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## **COMMISSION STAFF WORKING DOCUMENT**

### **Commission recommendations for Croatia's CAP strategic plan**

#### *Accompanying the document*

### **COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS**

#### **Recommendations to the Member States as regards their strategic plan for the Common Agricultural Policy**

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# 1. COMMISSION RECOMMENDATIONS FOR CROATIA'S CAP STRATEGIC PLAN

In the framework of the structured dialogue for the preparation of the common agricultural policy (CAP) strategic plan, this document contains the recommendations for the CAP strategic plan of Croatia. The recommendations are based on analysis of the state of play, the needs and the priorities for agriculture and rural areas in Croatia. The recommendations address the specific economic, environmental and social objectives of the future Common Agricultural Policy and in particular the ambition and specific targets of the Farm to Fork Strategy and the Biodiversity Strategy for 2030. As stated in the Farm to Fork Strategy, the Commission invites Croatia, in its CAP Strategic Plan, to set explicit national values for the Green Deal targets<sup>1</sup>, taking into account its specific situation and these recommendations.

## 1.1 Foster a smart, resilient and diversified agricultural sector ensuring food security

The Croatian agricultural sector is undergoing structural changes: The number of farms is decreasing and the average farm size is increasing, pointing to a process of consolidation. Farm structures are highly polarised with a 'missing middle': the average size is 10 hectares, but almost 70% of farms cover less than 5 hectares and 1% of farms have 100 hectares or more. Production is focused on crops (roughly two thirds of agricultural output), mostly low-value cultivation (maize, cereals). The livestock sector accounts for a third of agricultural output.

Productivity is lower than the EU average, although overall factor productivity has been increasing since 2007. Labour productivity stands at only 29% of the EU average productivity. Low productivity may also be due to the need to make Croatian agriculture 'smarter' by investing in technology and digitalisation and to strengthen the agricultural knowledge and innovation system (AKIS) by better connecting practice and research. The average technical efficiency of Croatian farmers amounts to 0.3, i.e. using available technology the same production could be achieved with 70% less input. The level of capital investments is low: investment gaps in capital, technology and R&D persist, further inhibiting productivity. The financing gap in the agricultural sector is significant. On trade, Croatia is competitive mainly in low value, primary agricultural products. Trade imbalances in the agri-food sector are growing, mainly due to a negative intra-EU trade balance. In terms of trade with non-EU countries, Croatia is doing comparatively better and the trade balance is positive.

The analysis of farm income in Croatia shows that despite positive developments since 2015 agricultural income remains well below the average wage at national level. Income support is quite homogenous across different sectors, although 20% of beneficiaries receive 77% of direct payments. The amount per hectare of direct payments is on average higher for farmers below the average size (10 hectares), while their income is significantly lower. With the complementary income support for sustainability, the future CAP has an effective instrument to ensure fairness and better targeting of income support by reducing income gaps between different farm sizes (in particular in favour of smaller-sized farms) and territories of the country. Most professional farms use risk management tools, which

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<sup>1</sup> It concerns the targets related to use and risk of pesticides, sale of antimicrobials, nutrient loss, area under organic farming, high diversity landscape features and access to fast broadband internet.

can also play an important role in fostering the resilience of agriculture (e.g. against extreme weather events), exist and are used by a majority of professional farms.

In terms of farmers' position in the value chain, both the share and the absolute amounts of the value added by primary producers show a downward trend. Farmers' position in the value chain seems to be affected by the very low level of cooperation and association between farmers: only 17 recognised producer organisations exist, covering only 700 members and around EUR 300 000 of the total value of marketed production. The EU quality schemes are attractive and the number of products with a PDO/PGI is increasing. Finally, short supply chains seem to bring more value added than longer ones, with the difference standing at more than EUR 8 000. The recent Covid-19 crisis led to a surge in direct sales.

Competitiveness and the position of farmers in the value chain could be further strengthened by increasing the currently low vertical integration of agricultural producers, processors, distributors and the market. Similarly, given the low investment in digital technologies and precision farming, further investment in these areas represents a real opportunity.

## **1.2 Bolster environmental care and climate action and contribute to the environmental- and climate-related objectives of the Union**

The environmental objectives are particularly relevant to Croatian agriculture. While the overall status and protection of natural resources in Croatia is good, climate change poses a major threat to agricultural areas and forests. These risks are likely to be further exacerbated if the trend of intensification of agricultural production continues and by the low level of conservation/zero tillage and the large share of agricultural area left without winter cover. Soil fertility and health are a particular concern: the risk of erosion due to water and winds is already high (and will increase due to climate change), while organic matter in the soil is low in the most productive areas of the country (eastern Croatia).

The use of conventional fertilisers is an additional issue: emissions linked to soil management are the main source of greenhouse gas (GHG) emissions in agriculture. In addition, diffuse pollution from agriculture is the most significant pressure on water bodies, especially in the continental part of the country lying in the Danube River Basin.

Air pollution emissions linked to livestock management still constitute a significant share of total emissions. Furthermore, two aspects of the implementation of Natura 2000 are of concern: according to Croatia's prioritised action framework (PAF), more than half of grassland habitats have an unfavourable conservation status. Moreover, delays in the preparation of management plans<sup>1</sup> for certain sites are limiting the access of Croatian farmers and land managers to CAP support. Finally, the share of utilised agricultural area (UAA) covered by landscape features appears modest. On the positive side, the area farmed organically is increasing, with the current CAP contributing significantly to this trend.

While Croatia is among the countries with the richest biodiversity in Europe, agroecosystems that are essential to biodiversity, such as extensive cropland and agricultural mosaics are threatened by processes of land consolidation and agricultural production intensification.

### **1.3 Strengthen the socio-economic fabric of rural areas and address societal concerns**

In Croatia, rural areas are significant in terms of both surface area and population (almost two thirds of the territory and more than 40% of the population). Demographic trends in the country are not favourable: the population is shrinking and getting older. Emigration and unemployment remain an issue, with rural areas particularly affected by these trends. The urban-rural divide is quite pronounced in a number of respects: firstly, gross domestic product (GDP) per capita is significantly lower than the total GDP per capita. Secondly, the employment rate in rural areas, one of the lowest in EU, is lower than the total employment rate. Thirdly, youth unemployment is higher than the national average and the poverty rate is higher than the total poverty rate. In spite of significant investments financed by European Structural and Investment Funds, basic infrastructure (e.g. childcare, sewage, water supply) is still not available across all rural areas. All these elements contribute to the depopulation of rural areas and exacerbate the rural - urban divide.

Generational renewal remains a challenge: young farmers still account only for 5.1% of total farmers. This issue also has a significant gender component, as the share of female young farmers is especially low. Closing the gender gaps in employment, pay, pensions, care and decision-making will be an important building block of a fair, strong and sustainable food system as envisaged by the Farm to Fork strategy, together with appropriate protection of agricultural workers, especially precarious, seasonal and undeclared workers. Young managers in Croatia have bigger and economically more viable farms, are comparatively better educated, more likely to invest in production of high quality products, and more likely to respond to societal demands by delivering public goods than older farmers. However, they struggle with economic self-sufficiency, access to land, finance and satisfactory advisory services. There is a need for their further growth, and for them to become involved in alternative and value added farming activities, and to specialise and innovate to remain competitive on local, European and world markets.

As regards its contributions to a sustainable food system, the agricultural sector appears to be responding reasonably well to societal expectations on food and health: the risk from pesticide use shows a downward trend higher than at EU level, much like the trend in the sale of antimicrobial agents. Organic products (see Section 1.4) are also increasing. There is, however, room for improvement in the sustainable use of pesticides, animal welfare and biosecurity. Croatia should also make an effort to shift towards healthier more sustainable diets as it has very high burden from non-communicable diseases due to dietary risk factors. While this is predominantly within the competence of national policies and public/private initiatives, the CAP can complement this action through appropriate instruments that Member States may choose in their strategic plans. One such example could be the targeting of support for producer organisations to promote the consumption of fruit and vegetables. Croatia faces significant challenges in encouraging consumption that would be more in line with national dietary recommendations, moving towards more plant-based diets with higher intake of fruit and vegetables, and in reducing food waste.

Croatia also has one of the greatest potentials in the EU for developing its bio-economy, due to its rich biomass resources. However, this potential is currently untapped and has even shown some signs of decline in recent years.

#### **1.4 Modernising the sector by fostering and sharing of knowledge, innovation and digitalisation, and encouraging their uptake**

Accelerating the transition towards sustainable food production will require an effort to collect and bring to the field the latest scientific findings and innovations. A well-functioning agricultural knowledge and innovation System (AKIS), covering not only the agricultural sector but also any farming and rural activity that relates to it, will be key to structuring knowledge flows to respond to the growing information needs of farmers. It will also lead to quicker innovation and better valorisation of existing knowledge to achieve all CAP objectives.

The AKIS in Croatia is highly fragmented and strongly influenced by publicly funded bodies where available. The low number of advisors raises doubts about the capacity of advisory services to meet the challenges ahead, particularly on the environment and climate, and at the same time increase competitiveness and productivity. This situation may hamper Croatia's transition toward a greener and more digital agriculture as envisaged by the Farm to Fork strategy. Information flows and cooperation between the various AKIS actors are limited. Cooperation between science and practice appears particularly critical and very few European Innovation Partnership (EIP) operational groups have started to submit their innovative project proposals.

In the digital domain, connectivity and digital public services are the two areas with the weakest performance. Digitalisation of the agricultural sector is limited; this provides an opportunity for improving Croatian agriculture's economic sustainability and resilience while preserving its environmental sustainability. For rural areas in general, improving access to fast broadband can contribute to making them more attractive to live in and bridging the rural-urban divide.

#### **1.5 Recommendations**

To address the above interconnected economic, environmental/climate and social challenges - the Commission considers that the Croatian CAP strategic plan needs to focus its priorities and concentrate its interventions on the following points, while adequately taking into account the specificities of Irish agriculture and rural areas:

*Foster a smart, resilient and diversified agricultural sector ensuring food security*

- **Strengthen the competitiveness of the Croatian agricultural sector** by improving productivity (for both land and labour, e.g. through training) and by improving the viability of smaller and medium-sized farms with higher development potential. Measures should include a more effective targeting of income support to better address the income gaps among different professional farm sizes, the promotion of producer co-operation and recognition of producer organisations, including an increased support for practices and technological modernisation, digitalisation and innovation **in an environmentally sustainable manner in line with Green Deal orientations.**
- **Strengthen the competitiveness of the Croatian agricultural sector** by improving productivity (for both land and labour, e.g. through training) and by improving the viability of smaller and medium-sized farms with higher development potential. A more effective targeting of income support should address the income gaps among different professional farm sizes (through, for example, complementary redistributive income support and a reduction of

payments) and advance in the internal convergence process. Furthermore, the promotion of producer co-operation and recognition of producer organisations, including an increased support for practices and technological modernisation, digitalisation and innovation **in an environmentally sustainable manner in line with Green Deal orientations**.

