done through a registration procedure in the competent ministry. Individual counselling providers will be licensed by the Minister if they possess appropriate professional qualifications, have undergone training in the relevant field and have passed a professional examination. In order to improve the skills and knowledge, the advisor should perform at least 8 hours of training per year according to a 3-year training program that will be implemented in accordance with the positive legal acts for adult education.

Farmers as users of advisory services will choose the service provider based on their proven commitment and expertise, i.e. a concept based on demand. The implementation of advisory services will be realized on the basis of an agreement for use of advisory services for a period of one year, initiated by the user of the advisory service. For monitoring on the effects of the services provided, the service providers will submit reports to the Ministry verified by the user. MAFWE will continuously verify the reliability and monitor the effect of the implementation of the Advisory Services Program.

Due to the large number of agricultural holdings, priority in access to advisory services will be given to holdings with necessary development potential (selected based on the size of the amount of subsidies / minimum production capacity / calculated income) or to defined categories of beneficiaries of state support measures, such as for example, young farmers in starting a business, holdings that move to a higher development category, members of a cooperative in formation, participants in integration projects to strengthen the value chain, members of breeding programs and others. Provided quality support in the implementation of activities for these users is a matter of success of the project. For small agricultural holdings with limited development potential, information packages will be prepared for education for diversification of economic activities, introduction of alternative systems of agricultural production, ways to increase production and expansion of existing activities if there is an initiative on their part.

Mandatory advisory services will be mostly state-funded (up to 90%). The financing, i.e. co-financing of the services from the system, will be provided in accordance with the Law on

Agriculture and Rural Development and from the budget of the public advisory service providers, and after the accreditation of the measure - Advisory services from the EU budget from the IPARD program.

In order to integrate advisory services in the new system of knowledge and innovation in agriculture, emphasis will be placed on the following activities:

- mandatory participation of advisory service providers in innovation projects implemented by operational groups,
- harmonization of the NEA advisory activities with the goals of the agricultural policy on formal procedures regulated by law and through functioning of permanent institutional forms of coordination. In that direction, a mandatory consultative procedure will be regulated with MAFWE during the preparation of the annual work program of NEA,
- providing a continuous link with the centres for creating knowledge and innovation in the country and improving the cooperation with scientific research institutions that will be strengthened by their presence in the board of NEA and regulated through annual action plans for cooperation. Emphasis will be placed on conducting joint applied research, demonstration trials and trainings,
- Strengthening the links with education by holding regular trainings for advisors by educational institutions, especially on new topics[61]. The involvement of high school students and university students, as well as vocational school teachers in the trainings organized for the advisors will be stimulated,
- providing more "system" advice in the package of services offered[62],
- advisors should be committed to: providing new research results, knowledge or other knowledge; connecting to national and international networks, connecting the data provided, knowledge and innovation to their customers and adapting to specific business situations and the local context; and
- providing support for the digitization of advisory work on the maintenance of IT knowledge platforms containing knowledge tanks, good farming practices, e-learning modules and various tools used in advisory activities.

### II.6.3 Improving interactive innovation in agriculture

Interactive innovation in agriculture will be encouraged through the establishment of a system for the establishment and support of Operational Groups for Agricultural Innovation

61 such as: how to mediate and facilitate interactive innovation projects implemented by operating groups, digitization, use of digital technologies for rapid diagnosis, forecasting and decision making, agricultural product processing, production system consulting and management with business activities, starting business activities

62 such as: land resources management, choice of type of production, expected results, recycling of natural resources, achieving quality and uniqueness of products, rural development support, branding and marketing, use of digital equipment and decision support systems, use of social networks, new machines, local traditional food, renewable energy production, rural tourism, eco payment schemes, etc.

Partnerships and through platforms for the creation and transfer of knowledge led by the farmers themselves.

**Establishment and support of Operational Groups for Agricultural Innovative Partnerships**

In order to realize the goals of the AKIS to promote interactive innovations that will encourage the competitiveness and sustainability of agriculture and forestry, in the following period will be established a system of formation and support of Operational Groups for Agricultural Innovation Partnerships designed as forms of association of stakeholders such as farmers, researchers, agricultural advisors, business representatives, environmental groups, consumer groups or other NGOs to promote innovation in the agricultural and forestry sector. The essence of the formation of the operational groups is the implementation of joint projects that should contribute to the achievement of the goals defined in this national strategy and solving the closer problems in agriculture.

The interactive innovation model begins with identifying the needs of end users and creating co-ownership for all involved during the project. The establishment of individual operational groups should be an initiative of the entities involved to address the needs and take advantage of the opportunities arising from the implementation of agricultural activities. Operational groups should be composed of key actors who are in the best position to realize the project objectives, share experiences and disseminate the results widely.

The groups should prepare a plan that will best describe their specific project and the expected results, and the recognition of the group will be through the selection of the project that it submits. The main criteria in forming groups are to have a combination of skills and knowledge (practical, scientific, technical, organizational, etc.) of the different types of partners needed to get the expected results in an interactive way, which should then be sufficiently prepared for implementation in practice.