- **Support the primary sector in strengthening its position in the value chain** by financing investments to diversify product portfolios, develop quality policy with higher value added, such as organic products, and develop and enhance vertical integration between agricultural producers, processors and distributors as well as strengthening the role of short supply chains through relevant support.
- **Strengthen the capacity to invest in the sustainable modernisation of agriculture** by significantly improving access to finance and capital, particularly for young farm managers, through offering an appropriate mix, as well as a combination, of grant-based support and financial instruments, such as guarantees and loans.

*Bolster environmental care and climate action and to contribute to the environmental- and climate-related objectives of the Union*

- **Increase resilience to climate change** by stepping up climate adaptation measures, particularly to address the risks stemming from extreme weather events, droughts and soil erosion, while preserving the status of water resources. Measures should include awareness raising, promotion of practices enhancing soil health and its carbon content (e.g. low tillage farming, regenerative agriculture) and hedges and other landscape features that have climate mitigation co-benefits, as well as support for investments in drought-resilient crops, efficient and sustainable irrigation infrastructure, and flood prevention and protection (e.g. natural water retention).
- **Contribute to the objective of achieving a climate-neutral EU by 2050** through reducing air pollution emissions and increasing removals of CO<sub>2</sub>. Measures should include support for management practices that increase the carbon uptake of forests and grasslands (carbon farming) and reduce emissions from enteric fermentation in line with the Methane Strategy, as well as investments in energy efficiency and renewable energy production, including solar and wind energy, and the promotion of carbon assessment tools.
- **Contribute to the EU Green Deal target on nutrient losses** by improving the application of fertilisers to avoid undesired losses in the environment. Measures should include the promotion of precision farming technologies and integrated nutrient management strategies (including, e.g., the use of organic-based fertilisers, better manure and livestock management, as well as agro-ecological practices), taking into account the whole nitrogen cycle and the risks to air, water and soil.
- **Contribute to the EU Green Deal target on organic farming** by sustaining the growth of the area under organic farming. Measures should include appropriate conversion and maintenance schemes as well as support for research and innovation activities for organic farming and other low-impact forms of farming. Lessons learnt in the implementation of the 2014-2020 rural development programme (e.g. as regards the potential for organic food production, the

optimization of subsidies and development of food supply chain structures) should be taken into account.

- **Contribute to the EU Green Deal commitments on biodiversity** by ensuring sufficient coverage of agricultural areas with high diversity landscape features, especially on intensively farmed arable land, and increased connectivity among habitats, and maintaining or restoring favourable conservation status of protected farmland and forest habitats and species, including farmland birds and wild pollinators. Measures should include the promotion of relevant environment-friendly and sustainable farming, forestry (including afforestation) and habitat management practices, the definition of ambitious GAEC requirements on biodiversity that are consistent with the Nature legislation and fully apply the SMR requirement from the Nature directives, and the prompt completion of Natura 2000 management plans.

*Strengthen the socio-economic fabric of rural areas and address societal demands*

- **Contribute to making rural areas more attractive**, by promoting investments in infrastructures and services (water sewage, childcare infrastructure and services), people, and economic development, in and outside the agricultural sector, with a specific focus on women and young farmers, e.g. through relevant investment support and financial instruments, and, where applicable, in synergy with other EU and national funds active in rural areas.
- **Harness the opportunities of the Croatian bio-economy** by aiming to increase the value added especially by the primary sector (e.g. agriculture and forestry) to bio-economy products and their circularity in a sustainable manner through offering relevant investment support and financial instruments.
- **Contribute to the EU Green Deal target of reducing the sale of antimicrobials**, although Croatia's sales are below the EU average, by sustained efforts to further reduce the use of antimicrobials in farming, for example by integrating targets into concrete and more ambitious CAP actions.

*Fostering and sharing of knowledge, innovation and digitalisation in agriculture and rural areas, and encouraging their uptake*

- **Strengthen the Agricultural Knowledge and Innovation System (AKIS)** to enhance the sustainability, performance, and competitiveness of the agricultural sector. This should be done by tackling the overall low uptake of planned funding in knowledge and innovation and enhancing information flows and cooperation between the various AKIS actors, with a particular focus on the overall availability and performance of advisory services, a better integration of independent private advisors, and enhanced innovation support, including for young farmers.
- **Reap the benefits of digital technology** for the development of the agricultural sector and rural areas. This should be done by encouraging the uptake and effective deployment of advanced and innovative technologies as well as the development of rural businesses by making the necessary investments in infrastructure to ensure full coverage of rural areas with fast broadband by 2025 **in line with the Green Deal target** and preparing for 5G rollout.



## **2. ANALYSIS OF AGRICULTURE AND RURAL DEVELOPMENT IN CROATIA**

Compared to the EU average, the Croatian agricultural sector lags behind in terms of competitiveness and productivity but scores better in terms of environmental/climate issues linked to agriculture (e.g. biodiversity, GHG emissions). Like many EU countries, generational renewal remains an issue and rural areas suffer from negative demographic trends, depopulation and lack of basic infrastructure.

### **2.1 Support viable farm income and resilience across the EU territory to enhance food security**

In Croatia, the agricultural income per worker is on average about 37% of the average wage in the whole economy between 2005 and 2019<sup>2</sup>. This has improved since the implementation of the current CAP in 2015, reaching 45% in 2019, but remains slightly lower than the EU average (47%). The average agricultural factor income per worker fluctuates around EUR 5 000 between 2005 and 2018<sup>3</sup>, with a positive trend.

Direct payments formed about 24% of the agricultural factor income in Croatia in 2018, while payments under rural development (except investment subsidies) account for nearly 10% of the factor income<sup>4</sup>. Support for areas facing natural or specific constraints (ANC) is particularly important in the sheep and goat sector. In total the share of operating subsidies in Croatia represent some 55% of the entrepreneurial income.

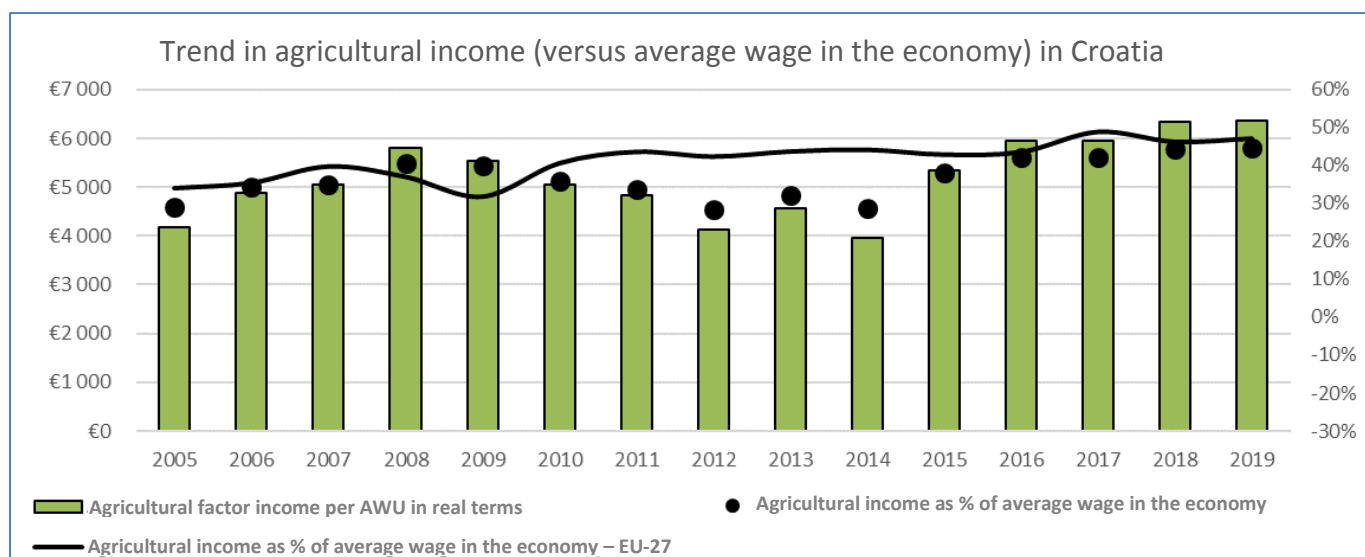
The agricultural factor income per worker tends to be above average for wine, milk, and field crops, and lower for permanent crops and orchards.

The amount of direct payments per hectare is quite homogeneous across different sectors, but tends to be higher for milk (EUR 518 per hectare, representing 50% of the income) and for olive oil (EUR 475 per hectare i.e. 61% of the income), also highly supported under rural development. The share of direct payments in income ranges from 23% for orchards to 61% for olive oil, with low figures in wine and horticulture (5%) and permanent crops (11%)<sup>5</sup>.

In 2017, 20% of the beneficiaries owned 75% of the land and received 77% of direct payments<sup>6</sup>.

The average farm size is about 11.6 hectares<sup>7</sup>, below the EU average of 15 hectares. In the Farm Accountancy Data Network (which provides information for farms above a threshold of EUR 4 000, i.e. professional farms), farms below 5 hectares consist of a mix of very different sectors: mixed crops and livestock (26%), mixed crops (9%), wine (9%), olives (8%). They represent 36% of the total number of farms. The amount per hectare of direct payments is on average higher for farms below average size (11.6 hectares), even though their income remains significantly lower<sup>4</sup>.

Risk management instruments and strategies are available in Croatia in the form of crop insurance covering climatic risks such as storms, hail and fires. Insurance in the livestock sector covers only illnesses. Uptake in Croatia is low (7-8% of farms) but covers approximately 50% of the production.<sup>8</sup> Products insuring farms against drought do not exist as considered highly risky (drought is frequent while irrigation systems are limited).<sup>9</sup>



Source: DG AGRI based on EUROSTAT<sup>10</sup>

## 2.2 Enhance market orientation and increase competitiveness including greater focus on research, technology and digitalisation

The Croatian farming sector is going through structural changes. Between 2007 and 2016, the total number of farms decreased by more than 25% (from about 181 250 to 134 460 farms), whereas the average farm size increased from seven to 11.6 hectares. Farm structures in Croatia are highly polarised with a ‘missing middle’. Out of 134 460 farms, more than 69% of farms cover less than 5 hectares, while 1% of farms have access to more than 100 ha of agricultural land. In 2018, crop production accounted for 60.3% of the total agricultural output, livestock production for 35.1%.<sup>11</sup>

Between 2008 and 2015, the agricultural sector in Croatia recorded negative growth in terms of gross output, with an average decrease of 5.6% per year. However, since 2016, agricultural GDP has been growing 2.8% per year on average. In 2018, there was also a noticeable increase in agricultural output of 5.9%, mostly related to cereals and industrial plants, but the livestock sub-sector decreased further by 3%.<sup>12</sup> The positive turnaround of agricultural GDP can largely be attributed to the end of the economic crisis and the start of CAP support as well as easier access to the EU agricultural market.

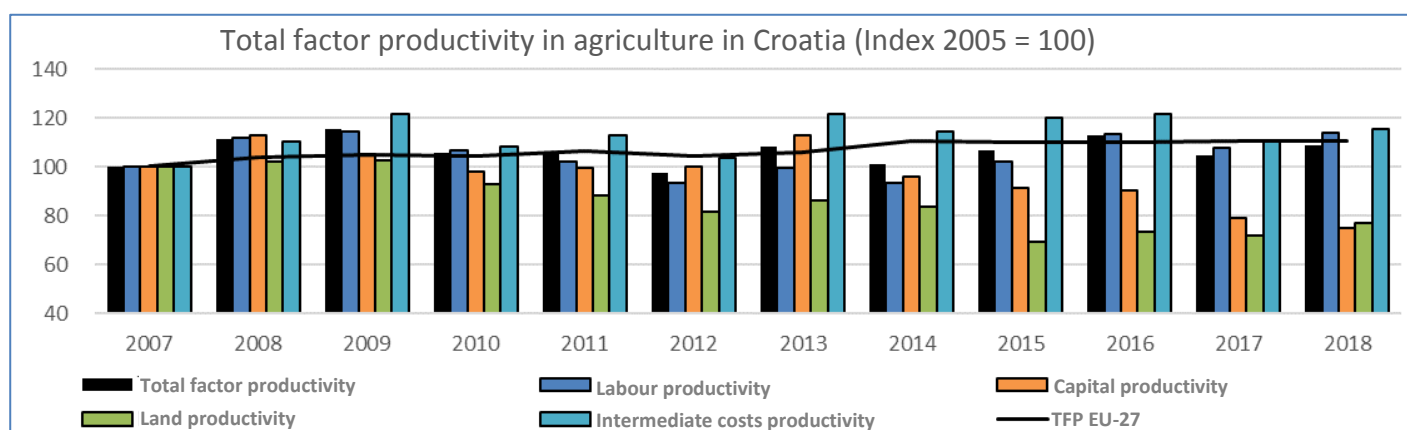
Overall factor productivity has been increasing in Croatia since 2007 but the productivity gap with the EU average remains. Croatia’s land productivity was higher than EU average before entering the EU but it has decreased since, reflected in the developments in yields and rents. According to a World Bank study<sup>13</sup>, land productivity is limited due to the production structure of low value cultures, mainly maize and cereals. Labour productivity in Croatia increased mainly due to the outflow of labour from the sector (-17% as of 2007) and stands currently at 29% of the EU average productivity. Low labour productivity has not allowed translating low labour costs into a comparative advantage, particularly for agricultural trade. It is worth noting that the average technical efficiency of Croatian farmers amounts to 0.3 meaning that using available technology they could achieve the same production with 70% less input.<sup>14</sup>

Low agricultural factor productivity (returns on investments) has led to low level of capital investments in Croatia. Investment gaps in capital, technology, and R&D persist in Croatia’s agricultural sector, further inhibiting productivity. The capital intensity of Croatia’s agri-food sector remains low compared to EU countries. Between 2009 and

2016, investment levels in physical assets, such as machinery and buildings, dropped by 70% and 61%, respectively. The unmet demand for finance from Croatian agriculture has been estimated to EUR 2.1 billion.<sup>15</sup>

Croatia is currently a net importer of agri-food products and faces growing agri-food trade imbalances, mainly caused by the negative intra-EU trade balance. However, Croatia has a positive trade balance with countries outside the EU (EXTRA EU-28) which is increasing over time.<sup>16</sup> Croatia is currently competitive in mainly low value, primary agricultural products, including cereals and oilseeds (sunflower, soybean).<sup>17</sup> Nevertheless, the main export product of Croatia to non-EU countries are live animals (21.4% in value in 2018).

Croatian agriculture suffers from a lack of vertical integration of agricultural producers, distributors and the market: storage and refrigeration capacities as well as distribution centres are lacking and are unequally distributed at regional level.<sup>18</sup> Research spending in Croatia is at the very bottom of the EU with only 0.97% of GDP (2.19% of GDP at EU level in 2018).<sup>19</sup> While statistical data on uptake of precision farming and digital technologies is not available, implementation of the rural development programme (RDP) 2014-2020 indicates a low level of investment in digital technologies: only 1.25% of the budget of all investment projects was invested in digital tools.<sup>20</sup>



Source: EUROSTAT for TFP and DG AGRI for partial productivity<sup>21</sup>

### 2.3 Improve farmers' position in the value chain

The share of the value added by primary producers in the food chain is decreasing over time in Croatia (from 35% in 2008 to 31% in 2016) in favour of the food and beverage consumer services.<sup>22</sup> The share of the value added that goes to the primary sector is above the EU-average. Also, the value added by primary producers in absolute terms decreased between 2008 and 2014, but increased again after 2015. The same trend is visible in the value added for the whole food chain in Croatia. Production in Croatia is very diverse, as the largest number of sectors accounts for 8% to 18% of agricultural products. However, the production structure is dominated by low-value crops and about two-thirds of arable land produces low-value cereals. The primary agricultural sector is fragmented and farms are generally rather small (cf. section 2.2).

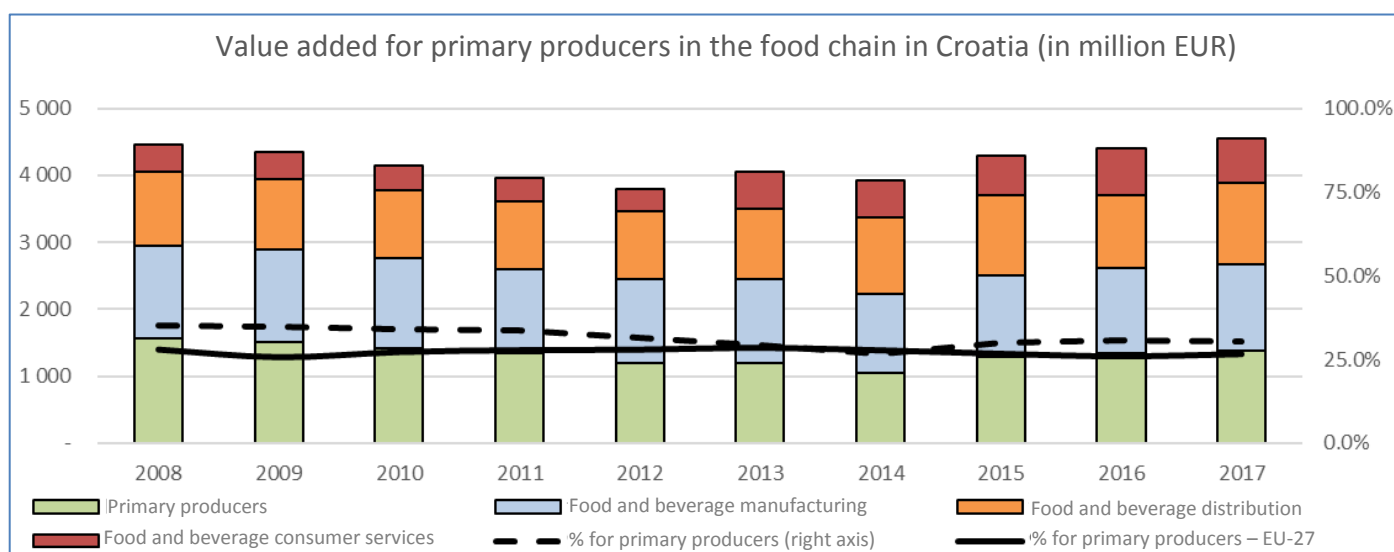
At the end of 2019, there were a total of 17 recognised producer organisations (PO) in Croatia operating in 8 different sectors<sup>23</sup>. The recognised PO penetration level is still very low, covering in total just over 700 members and ca. EUR 300 000 as the total value of marketed production which is only a fraction of the total number of POs (for example, according to a May 2019 PO Study<sup>24</sup>, there were 613 cooperatives in Croatia and only 2

of these were recognised as PO). In the 2014-2020 programming period, Croatia supports producers' cooperation from the RDP budget. The originally planned budgetary allocation of EUR 8 million has been decreased to EUR 5 million due to lack of interest for the measure, out of which only 12% is currently paid out (far below the EU average of 35%). So far, there is no recognised Interbranch Organisation (IBO) in Croatia: such organisations could also contribute to better vertical cooperation in the Croatian food supply chain.

Croatia has 25 agricultural and food products, 16 wines, 6 spirits and 1 aromatised wine listed in an EU database for protected designations of origin or protected geographical indications<sup>25</sup>. 121 manufacturers are included in the EU quality label system. Under the current RDP, Croatia stimulates agricultural producers to participate in quality schemes. However, the original budgetary allocation of EUR 6 million has been decreased to EUR 2.5 million due to low uptake, out of which only 1% is currently paid out (far below the EU average of 36%). In addition, Croatia has various food product names protected at national level and is currently establishing a national labelling scheme of agricultural and food products called "Proven Quality." This scheme would capture value-added Croatian products based on the improved quality resulting from various factors related to the method of production, processing, specific characteristic of raw materials or a final product.

Since December 2017, Croatia applies the national Law on Prohibition of Unfair Commercial Practices in the Food Supply Chain.

Croatian farmers who use short supply chains achieve an average of EUR 8 138 more value added on the farm than farmers who rely on longer supply chains<sup>26</sup>. Various private and public initiatives have been launched in Croatia to support the establishment of short supply chains. Examples include an e-commerce platform (Tržnica.hr) aiming at providing a digital marketplace for Croatian agricultural and food products, which the authorities recently launched, and a local food project Međimurski štacun, based on a partnership model. Direct sales also boomed in the Croatian agriculture and food sector during the COVID-19 pandemic.



Source: EUROSTAT<sup>27</sup>

## **2.4 Contribute to climate change mitigation and adaptation, as well as sustainable energy**

In 2018, agricultural emissions of greenhouse gases (without LULUCF) in Croatia amounted to 2.72 million tonnes of CO<sub>2</sub> equivalent, a decrease of 39% compared to GHG emissions in 1990 and 18% compared to 2005 but comparable to emissions in 2013. Agriculture accounts for 14.8% of total GHG emissions in Croatia, slightly above the EU average, and 0.65% of the total GHG emissions from agriculture in the EU.<sup>28</sup> Emissions remained lower than the annual targets of all sectors under the Effort Sharing Regulation.<sup>29</sup> Emissions in agriculture stem mainly from agricultural soil management (41%), followed by enteric fermentation (36%) and manure management (20%).<sup>30</sup> Among the main sources of non-CO<sub>2</sub> GHG, emissions from soil management increased by 13.3% between 2013 and 2018.