Innovation can be technological, non-technological, organizational or social and based on new or traditional practices. Operational groups can be involved in a very wide range of activities, related to all nine specific goals of the strategy, e.g., field trials, pilot projects, joint work processes for the development of new products or practices, technologies and production processes or a new way of organizing, up to the testing and adaptation of existing technologies and processes in new geographical and environmental contexts. The implementation of the project is limited to a few years as needed to develop the innovative solution.

Support for interactive innovation in agriculture will be provided to encourage cooperation, i.e. to prepare the project, as well as to finance the implementation of its activities. Rates for supporting innovation and forming groups through the cooperation measure can reach 100%.

Operational groups should stimulate the involvement of young people because of their potential for change, combined with advisory activities and the demonstration of new production methods on demonstration farms.

The conditions regarding the formation and composition of the operational groups, the submission of recognition requests and the specific areas and criteria for selection or eligibility of projects will be more closely regulated in the Law on System for Knowledge and Innovation in Agriculture and its bylaws.

**Farmers-led platforms**

The main goal of the platforms led by the farmers themselves is the exchange of new knowledge and innovations, their practical application and further adaptation. Good practices and useful findings for improving operational performance will be most easily understood and applied by farmers if they are communicated in an understandable language by the farmers themselves. Therefore, in the coming period, activities will be encouraged and supported to instruct farmers to change practices that do not work satisfactorily in two ways: by funding web-shared video experiences of farmers and by establishing demonstration farms.

- Exchange of knowledge from farmer to farmer Most farmers, like any other entrepreneur, face solving their own problems on a daily basis by applying different methods and approaches to reach the solution. They fully understand the specific state of their economy and are constantly adapting their farming systems to improve productivity and profitability, as scientific research often does not focus sufficiently on the specific needs of agriculture. Direct interaction with other farmers combined with seeing practical examples of applied good farming practices and successful alternatives to improve profitability through digital means should encourage farmers to expand their knowledge and test new farming methods.

- Establishment of demonstration agricultural holdings Because the most effective way of transferring knowledge to farmers is if they are directly convinced of the already applied more advanced production technology on the spot, in the following period will be supported the formation of demonstration agricultural holdings within secondary agricultural schools, research institutions at the faculties or within the advanced agricultural holdings. The investments for arranging the demonstration holdings and their maintenance, as well as covering the operating costs related to performing the demonstrative role of these holdings will be financed by the state or by donor projects.

Demonstration farms will be organized for the most common and most important types of production, distributed by regions dominated by a certain type of agricultural or livestock production. The farms will be presented the best and most advanced production techniques and technologies applied in order to increase yields, improve food quality and safety, post-harvest activities, environmental protection and climate impacts.

Farmers will have to visit the demonstration farms as part of the mandatory training. The advisory services of the national advisory system co-financed by the State will be related to the implementation of some of the councils of the demonstration holdings. The visit will be especially mandatory for the supported projects for starting new agricultural businesses for young farmers and restructuring of agricultural holdings.

### II.6.4 Supporting the digital transition in agriculture

Agriculture and rural areas are changing significantly with the availability of various modern technologies. The current modernization of economic activities, including agriculture, is inextricably linked to digital technology. The digital transformation of agriculture needs to be imposed as an important factor in the development and improvement of the competitiveness of the sector and hence the need for a strategic approach that includes strengthening the links between the AKIS in a wide sense, digitalization and existing advisory services.

Access to digital technology, especially more sophisticated solutions in the field of precision agriculture and other digital applications that are often designed for larger businesses, is problematic for small and medium enterprises that cannot afford its profitable use. Their economies of scale, limited knowledge of digital technology, and the predominantly older category they belong to require an approach that suits that situation.

Minimizing the digital divide and making better use of digital news will involve advisory services that have sufficient knowledge and access to data to help farmers who may not be able to keep up with new technologies. The future role of agricultural advisory services should include facilitating farmers' participation in innovative digital technology projects, as well as providing ongoing support to farmers to cope with the growing importance of digital technologies. Such would be the use of simpler and free solutions such as open-source digital technologies and tools available through smartphones or platforms where farmers will initially exchange ideas for digital innovation ideas in order to come up with a common and effective agricultural digitalization strategy.

To maximize the positive contributions to agriculture and rural areas that digitalisation can bring, a comprehensive approach is needed to combine digitalization support at the agricultural level and in the environment. Achieving the priorities in the digitalization of agriculture in the coming period will be stimulated through the following set of activities:

- provided full broadband internet access in rural areas,
- improving web-based technologies to support decision-making that contribute to the systematic monitoring and optimization of processes, such as the Agricultural Market Information System (hereinafter LFIS) for prices, FADN and other comparative economic analyses, soil map and agri-environmental mapping etc.,
- increase data access and data transparency, as well as their traceability for farmers and consumers. One of the most important information for farmers is the status of payment of financial support measures for which in the following period will be provided free and easy access by users to their personal profile for submitted support applications.
- improving the availability of data on agricultural policies that will be achieved through regular communication, at least quarterly of MAFWE with farmers on the most important changes in policy setting and implementation by delivering an electronic information bulletin to the e-mail address of farmers registered in SAHR or social networks,
- introduction of precision agricultural production and processing of agricultural products based on smart decisions guided by data, robotics / mechanization and IoT solutions for more efficient use of resources or introduction of new management systems, which will contribute to more economically profitable production,
- closer connection between producers and consumers through digitalization of the agri-food chain e.g., use of blockchain technology to increase the transparency and traceability of quality standards with secured co-financing of investments by all participants in vertical integration,
- use of digitalization as a tool to support better AKIS, especially for knowledge exchange, training and support of advisory services. Web workshops have proven to be a fast and cheap, but also a reliable means of transferring knowledge in the face of a sanitary crisis caused by COVID-19, as well as decision support tools in advisory services.

- interconnection and integration of all public data from similar areas for improved public access to data and administration of procedures. In this regard, all available land data (graphic and alphanumeric attributes of agricultural plots) will be placed on one platform and publicly available to users of the administration, farmers and other stakeholders in the form of "Integrated Land Management System". A similar approach will be applied to the Forestry Information System,
- simplification of the administrative procedures conducted through web applications in the part of submitting a request for financial support and initiating a procedure for advertising free agricultural land in state ownership for lease or sale, etc.
- use of technology to improve fruit and vegetable production using sensor data, cloud-based monitoring systems and early warning for pest and disease control,
- introduction of new methods for control of diseases in crops using disease detection algorithms, promotion of improved knowledge of propagation methods and models of dispersion of crops and introduction of decision support systems for control of some diseases of crops,
- improving the efficiency of sensor irrigation management, as well as the use of sensors and data analysis to improve the efficiency of fertilizer treatment for soil conservation,
- promoting and supporting the use of e-commerce practices, especially in conditions of increased restrictions on physical contacts due to the COVID-19 crisis, but also for a more favourable distribution of value by reducing the number of intermediaries involved, and
- support initiatives for establishing data platforms in the agriculture and food sector related to the implementation of market regulation policy that will enable the management of market data in a secure and transparent manner within defined groups of participants composed of business operators, administration, education and scientific institutions.

The above investments in tangible and intangible assets will be subject to support through co-financing with increased intensity in relation to other eligible costs.

In order for farmers to be able to use digital advisory tools and acquire the necessary media and technical skills for the digital age, these areas will be a mandatory part of AKIS activities through special training and education modules for farmers and advisors and special advisory packages.

In order to stimulate digitalization in agriculture, activities will be implemented to raise awareness and inform about the opportunities, primarily in the following key areas: precision agriculture, education and training for the next generation and reducing bureaucracy with the use of digital data and solutions.

The digitization process will be accompanied by the proper application of a regulatory framework of data exchange standards that protect data ownership and privacy, while allowing business development.

### II.6.5 System for compulsory training and education in agriculture

In order to improve the knowledge and qualifications of agricultural producers, a system for continuous training and education in agriculture will be introduced. The system will include trainings with a fixed number of hours depending on the type of agricultural production for beneficiaries of certain state support measures as a condition for using the measures.

Beneficiaries of the following training measures will be especially included in the system of mandatory trainings: starting new businesses of young farmers, moving to a higher category of agricultural holdings according to the size of capacity, establishing and operating agricultural cooperatives and implementing integration projects. The trainings will be mandatory for beneficiaries of financial support of other targeted measures in areas where it is necessary to significantly raise the level of knowledge of farmers or for problems of a more complex nature, such as: overcoming the situation of insufficient product quality and food safety (dairy production, etc.), agri-environmental measures and measures related to climate change.

The system of regionally distributed training centres will include secondary vocational schools, institutes and faculties that have agricultural holdings, and other entities that will be authorized to conduct the training after meeting the legally prescribed criteria. The type of training by centres will be defined in accordance with the representation of the appropriate type of production and the number of beneficiaries of given support measures for which training is mandatory in the regions.

The modules provided for different types of training for farmers will be used as part of the system of non-formal education for additional training, retraining and lifelong learning of the population of rural areas and other population interested in starting an agricultural activity.

As for formal education, scholarships for children of registered farmers will be co-financed by the State for education in agricultural professions that should ensure the continuity of agricultural activity of the holdings, but at a new improved professional level.

## PART III. IMPLEMENTATION OF NARDS 2021-2027

### III.1 Coordination and management of the implementation of the strategy

The Ministry of Agriculture, Forestry and Water Economy is responsible and managing body for the implementation of the NARDS 2021-2027 during the strategic period. MAFWE in an efficient, effective and correct way will ensure the functioning of a system for management and control of the implementation of the strategy set by ensuring a clear distribution and separation of the functions of the ministry and other involved institutions in accordance with the relevant laws.

The Ministry will carry out all necessary activities for the establishment of a comprehensive system for monitoring and evaluation of the implementation and reporting on the achieved results in accordance with the provisions of item III.2. In this regard, the Ministry will collect, maintain and manage information and statistics related to the implementation of the strategy, which are needed for monitoring and evaluation of progress towards the set goals and set targets.

The Ministry will also ensure that policyholders and bodies involved in the implementation of policy interventions are adequately informed of their obligations arising from the implementation, including the obligations to provide data for the purpose of recording the results achieved.

In addition to these commitments, the Ministry will provide information to potential beneficiaries and other economic and social partners and the general public on the content of the strategy, opportunities for access to funding and progress in implementation.