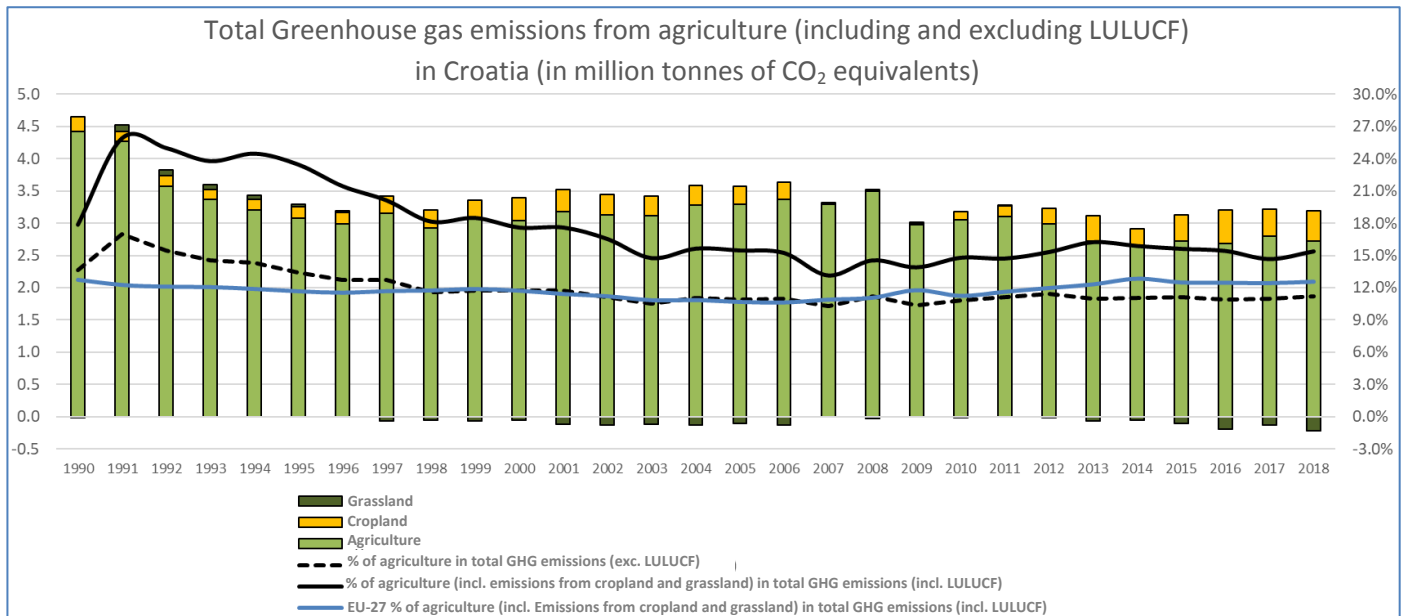
On land use, land use change and forestry (LULUCF), in 2018, forests act as main carbon sinks followed by grasslands (-0.222 million tonnes of CO<sub>2</sub> equivalent) while croplands are a source of emissions (0.47 million tonnes of CO<sub>2</sub> equivalent). Data for 1990–2018 show a worrying trend of decrease in net removals from LULUCF. Trends for 2013–2018 show an increase in cropland emissions of 19% while grasslands sinks increased by more than 230% in the same period.<sup>31</sup> Finally, according to the Greifswald Mire Centre, up to 2% of the total area of Croatia consist of peatlands, but detailed data on carbon rich soils are not available.<sup>32</sup>

The share of agriculture in the production of total renewable energy in Croatia is very low (2.7%), significantly below the EU-27 average (12.1%). Conversely, almost two thirds of renewable energy production comes from the forestry sector (62.6%) which is significantly above the EU-27 average (41.4%).<sup>33</sup> Energy consumption in Croatian agriculture and forestry accounts for 3.2% of the total final energy consumption, which is the same as the EU-27 average (3.2%). Between 2009 and 2015 there was an overall decline in the number of kg of oil equivalent use per ha of the utilised agricultural area and forest area in the EU-28 (-2.5 kg of oil equivalent per hectare). In the same period, Croatia registered a decrease of 9.1 of kg of oil equivalent per hectare and a 3% reduction of the direct use of energy in food industry.<sup>34</sup>

The National Strategy for Adaptation to Climate Change by 2040 acknowledges the high vulnerability of agriculture and forests to climate change. As for the rest of the Southern climate region, there is an increased risk of drought and soil erosion and a related risk of decrease in water availability and crop yields. The Strategy outlines 8 specific adaptation measures for the agricultural sector and 12 for the forestry sector. The measures of very high importance in the agricultural sector include, for instance, increasing the water absorption capacity of agricultural land, appropriate land management techniques (conservation and other reduced tillage techniques), cultivating crops and breeds that are more resilient to climate change, integrating risks stemming from climate change in developing irrigation systems.<sup>35</sup> However, according to the assessment of the Second River Basin Management Plan, Croatia has yet to report a drought management plan.<sup>36</sup> The Integrated National Energy and Climate Plan for 2021-2030 puts strong emphasis on decarbonisation and outlines a comprehensive set of 15 measures in agriculture and 7 for the LULUCF sector.<sup>37</sup> However, the Plan does not indicate priority actions as no budget data are provided.

The current Rural Development Programme promotes climate adaptation and mitigation primarily through agri-environment-climate measures (e.g. preservation of HNV grasslands, better input management) but also non-productive investments and

investments in better manure management.<sup>38</sup> Uptake of these measures has been generally low (although it shows an increasing trend since 2019). 0.5 million ha of agricultural land in Croatia have very high and high irrigation benefit and a national irrigation target has been set at 65 000 ha to be irrigated by 2020. However, the 2009 economic crisis has undermined this objective and 17 currently implemented irrigation projects under HR RDP 2014-2020 will only cover 7 000 ha of agricultural land with additional 11 projects covering 9 300 ha being in the pipeline.<sup>39</sup>



Source: European Environmental Agency. As in EUROSTAT [[env air gge](#)]

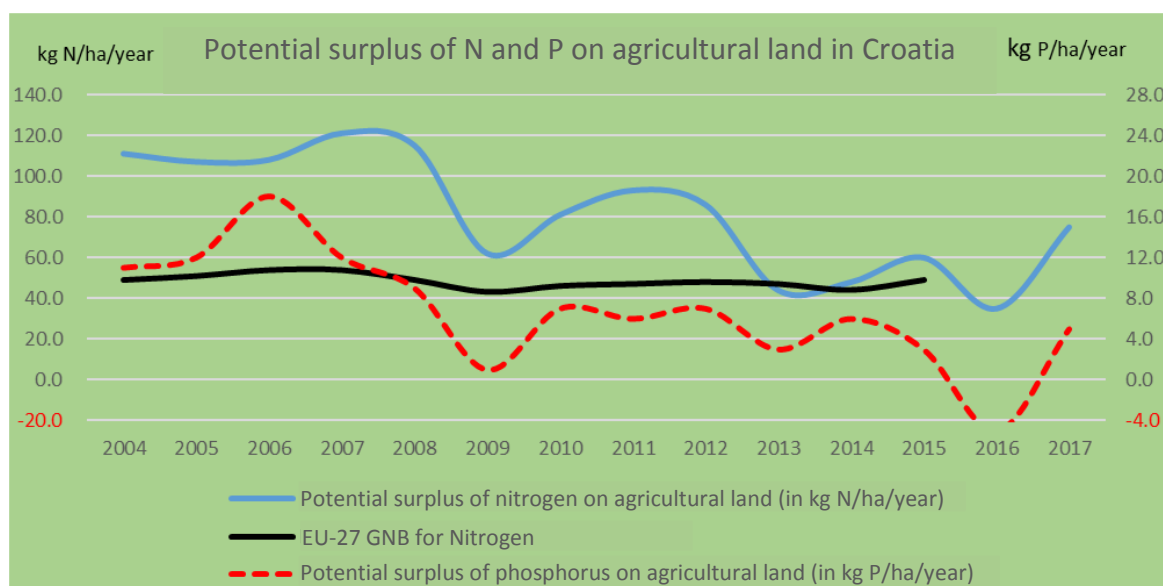
## 2.5 Foster sustainable development and efficient management of natural resources such as water, soil and air

After a substantial decrease in the previous years, which can largely be attributed to a decrease in livestock numbers<sup>40</sup>, ammonia emissions in HR have increased since 2013, broadly in line with the EU trend.<sup>41</sup> This is also the case for NH<sub>3</sub> emissions from agriculture<sup>42</sup>, the share of which in total ammonia emissions is below the EU average. In 2018, ammonia emissions from agriculture made up 81% of total ammonia emissions in HR (EU28: 93%).<sup>43</sup> Linked to this is the fact that, due to a relatively low livestock density<sup>44</sup>, the relative contribution of the livestock sector to ammonia emissions from agriculture in Croatia is considerably lower than the EU average.<sup>45</sup> However, NH<sub>3</sub> emissions from agriculture per hectare in Croatia are close to the EU-average.<sup>46</sup> Current NH<sub>3</sub> emissions in Croatia are below its NECD (National Emission Ceiling Directive) ammonia emission reduction commitment for 2020-29 and, according to its own projections, Croatia will be able to meet the 2030 reduction commitment<sup>47</sup>. However, reviews of the National Air Pollution Control Programme (NAPCP) and air pollutant emission projection commissioned by the European Commission have found a medium risk of non-compliance with Croatia's ammonia (NH<sub>3</sub>) emission reduction commitments for the period 2020-2029 as well as for 2030 and beyond.<sup>48</sup>

Due to its location in the centre of the Mediterranean region, Croatia has a high risk of soil erosion. Certain land uses and types of agricultural practices further exacerbate soil erosion pressures.<sup>49</sup> Conventional tillage practices are very widespread<sup>50</sup> and soil is often left bare during winter<sup>51</sup>. The share of the estimated agricultural area affected by severe erosion due to water (>11t/ha/yr) in Croatia is similar to the EU average.<sup>52</sup> The estimated

rate of soil loss by water erosion is higher than the EU average<sup>53</sup>, with higher rates in the south of the country. Research conducted in Eastern Croatia (Osijek-Baranja County) indicates low levels of soil organic matter.<sup>54</sup> In 2018, over 6% of agricultural land in Croatia was under contracts to improve soil management.<sup>55</sup> In the future, these soil management issues can be addressed in synergy with activities under the Horizon Europe mission on Soil Health.