### III.2. Monitoring, reporting and evaluation of the implementation of the strategy

The implementation and progress of the strategy towards the established strategic and specific goals will be subject to regular monitoring. Evidence-based policy involves conducting an annual and multi-year assessment based on a set of selected impact indicators, results and outputs included in the strategy in order to demonstrate progress and assess the impact and effectiveness of the strategy implementation.

To this end, the Ministry will establish a framework for monitoring and evaluating the performance of the national policy. The framework for monitoring and evaluating the implementation of the strategy includes the following elements:

- set of indicators for context, output, result and impact;
- target values set in relation to the relevant specific objective for the performance indicators;
- data collection, storage and exchange;
- regular reporting on operations, monitoring and evaluation activities, and
- ex-post evaluation and other evaluation activities related to the national strategy to examine effectiveness, efficiency, relevance and coherence.

MAFWE as the governing body and the Monitoring Committee for implementation of the strategy will regularly monitor the implementation of the strategy and the progress made towards achieving the goals based on the output indicators and results. The Monitoring Committee for Implementation of the Strategy is the Council for Agriculture and Rural Development.

The preparation of an Annual Report on the implementation of the strategy will be a key element of the ongoing monitoring and management of the policy implementation. The Ministry as a governing body by the end of the current year for last year will prepare and submit to the Government of RS Macedonia regular annual reports on the status of implementation of the strategy which will be previously forwarded and discussed by the Council for Agriculture and Rural Development. The annual reports will consist of key qualitative and quantitative information on the implementation of the strategy in relation to the set indicators and financial data. They will also include information on the results achieved and the progress in meeting the set goals.

The Ministry, in order to more closely monitoring the implementation of the activities of the strategy, by December of the current year, will prepare annual operational plans for implementation for each following year.

The Council for Agriculture and Rural Development in the role of Monitoring Committee at one of the sessions provided by law, will review the progress made in the implementation of the strategy by achieving the goals, indicators and their targets. The Council will discuss open issues affecting the implementation of the strategy and the activities undertaken to address them, the findings of the evaluations of the progress made, the required institutional capacity and the implementation of communication and visibility activities related to the strategy.

In order to regulate the procedures for monitoring the implementation of the strategy, MAFWE in 2021 will prescribe appropriate procedures.

During 2024, in the middle of the period of implementation of the strategy, an analysis of the realization will be made, i.e. the achieved effects and results from the realized policies. Based on the analysis, the text of the strategy will be updated as needed. The review of the achievement of the fulfilment of the strategic commitments in the middle of the strategic period together with the updated text of the strategy should be submitted for approval to the Government of RS Macedonia by October 2024 at the latest.

Ex-post evaluation of the implementation of the strategy is planned to be realized after the end of the strategic period. The evaluation will assess the effects based on the indicators and objectives of the strategy and make a detailed analysis of the extent to which the strategy can be considered relevant, effective, efficient and coherent with other national policies. The evaluation will also provide lessons learned to identify gaps and problems, i.e., the potential for further improvement of interventions in order to help maximize their future impact.

The framework for monitoring and evaluation of the implementation of the strategy, reporting on the achieved results and its updating in the middle of the strategic period will be properly regulated as an obligation of MAFWE in the Law on Agriculture and Rural Development by the end of 2023 at the latest.

### III.3. Programming policy interventions from the strategy

Transposition of the long-term strategic goals of the National Strategy for Agriculture and Rural Development at the operational, implementation level is done through the National Program for Agricultural Development and Rural Development for a period of five years and the IPARD program for part of the rural development policy measures financed from the funds of the EU Instrument for Pre-Accession Assistance. The National Program for Agricultural Development and Rural Development then forms the basis for the annual programming of policy measures financed by the national budget which are implemented through annual programs and decrees for financial support in agriculture and rural development.

MAFWE, the IPARD Governing Body or other designated bodies will define the closer criteria for selection of interventions in consultation with the IPARD Monitoring Committee, the Agriculture Council and the permanent sub-sectoral groups established in accordance with the law. The criteria for the selected interventions, which will be defined in the multi-year program documents, will aim to ensure equal treatment of the applicants, better use of financial resources and directing the support in accordance with the purpose of the interventions.

In order to align with the strategy, the National Program for Agricultural Development and Rural Development for the period 2018-2022, which was adopted during the period of validity of the

previous national strategic document, will be updated in the last quarter of 2020 - the first half of 2021.

During 2021, in order to program the financing of the measures supported by the EU Instrument for Pre-Accession Assistance, an IPARD program for the period 2021-2027 will be prepared and submitted to the European Accreditation Commission.

The objectives, measures, allocation of funds and policy indicators envisaged in the strategy will be appropriately and regularly transposed on a three-year level during the preparation of the strategic and budget plans of the institutions involved.

## III.4. Institutional aspects and competencies

### III.4.1 Institutional capacity and ICT systems for strategy implementation

The key institutional capacity for implementation of modern agricultural policies in the competent institutions and the respective information-communication systems has been set in the past strategic period, based on the previously adopted complete set of relevant legal regulations.

The priority in the next period in terms of institutional capacity and relevant ICTs remains the completion and integration of individual elements. However, for some of the policies that are at the beginning of their implementation in accordance with the national strategy, adequate institutional capacity responsible for their implementation and support information systems should be provided.

These are: the system of knowledge and innovation in agriculture, the policy of regulating the markets with agricultural products with appropriate interventions, agri-environmental measures, part of the food safety policies, especially in the area of phytosanitary policy and management of by-products, the integrated land and water management.

### III.4.2 Integrated competencies for agri-food policies

In order to achieve compliance and efficiency in the implementation of agricultural policies, it is necessary to complete and formalize the process of integrating the competencies in the agricultural and food sector in one institution, i.e. in the Ministry of Agriculture, Forestry and Water Economy. This especially refers to the competencies in the field of food - processing, marketing, market regulation and foreign trade of agri-food products.

The concept of the EU Common Agricultural Policy implies an integrated approach in regulating the areas of primary agricultural production and processing of agricultural products (from inputs, through production, processing and trade to consumers), i.e. a system "from farm to fork". The lessons learned from the previous period show that the non-integration of state policies for primary agricultural production, processing sector and trade of agricultural products, leads to partial solutions that complicate the process of reaching consensual decisions of common interest of all stakeholders and does not help overcome one of the main problems in the sector - the pronounced vertical disintegration in the supply chains.

Hence, it is necessary to integrate the responsibilities and competencies on the entire food production chain and to establish a vertically harmonized concept in the development of the agri-food sector within the Ministry of Agriculture, Forestry and Water Economy. In that way,

the existing practice will be formally regulated that most of the policies and instruments in these areas are now de facto programmed and implemented through the programs under the competence of MAFWE. In order to change the situation, it is necessary to amend Article 21 of the Law on Organization and Work of the State Administration Bodies in the part of the competencies performed by the MAFWE.

In addition, the existing law does not adequately reflect the reality of the competencies that with the amendment of the laws in the past period are now implemented by the Ministry, and which are part or under the competence of other state administration bodies (quality protection, market regulation, processing industry, agroecology, etc.) or did not exist at all in the legal definition as a concept in the past period (rural development, agroecological measures).

### III.4.3 Systems for planning and monitoring policies - Agricultural Information System

A functional Agricultural Information System is a necessary condition for planning and monitoring the implementation of agricultural and rural development policies. The necessary legal, information and procedural basis and appropriate institutional capacities have been established in the past period and in a good part of the elements of the system, to a significant extent harmonized with the European regulations. The Agricultural Information System includes the Network for Collection of Accounting Data from Agricultural Holdings, the Agricultural Market Information System and Agricultural Statistics.

The data needed for analysis and monitoring of the implementation of the agricultural policy from various relevant sources will be integrated in the established system of central database (Data Warehouse) at MAFWE. The exchange of data between the main institutions in the system (MAFWE, FVA, AFSARD, SSO, etc.) will be formalized in mutual agreements by defining the scope and type of data, manner and frequency of exchange, taking into account gender-disaggregated data.

#### Network for collecting accounting data from agricultural holdings

In order to provide microeconomic technical and accounting data at the level of agricultural holding needed for analysis of the economic situation in agriculture, a functional national system of continuous research from a representative sample - Macedonian FADN (EU acronym) has been established. The collection and processing of accounting data was started in early 2010 from a sample of 300 agricultural holdings distributed according to their economic size and type of agricultural production.

In the past strategic period, new software has been introduced, data quality control and their application to policies have been improved. The scope and format of about a thousand collected accounting data from agricultural holdings for the needs of FADN are prescribed by a new rulebook in line with the current requirements of the relevant EU Regulation.

In the next strategic period, it is planned to gradually increase the number of agricultural holdings included in the FADN sample, from the existing 750 to 1000-1200 holdings, which will further improve the representativeness of the sample. Increasing the scope means involving a larger number of advisors in data collection, their regular training (at least once a year) and

increasing funding. In order to sustainably operate the expanded FADN system, the existing staff capacities in the competent department will be strengthened.

The results calculated on the basis of data from holdings will be regularly presented in a statistical set called "FADN Standard Results" which are available to the public on the MAFWE website.

**Agricultural Market Information System**

In addition to being necessary for regular monitoring of the state of agricultural products markets to create sound policy interventions, timely and relevant market information should strengthen the position of producers in the market to make the right decisions about sales activities and production planning.

The National Agricultural Market Information System (NAMIS) covers selected product groups and representative markets from which reporters regularly collect data on traded prices and quantities and submit it to the responsible department at the MAFWE.

In the next strategic period, the system will continue to regularly provide and process information from the markets and issue reports. In order to improve the quality and relevance of the data and the easier access to the users, by 2022, a research will be conducted on a target group of manufacturers, producers' organizations and suppliers of repro materials for the use of system data in the development of their business plans will assist in the development of new guidelines, a plan for the promotion and training of data users and reporters.

By 2025, regional connection with related systems in the Western Balkans and beyond is planned, and by 2027 the system should be compatible with the EU ISAMM system, which will enable smooth exchange of market data and information with the Union. In order to support these activities, modernization of the information base of the system is envisaged.

The system should be adapted to the process of setting up information systems for market monitoring due to sectoral interventions in accordance with the market regulation policy and to harmonize the product description by quality classes in accordance with the implemented minimum quality standards.