Croatia is rich in renewable water sources, although they are spatially and temporary unequally distributed. The quality of groundwater is generally considered good throughout the country, but Croatia has a relatively high proportion of eutrophic or hypertrophic rivers and lakes<sup>56</sup>. Diffuse pollution from agriculture is the most significant pressure on surface- and groundwater bodies, especially in the continental part of the country belonging to the Danube River Basin. Nutrient pollution is the most significant impact on surface water bodies (43% of surface water bodies affected) and on groundwater (6%).<sup>57</sup> With 1.9% (~29 700 ha), the share of irrigable<sup>58</sup> agricultural area in HR is relatively small<sup>59</sup>, and irrigation accounts only for 1.2% of all water abstractions<sup>60</sup>. Croatia has reduced its total consumption of nitrogen- and phosphorus based fertilisers significantly since 2008.<sup>61</sup> Likewise, there is a positive long-term trend in the reduction of its gross nutrient balance.<sup>62</sup> However, it should be emphasised that those developments occurred simultaneously with a severe decrease of agricultural production (in particular livestock<sup>63</sup>). Moreover, nitrogen usage efficiency is still quite low, although there is also a positive trend<sup>64</sup> and Croatia still has one of the highest phosphorus surpluses (> 5 kg/ha) in the EU (together with Belgium, Cyprus, Denmark, and Malta)<sup>65</sup>. In 2018, over 6% of agricultural land was under contracts to improve water management.<sup>66</sup>



Source: EUROSTAT [aei\_pr\_gnb]<sup>67</sup>

## 2.6 Contribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapes

On biodiversity, data on the Farm Bird Index and the Forest Bird Index are collected since 2016 only and cannot be considered reliable indicators of trends yet.<sup>68</sup> Generally, however, Croatia is among the countries with the richest biodiversity in Europe as shown, for instance, by the high diversity of animal and plant species present in different habitats and the number of endemic plant species and subspecies.<sup>69</sup>

The share of agricultural area in Natura 2000 (26%) is the highest in EU-27 and significantly above the EU average (11%).<sup>70</sup> However, the preparation of Natura 2000 management plans is lagging behind, limiting access of Croatian farmers and other potential applicants to several CAP support schemes. In addition, forests account for 45% of the Natura 2000 area in Croatia (EU average 23%).<sup>71</sup> On top of areas covered by the Natura 2000 network, 12% of the land territory benefits from other forms of protection in line with national legislation (national parks, parks of nature).<sup>72</sup> The share of high nature value areas in UAA is high with some territorial variability (61-80% in Eastern Croatia, 81-100% in Adriatic and North-West Croatia).<sup>73</sup>

Data on the conservation status of grassland habitats in 2012 are not available, but, according to Croatia's Prioritised Action Framework (PAF) under the EU Habitats Directive (2013-2018), only 27.59% of grassland habitat types present in Croatia are currently in favourable conservation status; status for 13.79% is unknown, while the rest is in unfavourable conservation status (58.62%).<sup>74</sup> Grasslands in the Natura 2000 network are threatened primarily by abandonment of traditional agricultural activities such as extensive grazing and mowing, *inter alia* due to the depopulation of rural areas, while other agroecosystems, including cropland and extensive agricultural mosaics, are threatened by land consolidation and the intensification of agricultural production.<sup>75</sup> Indeed, according to data on farming intensity for 2013-2016,<sup>76</sup> the percentage of UAA farmed with high input intensity is increasing while the percentage of UAA farmed with low input is decreasing. The threat to grasslands is particularly high in areas where climatic and vegetation/ soil conditions make extensive grazing the only feasible farming system (e.g., karst pastures, coastal areas).<sup>77</sup>

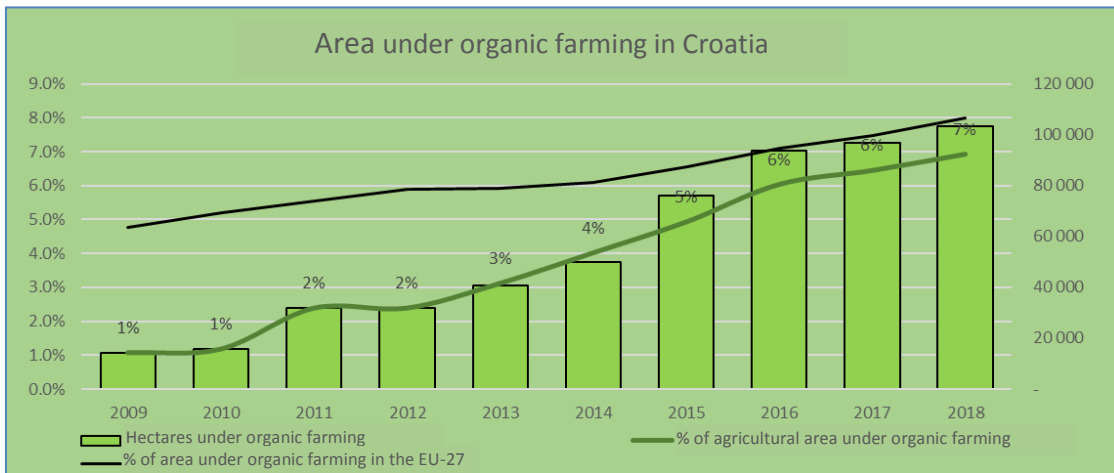
Approximately 1.6% of UAA is covered by landscape features (0.7%) or land laying fallow (1%) (the target set in the Farm to Fork Strategy is 10%).<sup>78</sup>

Croatia recognises forests as an important element of nature and biodiversity protection, placing emphasis on their sustainable management and protection: as mentioned above, 45% of Natura 2000 areas are comprised of forests, 14% of total forest area is considered High Conservation Value Forest and forest owners are obliged to elaborate forest management plans that define all conditions related to maintenance, protection and allowed exploitation.<sup>79</sup> In forest Natura 2000 sites, those forest management plans (since 2019) will serve as Natura 2000 management plans. However, 27% of forest area is degraded due to overgrown vegetation (mainly underbrush/coppice) and 300km<sup>2</sup> are still mined (or mine-suspect) and consequently not maintained nor used.<sup>80</sup>

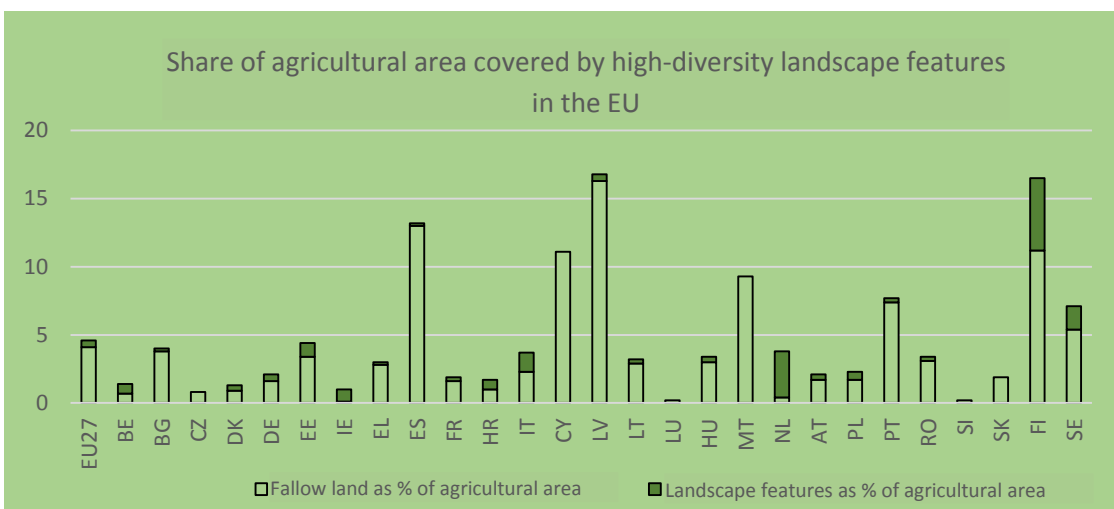
The area under organic production has increased steadily since 2012 and more than doubled in absolute terms. The current share of UAA farmed organically is 6.5%,<sup>81</sup> very close to the EU average of 8% but well below the Farm to Fork target of 25%. The share of UAA under conversion to organic farming decreased in recent years<sup>82</sup>. More than 90% of organic area receives CAP support. However, farmers' choices of converting to organic farming seem to be strongly driven by the level of support (and less by the market demand) for certain types of crops (e.g. hazelnuts, walnuts, pastures).<sup>83</sup>

The current RDP includes measures supporting biodiversity and/ or landscape features but uptake has been generally low and only 6% of land is under contracts for protecting biodiversity and/or landscape features, well below the EU average of 15%.<sup>84</sup> The RDP offered also financing opportunities for the restoration of damaged forests, but budgets remain unspent mainly due to property-legal relations regarding the ownership of private forests, slow-paced association of private forest owners, as well as insufficient activity and promotion from the competent authorities.<sup>85</sup>





Source: EUROSTAT [[org\\_cropar\\_h1](#)] and [[org\\_cropar](#)]<sup>86</sup>



Source: Directorate General for Agriculture and Rural Development. Based on EUROSTAT for land laying fallow and Joint Research Center based on LUCAS survey for estimation of landscape elements. \* *Linear elements considered here: Grass margins, shrub margins, single trees bushes, lines of trees, hedges and ditches. This estimation is to be taken with caution because of methodological caveats.*

## 2.7 Attract young farmers and facilitate business development in rural areas

In 2016, the share of young farmers (YFs) in Croatia was 5.1% (equal the EU average) which represents 6 890 farms (+17% as compared to 2007)<sup>87</sup>. For every Croatian farm manager younger than 35 years, there were nearly seven between 35-54 years old and 12 older than 55<sup>88</sup>. In 2016, 15% of YF holders in Croatia were women, while the proportion of women holding farms in total in Croatia was 26%, almost at the level of the EU average (28%)<sup>89</sup>. The ratio of young managers < 35 to elderly > = 55 has shown a constant increase over the period 2010-2016 (from 7.0% to 8.47%)<sup>90</sup>.