**Agricultural statistics**

The formulation of appropriate policies based on evidence and analysis largely depends on the availability and relevance of the data used. Therefore, as in the past, the continuous improvement of the quality of statistics on crop and livestock production, forestry, water management, agricultural labour and agro-monetary statistics, including economic accounts for agriculture, structural statistics, as well as statistics on rural areas remain goal of common interest of all involved institutions, primarily the SSO and MAFWE.

In the following period, the formal inter-institutional cooperation defined in accordance with a joint memorandum will be intensified, which is organized within the working groups for four areas of interest (crop production, livestock production, agro-monetary statistics and structural research), especially in order to achieve the following specific objectives:

- regular monitoring of agricultural statistics and initiating activities to improve their quality,

- harmonization of the reliability of the same data from different sources - administrative and statistical, as well as increased use of data from the administrative registers for statistical purposes and where possible harmonization of methodologies,
- improved exchange of statistical data between institutions, in particular through established online platforms and
- successful organization of the Census of Agriculture and other statistical operations of common interest.

### III.5. Financial plan of NARDS2021-2027

The financing of the implementation of the national agricultural policy is mostly done with funds provided from the Budget of the Republic of Nord Macedonia allocated in the budgets of the budget users who have competence in the implementation of the national agricultural policy according to the law, primarily the budget of AFSARD and MAFWE.

In addition to the national budget, the financing of the national agricultural policy is ensured by the funds of the European Union, based on a multiannual program for using the funds from the Instrument for Pre-Accession Assistance for Agriculture and Rural Development of the European Union - IPARD, and in accordance with the concluded contracts and agreements with the Union for the use of the instruments for pre-accession financial assistance and other planning documents.

Part of the funds for financing the agricultural policy and achieving the strategic goals of the national strategy will be provided by donor projects and part of the funds of the local self-government units in co-financing certain measures of rural development.

Table No. 9 Indicative financial plan for state support in agriculture and rural development by policy for the period 2021-2027, million €

| Policies and measures | 2021 | | 2022 | | 2023 | | 2024 | | |
|---|---|---|---|---|---|---|---|---|---|
| | mil € | % | mil € | % | mil € | % | mil € | % | mil |
| **Direct payments** | **100** | 70% | **105** | 64% | **105** | 58% | **107** | 50% | **1** |
| **Regulation of markets** | **0** | 0% | **1** | 1% | **3** | 2% | **5** | 2% | |
| **Rural development in total** | **42** | 30% | **56** | 34% | **70** | 39% | **100** | 47% | |
| - Rural development national budget | **36.7** | 26% | **45.4** | 28% | **56.7** | 32% | **80.3** | 37% | **7** |
| - IPARD EU funds | 4 | 3% | 8 | 5% | 10 | 6% | 15 | 7% | |
| - IPARD national participation | 1.3 | 1% | 2.6 | 2% | 3.3 | 2% | 4.7 | 2% | |
| **Knowledge and innovation system** | 0 | 0% | 1 | 1% | 2 | 1% | 3 | 1% | |
| **Total support** | **142.0** | 100% | **163.0** | 100% | **180.0** | 100% | **215.0** | 100% | **21** |
| **Total national budget** | **138.0** | | **155.0** | | **170.0** | | **200.0** | | **20** |

The financial plan for implementation of policies in agriculture and rural development is the basis for planning the annual budget allocations and monitoring the implementation. Due to the multiannual timeframe of planning, the financial plan of policies and interventions should be taken as indicative with maximum effort to maintain the planned proportions of funds by individual policies.

Overview of the distribution of funds intended for policies for agriculture and rural development for the period 2021-2027 according to the strategy, by sources of funds and key support policies are presented in Table 9.

The data in the tables, show the positive trend of growth of fiscal allocations for the development of agriculture and rural areas as a whole, as well as allocations aimed at rural development policies in relation to direct payment policies, in order to have a more balanced mutual participation in the division of total assets.

The total amount of funds to support the sector and rural areas allocated from the national budget and IPARD funds for the period 2021-2027 is 1.35 billion euros, while from the national budget alone, the amount is 1.26 billion. Over the years, the allocations are planned to increase from 138 million euros in 2020 to 200 million euros in 2024 and beyond. The difference of 82 million euros is planned for the implementation of the measures from the IPARD program financed by the European pre-accession funds.

The percentage share of funds allocated for structural interventions and measures of rural development policy in the total planned funds for state support has a continuous increasing trend during the strategic period, with a projected target of at least 35% in 2027, which depending on the realization may be higher. At the same time, the share of market-pricing policy measures is planned to decrease from 82% on average of the total amount of all state support measures for the next period to 65% or less in 2027 due to the increase of funds towards rural development, market regulation and the Science and Innovation System.

## Appendix No. 1 SWOT Analysis

| ADVANTAGES | WEAKNESSES |
|---|---|
| **Competitiveness of the agricultural sector, economic sustainability and income of agricultural holdings** | |
| - Long tradition in the production of various primary products and processed foods;<br>- High natural potential for agricultural production and wood mass production;<br>- Available state-owned agricultural land that can be used in development policies;<br>- Good image of Macedonian agricultural and food products in the countries of the region;<br>- Existence of associations and chambers of commerce that are active actors in creating and implementing development | - Dual structure of agriculture with a large share of small agricultural holdings with very small average production capacities per holding;<br>- High degree of parcelisation of agricultural land and private forest land with limited access to water and access to plots;<br>- Lower and unstable incomes in agriculture compared to incomes in other economic branches;<br>- Low level of education, inadequate qualifications, business and managerial |

| | |
|---|---|
| policies represented through the system of socio-economic dialogue (through the existing sub-sectoral groups);<br>- Available educational facilities in the field of agriculture, forestry and food industry in secondary and higher education;<br>- Established policies to support agriculture and rural development with key elements of the European CAP;<br>- General interest in starting an agricultural activity; | skills of the labour force in agriculture and the rural population;<br>- Lack of seasonal labour in agriculture and aging labour in rural areas;<br>- Depreciated equipment and tools for work and application of outdated technologies;<br>- Unfavourable varietal and racial representation;<br>- Low compliance with sanitary and other legal standards;<br>- Lack of equity and difficult access to loans to small agricultural holdings;<br>- Poor integration of food chains and lack of vertical integration;<br>- Poor use of certified seed and planting material and insufficient domestic production<br>- Resistance to horizontal market association of farmers and other stakeholders;<br>- Low productivity in agriculture and food industry;<br>- High share of low value-added agricultural products - unprocessed or semi-processed products in the export structure of agri-food products and insufficient diversification by export destinations;<br>- Unimplemented minimum quality standards and insufficient quality protection<br>- Underdeveloped system for vocational training in agriculture, food industry and forestry and insufficient access to quality advisory services;<br>- Poor integration of research capacities for development of agriculture and forestry and slow pace of innovation in the agri-food sector<br>- Non-existent digitalization and resistance to the application of information technologies |
| **Application of environmental practices in production, the impact of climate change and adaptation to them** | |
| - Favourable agro-ecological potential;<br>- The rich biodiversity of indigenous genetic material;<br>- Diverse soil and high natural value of arable land; | - Insufficient application of agricultural practices that take into account the natural environment and climate;<br>- Intensive urbanization of agricultural land; |

| | |
|---|---|
| - Existence of many years of experience in applying traditional sustainable practices in agriculture;<br>- Generally low use of chemicals in agricultural production compared to developed agricultural countries; | - Destruction of natural habitats through drainage, plowing, construction activities and the use of fertilizers and chemicals;<br>- Unsustainable use of chemicals in agriculture in intensive production;<br>- Vulnerability of agricultural production and rural population depending on agriculture to external influences that become more destructive due to climate change;<br>- Inefficient use of natural resources;<br>- Non-application of risk management practices;<br>- Inadequate use of irrigation water and inefficient systems with high water losses;<br>- Trend of soil degradation especially under pressure of monocultures;<br>- Significant share of old low-stemmed forests;<br>- High risk of damage to forests from natural disasters, especially fires;<br>- Reduction of areas under pastures and degradation of height pastures especially by reducing the number of sheep and goats;<br>- Lack of a system for harmless disposal of animal residues and plant waste; |
| **Sustainable development of rural areas** | |
| - Preserved rural communities with rich historical and cultural traditions;<br>- Presence of road infrastructure with provided access to settlements in rural areas;<br>- Introduced ICT technologies that provide opportunities to improve access to services and develop new businesses, especially internet, television and radio coverage,<br>- Increased investment in rural infrastructure, including rehabilitation of schools and health facilities in rural areas;<br>- Greater resistance of rural households to the upward movement of food prices;<br>- Opportunity for polycentric development in larger rural settlements that will ensure that the migrant population from smaller settlements stays close to productive resources; | - Population aging, negative population growth and migration outside rural areas especially of the young and female population;<br>- Lack of spatial planning in rural areas;<br>- Low educational status and lack of entrepreneurial spirit in the rural workforce;<br>- High dependence on agriculture and poor employment opportunities in non-agricultural sectors;<br>- Lower incomes in rural areas;<br>- Presence of rural poverty and social exclusion, especially among non-agricultural families;<br>- Poor access and low quality of basic services for the population in rural areas (schools, health and social protection, ICT penetration, rest and recreation);<br>- Neglected or absence of basic infrastructure (roads, water supply and sewerage); |