YFs in Croatia have bigger (number of ha) and more viable (in terms of Standard Output (SO)) farms than older categories<sup>91</sup>. In 2016 one YF in Croatia used on average 19.6 ha of agricultural land (+18.1% compared to 2010), had 13.5 livestock units (+15.2%) and generated an average economic output of EUR 33 422 (+25.4%) for which 1.6 annual work units applied (+2.2%)<sup>92</sup>. Nevertheless, between 2010-2016 the number of economically self-sufficient farms managed by YFs dropped from 3 030 to 1 980 (-34.7%)<sup>93</sup> which points to the need for their further growth, involvement in alternative and value added farming activities, specialization and innovativeness so as to remain

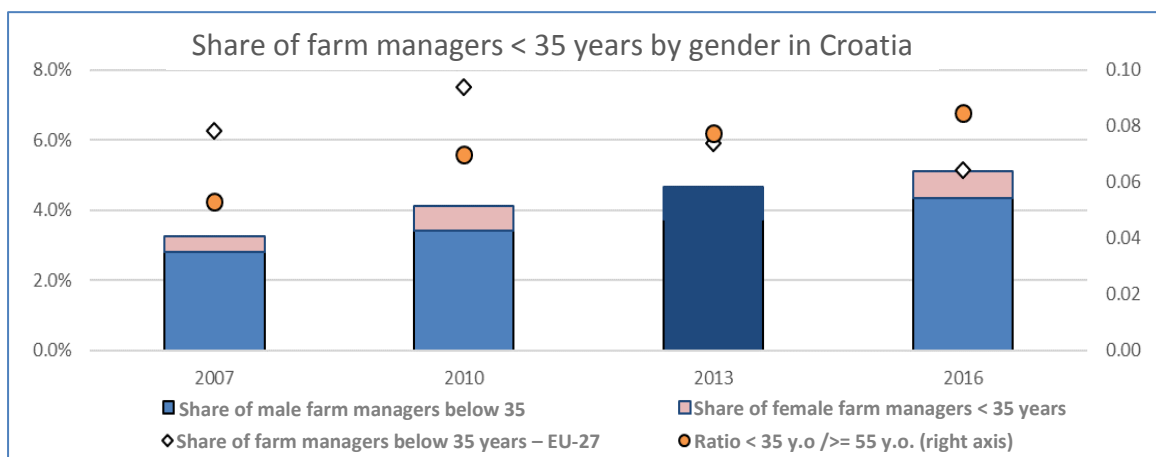
competitive on local, European and world markets. While only 1.2% of Croatian YFs produce a SO of more than EUR 250 000, 47% of them have SO of up to EUR 8 000<sup>94</sup>, which points at low value farming cultures, limited market connectivity and the part-time character of their farming activity.

The share of farm managers below 35 years of age with at least a basic level of agricultural training (27%) is higher than that share among total farm managers in Croatia (10%) in 2016<sup>95</sup>. Simultaneously, the share of Croatian YFs with high vocational education (BSc, MSc, PhD) remains 52% below the EU-average.<sup>96</sup> YFs are more likely than older ones to invest in and produce high quality, safe and non-traditional food, to create alternative agri-food networks (e.g. local certification schemes) and innovative business models (e.g. environment friendly schemes) as well as deliver the large range of public goods that society demands. To increase their participation in the above initiatives, the Croatian YFs need to be properly accompanied by a sufficient number of trainers and advisors from both public and private sectors. It is doubtful if the current system of 230 public advisors working in 117 county offices<sup>97</sup> will be sufficient to cover all sectors and initiatives (see also 2.10). In particular, the Croatian YFs underline a need for support in the application of practical knowledge with clear visual training and aids on technological processes<sup>98</sup>.

33% of agricultural land is state-owned<sup>99</sup>, and its disposal under the responsibility of local self-governments remains slow and could be further improved<sup>100</sup>, despite certain preferences provided to YF during the tendering process. Other challenges pointed out by Croatian YFs are: availability of subsidies, difficult access to credit, advice of extension services<sup>101</sup> as well as the improvement of the business environment for producers and agribusiness SMEs.<sup>102</sup>

The above-mentioned shortages of financing to Croatian YF are confirmed by the current implementation of the RDP 2014-2020 where the financial uptake under FA2B 'Generational renewal' remains second highest in the HR Programme (76% vs. 56% of the HR RDP average) and compared to other MS (76% vs. 56% of the EU average for FA 2B). As for the young farmer payment under Pillar I, Croatia in 2018 granted EUR 5.49 million, nearly the total 2% of direct payments available for this schemes; 10 299 farmers benefit from this scheme, which represent 10.3% of the total number of beneficiaries in 2018 (vs 7.5% at EU level).

The financing gap for YFs is estimated between EUR 413 and 514 million<sup>103</sup>. Commercial banks still perceive the agricultural sector as too risky thus YF running smaller, part-time farms do not have sufficient access to capital for lack of ownership, proper cadaster titles and insufficient collateral or guarantees. Croatian farms, including those managed by YFs, lack inclusion into higher-level organizational forms and other types of cooperation. Only 17 producer organizations are currently registered in Croatia<sup>104</sup> and their linkages to markets are limited.



Source: EUROSTAT [[ef\\_m\\_farmang](#)]

## 2.8 Promote employment, growth, social inclusion and local development in rural areas, including bio-economy and sustainable forestry

Predominantly rural areas represent 63% of total HR territory, a higher share than the EU27 average (45%).<sup>105</sup> With 43%, the share of the population living in rural areas is also higher than the EU27 average (21%).<sup>106</sup> Croatia's population has been shrinking since 1991, due to a negative natural rate and emigration flows; rural areas are particularly affected by this trend (between 2005 and 2019, the population in rural areas decreased from 1.9 million to 1.74 million).<sup>107</sup> Following the general EU development, Croatia's population is also getting older, in general as well as in rural areas.

Despite a positive trend, with 59%, Croatia still has one of the lowest employment rates for rural areas in the EU (EU27: 68%). It is also lower than the total employment rate for Croatia (62%).<sup>108</sup> The gender gap in total employment rate corresponds to the gap at EU27 level.<sup>109</sup> Although Croatia still has one of the highest shares of precarious employment in the EU, this share has been gradually decreasing since 2016, reaching 5.8% in 2019.<sup>110</sup> There has also been a positive trend in youth unemployment rates, which have decreased significantly in recent years and are now close to the EU27 average, but it remains an issue, especially in rural areas, where it is generally more pronounced.<sup>111</sup>

Total GDP per capita as well as the GDP per capita in rural areas are below the EU average and per capita GDP in rural areas is significantly smaller than the total GDP per capita.<sup>112</sup> Since 2015, GDP growth rates have been above the EU average. However, in 2018, Croatia's GDP per capita relative to the EU average was still at the same level as ten years before due to high negative growth rates in earlier years.<sup>113</sup> While the relative economic importance of agriculture has been decreasing in recent years, tourism is gaining importance as a key sector of the economy accounting for almost 20% of the GDP – the Adriatic coast is the third most popular tourism destination among EU regions.<sup>114</sup> Between 2010 and 2018, bed places in Croatia have increased by 40%, and 68% of bed places are located in rural areas (EU27: 45%).<sup>115</sup>

The contribution of the primary sector to the gross value added in Croatian rural regions (7.9%) is higher than the EU average (4.2%) and higher than in intermediate (4.3%) and urban regions (0.3%).<sup>116</sup> The primary sector's share in the employment of rural areas was at 13.26% in 2016, above the EU average of 12.68%.<sup>117</sup>

The share of population at risk of poverty or social exclusion (poverty rate) in rural areas in Croatia decreased from 38.8% in 2010 to 30.9% in 2018, but it is still above the EU27 average (23.6%).<sup>118</sup> The situation is particularly serious in the east and the southeast regions of the country – mainly along the border with Bosnia and Herzegovina and Serbia.<sup>119</sup> The total poverty rate in HR (24.8%) is below the poverty rate in rural areas.<sup>120</sup>

Croatian rural areas are characterised by underdeveloped technical and social infrastructure, which has contributed to depopulation and a lack of interest from young families to live and work there. Despite substantial investments from European Structural and Investment Funds (ESIF) amounting to approximately EUR 2 billion in the 2014-2020 period, the investment gap remains big as Croatia is still substantially below EU average in terms of waste recycling, sewage systems, water supply networks and kindergartens.

There are currently 68 Local Action Groups (LAGs) implementing Community Led Local Development (CLLD/LEADER) strategies in Croatia.<sup>121</sup> In the 2014-2020 period, LEADER was used to deliver standard measures of Croatia's Rural Development Programme under the control of the Paying Agency, leaving little scope for LAGs to design their own bottom-up and place-based responses to local problems. The financial situation of LAGs remains vulnerable as obtaining banking guarantees from commercial banks, required for payment of advances for the running costs and animation, is challenging.

Croatia has approximately 2.5 million ha of forests and other wooded land, corresponding to 45.7% of its land area (EU27: 45.1%).<sup>122</sup> 76% of forest area is state owned.<sup>123</sup> 13 800 persons worked in the forestry and logging sector in 2017. With EUR 14 100 gross value added per person employed, the apparent labour productivity of the sector is below the EU27 average (EUR 54 200). The same applies for the economic productivity of forestry activities in HR.<sup>124</sup> At the same time, and somewhat surprisingly, Croatia has one of the highest ratios of gross fixed capital formation to value added in the EU (15.4%), indicating a relatively high level of investment.<sup>125</sup>

In 2017, the bio-economy in Croatia had a total turnover of EUR 11 000 million, with a turnover per person of EUR 52 000 (EU27: EUR 127 000), and employed 216 800 people. Agriculture and the manufacturing of food, beverage and tobacco are the dominant sectors of the Croatian bio-economy, despite negative growth rates in terms of employment and turnover between 2008 and 2017 in the agricultural sector in particular.<sup>126</sup> Due to its endowments of biomass resources, Croatia has one of the greatest potentials for development of the bio-economy in the EU representing an opportunity for green development of rural areas and new economic opportunities for farmers. However, between 2010 and 2013, the agricultural value added in Croatia (as well as in Bulgaria, Slovenia and Ireland) went down along with increasing production-based land footprint.<sup>127</sup>

## **2.9 Improve the response of EU agriculture to societal demands on food and health, including safe, nutritious and sustainable food, as well as animal welfare.**

Pesticide sales in Croatia increased between 2013 and 2015, but dropped below 2013-level in 2016 and 2017 mainly due to a decrease in sales of fungicide and bactericides (Figure 2)<sup>128</sup>. A slight increase was recorded again in 2018 compared to 2017<sup>129</sup>, but the use of plant protection products per hectare in Croatia remained below the EU average. The total quantity sold annually is about 2 000 000 kg<sup>130</sup>. The Harmonized risk indicator

(HRI) 1 shows a 38% decline from 2011 to 2018 compared to a 20% decrease at EU level, and a significant increase in sales of low risk active substances (Group 1, category B) placed on market in 2016.<sup>131</sup> HRI 2 shows an increase in the authorizations granted especially in year 2017<sup>132</sup> although in the period 2011-2018 there is a decrease of 14%, compared to a 50% increase at EU level.

The use of pesticides in Croatia in the period between 2012 and 2017 was on average about 2 million kg/ year of active substances, with the exception of 2016 and 2017 when the use was lower by 20-30%. On average, 2 kg of various active substances of pesticides were applied per ha (herbicides 46.8%; fungicides 50.2%; zoocides 3.0%) in 2012 while, in 2017 it was reduced to 1.43 kg<sup>133</sup>.

The letter of the Commissioner for Health and Food Safety addressed to Croatia's Minister of Agriculture on the occasion of the adoption of the Farm to Fork strategy highlights that Croatia has not reported to the Commission any substantial changes to their first National action plan under the Directive 2009/128/EC on the sustainable use of pesticides, and has not provided a revised National action plan. All pesticide application equipment in use, including sprayers and other specific items, need to be inspected. Additional measures are needed to promote low pesticide-input pest management and the implementation of Integrated Pest Management general principles is an obligation for all professional pesticide users; the control authorities need to verify this during official controls at farm level.<sup>134</sup>

The sale of veterinary antimicrobial agents shows a steady decrease between 2014 and 2018 (see figure below)<sup>135</sup>. With 66.8 mg/PCU, Croatia is well below the EU average (118 mg/PCU). The Member States should maintain this downward trend in line with the Green Deal target for a 50% reduction in the sales of antimicrobials for farmed animals and in aquaculture by 2030 at EU level.

Croatia has indicated that as of 2022 they intend to establish an extensive educational program on the problem of antimicrobial resistance and alternative solutions.<sup>136</sup>

For the period, 2014-2020 Croatia has included in the Rural Development Program an "Animal welfare" measure (Measure 14), the implementation of which began in May 2018.<sup>137</sup>

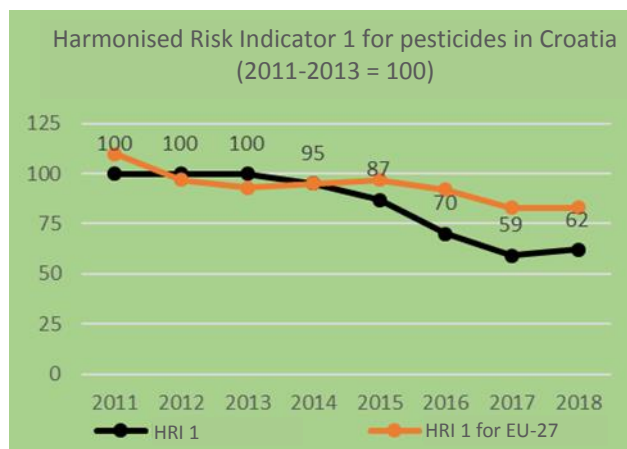
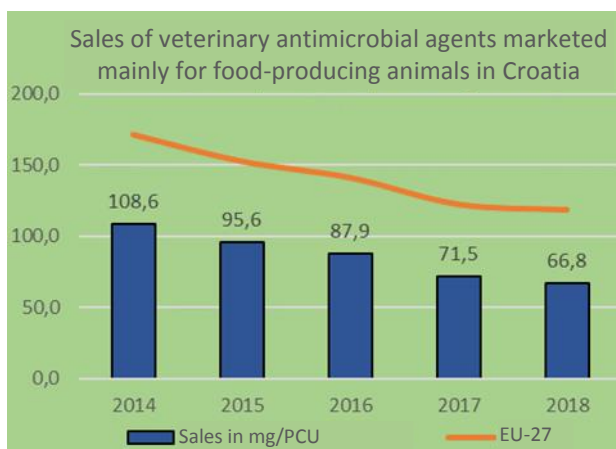
In relation to animal welfare, the main issue in Croatia, as presented in the above-mentioned letter from the Commissioner for Health and Food Safety is the routine practice of tail docking of pigs even though it is prohibited as a routine measure by EU rules. The percentage of pigs reared with intact tails has barely changed since 2016. Secondly, in a recent DG SANTE audit report, the approval and inspection of livestock vessels does not guarantee the compliance of the ship with the requirements in Regulation 1/2005 and therefore does not adequately minimise the risks for the welfare of the animals as reported in details in 2018 audit report.<sup>138</sup>

In terms of farm biosecurity, African swine fever is not present in Croatia but there is an increased risk, hence the need for the prevention of further spread from across the border. Croatia is also among the countries that need to upgrade farm biosecurity and to revise and upgrade registration of certain farms, animal identification and animal movements.

There is no official data on the amount of food waste but estimates only.<sup>139</sup> In the Croatian Waste Prevention Plan<sup>140</sup> not enough attention is given to food loss and waste at early stages of the supply chain (including lack of data). According to the data of the Tax

Authority, the amount of the purchase value of donated food during 2019 amounts to approximately EUR 1.7 million, which is an increase of 30% compared to the data for the previous year. Quantities of donated food have generally been on the rise since 2016, when data monitoring began. There is an incentive for public use donation by assuring a tax relief for such donations.

The challenge of stimulating the shift to healthy and sustainable food consumption is a common EU challenge, considering its health and environmental impacts. The estimated average prevalence of overweight adults in the EU is around 52%. In addition, more than one-third (36.9%) of the EU population is pre-obese with a further 14.9% being obese. For Croatia, the overweight rates reported currently stand at 57.4%. Regarding obesity, the number stands at 18.7%. Men are significantly more affected than women, 20.8% of them are overweight compared to 16.8% of women<sup>141</sup>. Furthermore, the same tendency can be seen in children too, a total of 31% of girls and 38.7% of boys in Croatia are overweight and obese<sup>142</sup>. According to the European Strategy for the Control and Prevention of Chronic Non-Communicable Diseases, overweight and obesity are risk factors for the development of chronic non-communicable diseases. Croatia has a very high burden from non-communicable diseases due to dietary risk factors expressed as Disability-Adjusted Life Years (DALYs) per 100 000 population attributable to diet<sup>143</sup>. . Therefore, efforts should focus on shifting towards healthy sustainable diets, in line with national recommendations, in order to contribute to reducing rates of overweight, obesity and the incidence of non-communicable diseases while simultaneously improving the overall environmental impact of the food system. This would include moving to a more plant based diet with less red meat and more fruits and vegetables, whole grains, legumes, nuts and seeds.



Source: DG AGRI after ESVAC, Tenth ESVAC Report (2020)<sup>144</sup> Source: EUROSTAT [[SDG\\_02\\_51](#)]

## 2.10 Cross-cutting objective on knowledge, innovation and digitalisation

The Croatian agricultural knowledge and innovation system (AKIS) is moderately diverse and strongly influenced by publicly funded bodies. The Croatian Advisory Service in Agriculture and Forestry, the central element of the AKIS integrated into the Ministry of Agriculture, is composed of 230 public advisors working in the 117 county offices<sup>145</sup>, i.e. on average one advisor per 585 farms.<sup>146</sup> Such a ratio raises doubts on the capacity of public advisors to provide an effective service, particularly in light of the increased responsibilities envisaged under the future CAP. Despite the existence of numerous public and private bodies that are very experienced in educational, research or advisory services, their cooperation is very limited or non-existent.<sup>147</sup> The least developed elements of the AKIS are NGOs and farming organisations.<sup>148</sup> The Croatian

AKIS suffers from a lack of public support to innovation, limited dissemination of knowledge among elements of the AKIS, limited cooperation of key stakeholders with industry (producers), and a lack of diversification of funding for advisory services.

Between 2005 and 2013, the share of Croatian farmers with basic or full agricultural training increased by a few percentage points, but in 2013 a vast majority of farmers still only have practical experience (61.6% of farmers below 35 years of age and 76.2% of farmers above 55 years of age).<sup>149</sup>

Under the 2014-2020 RDP, the initial financial allocation for knowledge transfer, advisory services and cooperation-European Innovation Partnerships (EIP) was 1.8% of the total envelope, well below the EU average of 3.6%. This ratio dropped to 1.05% due to successive budgetary cuts. Cuts were particularly steep (57%) for advisory services, pointing to a likely under-staffing of the public advisory service and limitations stemming from restricting access of private advisors to RD funding for advisory services. Nonetheless, 2 945 training sessions for 51 945 participants and 100 categories of advice for 7 355 farmers were organized<sup>150</sup>. In the opinion of Croatian young farmers participating in numerous exchange schemes, the level of practical knowledge and aid on technological processes was insufficient<sup>151</sup>. However, recent online surveys among beneficiaries of advisory services indicate a more positive impact.<sup>152</sup> In 2019, Croatia submitted a proposal for an amendment of their RDP 2014-2020 to invite external experts to bring their professional knowledge under knowledge transfer/ advisory schemes measures.<sup>153</sup> In addition, 41 various training sessions aimed at advisors were organised under the RDP for 1 187 participants (all of them employees of the public advisory service).<sup>154</sup>

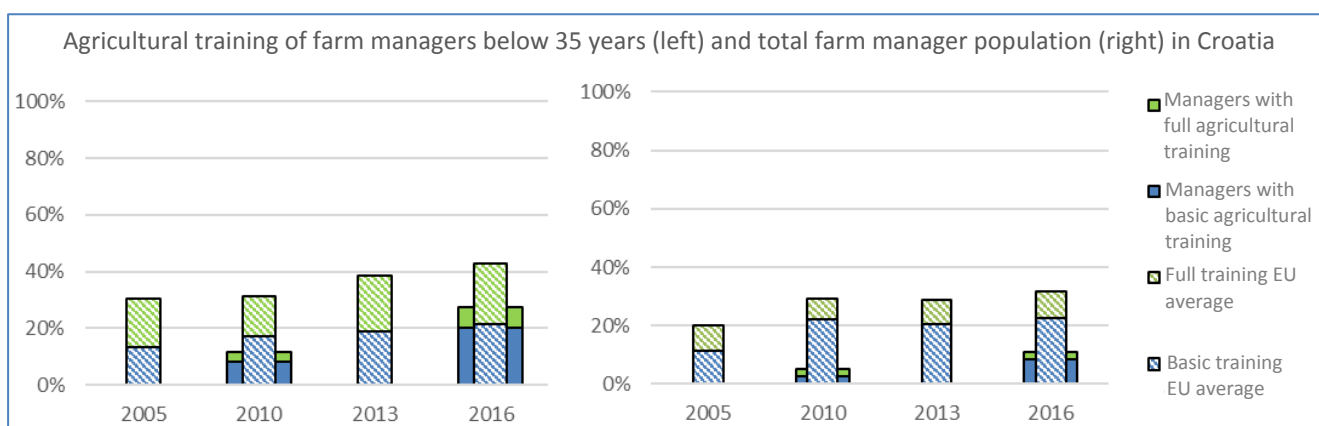
Cooperation between universities and research institutes and public advisory services has not yet started or there is no information on whether their research findings have been shared with other stakeholders or have been disseminated in a systematic way<sup>155</sup>. For example, since 2016 the Faculty of Zagreb has been involved in applied research projects, however, no information on dissemination of results exist. There is also little information about networking activities organised at the national level or the existence of tools such as knowledge platforms to connect research actors (such as universities and partners of Horizon 2020 consortia) with farmers, advisors, and rural businesses, and facilitate the implementation of up-to-date research findings and innovations.

The implementation of innovative projects is now being transferred to the EIP Operational Groups (OGs) financed under the RDP. However, the originally planned number of 33 EIP OGs has decreased to 20 and at the end of 2019, only 21 project proposals from EIP OGs were approved for a total amount of EUR 105 000 (i.e. 1% of allocated budget).