| | |
|---|---|
| | - Weak social capital for local development |

| OPPORTUNITIES | THREATS |
|---|---|
| **Competitiveness of the agricultural sector, economic sustainability and income of agricultural holdings** | |
| - New technologies in agriculture, food industry and forestry;<br>- Increasing revenues and increasing domestic demand for high quality agricultural and food products;<br>- Improved access to EU markets and penetration of alternative markets;<br>- Increasing domestic financial support and EU support to improve the competitiveness of agriculture, forestry and food industry;<br>- Increasing foreign investment;<br>- Increased interest in establishing cooperatives and in joint marketing and marketing;<br>- Opening of new purchase and distribution centres for fresh fruits and vegetables;<br>- Increasing the investments of larger economic entities; | - Loss of specialised labour in agriculture and forestry, due to migration;<br>- Increased competition in the domestic and regional markets;<br>- Increased costs of adapting to increasing quality, food safety and environmental standards;<br>- Prolonged decline in prices of agricultural products and negative impact on agricultural incomes;<br>- Increasing input costs and reducing available agricultural land;<br>- Increased incidence of diseases in animals and plants;<br>- Prolonged negative impact of COVID-19 and the possibility of other global market disruptions; |
| **Application of environmental practices in production, the impact of climate change and adaptation to them** | |
| - Increasing environmental awareness;<br>- New technologies: for energy saving and renewable energy production;<br>- Interest in application of agro-ecological practices and organic agricultural production;<br>- Lack of environmental air problems that are more pronounced in urban areas;<br>- Production of energy from renewable sources and waste from plant and animal production | - Global climate change and natural disaster risks (e.g. floods, accidents, fires, droughts);<br>- Loss of biodiversity;<br>- Increase of soil, water and air pollution due to the intensification of agriculture, industrial activities, transport and tourism;<br>- Use of commercial varieties and species leading to the extinction of traditional and indigenous varieties and breeds; |
| **Sustainable development of rural areas** | |
| - Increasing demand for rural tourism in the domestic and international market;<br>- EU support for diversification of economic activities, improvement of basic services in rural areas;<br>- Digitalization and ICT that reduce the differences in terms of living in urban | - Reduction of the rural population, especially of the young working age population;<br>- Increased mobility of rural labour abroad;<br>- Increased demands on the quality of the workforce for businesses; |

| | |
|---|---|
| areas and improve the attractiveness of rural areas, especially those that are well connected to the larger development centres in the country. | - Lack of funds for rural municipalities to invest, especially in smaller settlements;<br>- Further increase disparities between rural and urban areas in economic development, education and access to basic services and loss of rural area competitiveness to retain young population |

Appendix 2 Records of conducted stakeholder consultations as part of the preparation of the NARDS 2021-2027

| Subsector / Organization of stakeholders | Date of consultation | Method of consultation | Number of participants |
|---|---|---|---|
| **Sub-sectoral consultations** | | | |
| **Permanent sub-sector group for flowers and ornamental trees** | 01.10.2020 | DM | 5 |
| **Permanent sub-sector group for meat** | 28.10.2020 /<br>14.12.2020 | DM /<br>VM | 14 /<br>14 |
| **Producers of pork** | 20.10.2020 | DM | 12 |
| **Representatives of the meat-processing industry** | 21.10.2020 | VM | 5 |
| **Permanent sub-sector group for milk** | 21.10 2020 /<br>28.10 2020 /<br>18.12.2020 | DM /<br>VM /<br>VM | 11 /<br>12 /<br>7 |
| **Permanent sub-sector group for cereals** | 19.10.2020 | DM | 10 |
| **Permanent sub-sector group for organic production** | 26.10.2020 | VM | 10 |
| **Permanent sub-sector group for vegetables** | 14.12. 2020 | VM | 13 |
| **Permanent sub-sector group for seeds and planting material** | 25.09.2020 | ESMC | 15 |
| **Macedonian Association of Processors** | 18.11.2020 | DM | 4 |
| **Permanent sub-sector group for honey** | 13.11.2020 /<br>17.12.2020 /<br>14.12.2020 /<br>09.12.2020 | VM /<br>VM /<br>ESMC /<br>ESMC | 13 /<br>8 /<br>6 /<br>6 |
| **Sheep Breeders Association** | 27.10.2020 | DM | 20 |

| | | | |
|---|---|---|---|
| **Association of sheep breeders, slaughterhouses, teachers** | 17.12.2020 | DM | 15 |
| **Permanent sub-sector group for cereals** | 19.10.2020 | DM | 8 |
| **Permanent sub-sector group for cereals, part of rice production** | 21.10.2020 | DM | 8 |
| **Permanent sub-sector group for tobacco** | 08.10.2020<br>20.10.2020 | DM /<br>DM | 12 /<br>10 |
| **Permanent subsector group for eggs** | 16.10.2020 | DM | 7 |
| **Permanent sub-sector group for fruit** | 6.12.2020 | ESMC | 16 |
| **Wines from Macedonia** | 20.11.2020 | ESMC | / |
| **Economic Chamber of Macedonia, "Current situation and future directions for promotion of the agri-food sector in RS Macedonia", h. Aleksandar Palace, Skopje** | 11.11.2020 | DM | 50 |
| **Consultations with stakeholders in the field of rural development policies** | | | |
| **Macedonian Association of Agricultural Cooperatives** | 20.10.2020 | DM | 30 |
| **Tikvesh Wine Route** | 20.11.2020 | ESMC | |
| **National Federation of Farmers** | 21.11.2020<br>22.12.2020 | ESMC | |
| **Chamber of Organic Producers** | 21.11.2020 | ESMC | |
| **Rural Coalition** | 21.11.2020 | ESMC | |
| **Consultations on agricultural land consolidation policy, meeting with:** | | | |
| **- with participants in consolidation** | 20.10.2020 | DM | 5 |
| **- National Federation of Farmers** | 20.10.2020 | VM | 3 |
| **- performers of works in consolidation** | 16.10.2020 | VM | 3 |
| **- with participants in consolidation** | 13.10.2020 | VM | 2 |
| **- advisory services -NEA** | 20.10.2020 | VM | 3 |
| Total | | 32 | 357 |

Manner of consultation:

DM - direct meeting

VM - meeting through virtual meeting platforms

ESMC - consultation with electronic sharing of materials and commenting