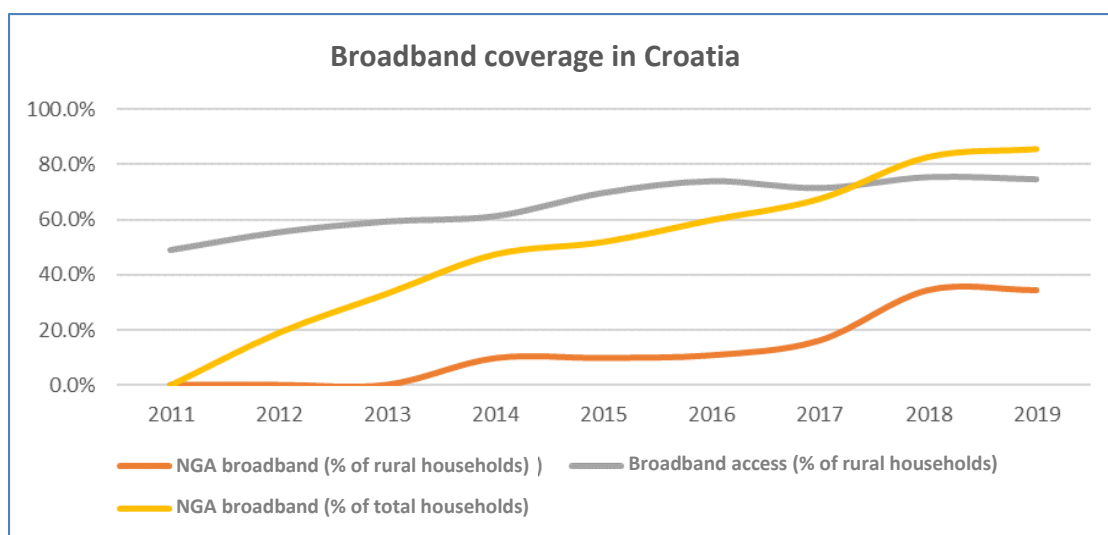
On digitalisation, Croatia ranks 20th amongst EU Member States in the Digital Economy and Society Index (DESI) 2020<sup>156</sup>. Connectivity and digital public services are the two DESI areas with the weakest performance.<sup>157</sup> Take-up of ultrafast broadband is very low (6%, compared to an EU average of 26%) and Croatia has not yet assigned any 5G spectrum. About 70% of households have fixed broadband take-up.<sup>158</sup> While high-speed internet access for households is not widespread in Croatia in general, the situation in rural areas is worse: 34.5% of rural households in HR had access to fast broadband in 2019, compared to 85.6% of total households. 25.5% of all rural households have no broadband access.<sup>159</sup> This urban - rural digital divide remains a challenge, which, if not mitigated, may lead to digital and social exclusion as well as present an obstacle in developing rural businesses. While taking up broadband in rural areas, it will be

important to ensure synergies with other EU and national funds. Access to digital platforms is becoming increasingly important in counteracting the depopulation of rural and remote areas. The expansion of e-commerce in rural areas supports the promotion of short supply chains and local agricultural products, and may help to increase farmers' income. A good example is the recently set up digital marketplace platform (trznica.hr) that enables consumers to find products produced locally; currently around 900 agricultural producers across 11 product categories are benefiting from this free-of-charge platform.

Nevertheless, numerous challenges still need to be addressed to reap the benefits of digital technology and exploit at national level the EU's technological lead in satellite technology such as wider use of precision farming or better monitoring and optimisation of agricultural production processes (see also section 2.2).



Source: EUROSTAT [[ef mp training](#)]<sup>160</sup>



Source: DESI report<sup>161</sup>



- <sup>1</sup> Management plans are not an automatic requirement under the Habitats Directive (cf. Art. 6(1) of Council Directive 92/43/EEC), although they seem to be a preferred option for most Member States and are considered obligatory in many of them. See also *Commission Note on Establishing Conservation Measures for Natura 2000 Sites*, accessible online here: [https://ec.europa.eu/environment/nature/natura2000/management/docs/commission\\_note/comNote%20conservation%20measures\\_EN.pdf](https://ec.europa.eu/environment/nature/natura2000/management/docs/commission_note/comNote%20conservation%20measures_EN.pdf)
- <sup>2</sup> European Commission. *Common Agriculture Policy context indicator C.26 Agricultural entrepreneurial income*. Income based on EUROSTAT [aact\_eaa04], [aact\_ali01] and [aact\_eaa06], adding back the compensation of employees to the entrepreneurial income and divided by the total number of annual working units. Note: 2019 data estimated. The Average wage in the economy based on EUROSTAT [nama\_10\_a10\_e] thousand hours worked using employees' domestic concept and [nama\_10\_a10], item wages and salaries.
- <sup>3</sup> European Commission. *CAP context indicator C.25 Agricultural factor income*. Based on EUROSTAT [aact\_eaa04], [aact\_ali01] and [aact\_eaa06]
- <sup>4</sup> Directorate General for Agriculture and Rural Development own calculations based on FADN data
- <sup>5</sup> Farm Accountancy Data Network (FADN). *FADN Standard reports*. [YEAR.COUNTRY.TF14](#) and own calculations
- <sup>6</sup> Directorate General for Agriculture and Rural Development own calculations based on FADN data (up to 2018) and CATS data (up to 2018).
- <sup>7</sup> EUROSTAT. [ef\_m\_farmang]
- <sup>8</sup> Ecorys and Wageningen Economic Research, *Study on risk management in EU agriculture*, 2017, p. 141, available online here: <https://op.europa.eu/en/publication-detail/-/publication/5a935010-af78-11e8-99ee-01aa75ed71a1>
- <sup>9</sup> World Bank, *Strateška transformacija poljoprivrede i ruralnog prostora (STARS RAS)*, 2020, available online here: <https://poljoprivreda2020.hr/wp-content/uploads/2020/06/Financiranje-i-upravljanje-rizikom-u-hrvatskoj-poljoprivredi.pdf>
- <sup>10</sup> Directorate General for Agriculture and Rural Development. *CAP context indicators C.25 Agricultural factor income and CAP context indicator C.26 Agricultural entrepreneurial income*. Income based on EUROSTAT [aact\_eaa04], [aact\_ali01] and [aact\_eaa06], adding back the compensation of employees to the entrepreneurial income and divided by the total number of annual working units. Note: 2019 data estimated. The Average wage in the economy based on EUROSTAT [nama\_10\_a10\_e] thousand hours worked using employees domestic concept and [nama\_10\_a10], item wages and salaries.
- <sup>11</sup> EUROSTAT. [aact\_eaa01]
- <sup>12</sup> fi-compass, *Financial needs in the agriculture and agri-food sectors in Croatia*, Study report 2020, available online here: [https://www.fi-compass.eu/sites/default/files/publications/financial\\_needs\\_agriculture\\_agrifood\\_sectors\\_Croatia.pdf](https://www.fi-compass.eu/sites/default/files/publications/financial_needs_agriculture_agrifood_sectors_Croatia.pdf)
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- <sup>14</sup> World Bank, *Sector Diagnostic and Analysis of Public Spending in Agriculture and Rural development*, May 2019
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- <sup>20</sup> Ministry of Agriculture of the Republic of Croatia (2020)
- <sup>21</sup> European Commission. *CAP context indicator C.27 Total factor productivity*. Based on EUROSTAT [aact\_eaa05], [aact\_eaa04], [aact\_ali01], [apro\_cpsh1] and [ef\_mptenure] and FADN
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- <sup>23</sup> Ministry of Agriculture of the Republic of Croatia (2020)
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- 34 European Commission. *CAP context indicator C.44 Energy use in agriculture, forestry and food industry*. Based on EUROSTAT [[nrg bal s](#)]
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- 41 In 2018, total annual NH<sub>3</sub> emissions in HR have dropped by 34% compared to 1990. They increased from 32,260t in 2013 to 35,660t in 2018, whereas in the EU28, they rose from 3,808,000t to 3,852,600t. (European Environment Agency (EEA). *Air pollutant emissions data viewer*. <https://www.eea.europa.eu/data-and-maps/dashboards/air-pollutant-emissions-data-viewer-3>)
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- <sup>110</sup> EUROSTAT. [[lfsa\\_qoe\\_4ax1r2](#).], <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20200511-1>
- <sup>111</sup> In 2019, total youth unemployment rate (age group 15-24) in HR was at 16.6% and at 17.7% in rural areas. Figures for the EU27 were 14.4% and 13%, respectively. European Commission. *CAP context indicator C.07 Unemployment rate*. Based on EUROSTAT [[lfst\\_r\\_lfu3rt](#)]
- <sup>112</sup> In 2018, total GDP per capita and GDP per capita in rural areas were at EUR 19,120.30 (EU27: EUR 30,157.7) and EUR 13,415.67 (EU27: EUR 20,066.95), respectively. (European Commission. *CAP context indicator C.08 GDP per capita*. Based on EUROSTAT. [[nama\\_10r\\_3gdp](#)] and [[nama\\_10r\\_3popgdp](#)])
- <sup>113</sup> EUROSTAT. [[naida\\_10\\_gdp](#)], [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=naida\\_10\\_gdp&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=naida_10_gdp&lang=en), cf. also European Commission. *Commission Staff Working Document Country Report Croatia 2020*. SWD(2020) 510 final, available online here: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020SC0510&from=EN>
- <sup>114</sup> EUROSTAT. “Croatia in the EU” (2020), available online here: <https://ec.europa.eu/eurostat/documents/10186/10362446/Croatia+in+the+EU-EN+.pdf>
- <sup>115</sup> European Commission. *CAP context indicator C.30 Tourism infrastructure*. Based on EUROSTAT [[tour\\_cap\\_nuts2d](#)]
- <sup>116</sup> European Commission. *CAP context indicator C.10 Structure of the economy*. Based on EUROSTAT [[nama\\_10r\\_3gva](#)]
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- <sup>118</sup> European Commission. *CAP context indicator C.09 Poverty rate*. Based on EUROSTAT [[ilc\\_peps11](#)]
- <sup>119</sup> OECD. *OECD Investment Policy Reviews: Croatia 2019*, p. 18, available online here: <https://www.oecd-ilibrary.org/docserver/2bf079ba-en.pdf?expires=1598448551&id=id&accname=oid031827&checksum=A022283FD8F4E3FB6196DC631987CB5>
- <sup>120</sup> European Commission. *CAP context indicator C.09 Poverty rate*. Based on EUROSTAT [[ilc\\_peps11](#)]
- <sup>121</sup> 54 of those LAGs are funded by the European Agricultural Fund for Rural Development (EAFRD), 14 by the European Maritime and Fisheries Fund (EMFF). Cf. ENRD LAG database, available online

- here: [https://enrd.ec.europa.eu/leader-clld/lag-database/en?f%5B0%5D=im field enrd lag country%3A19211](https://enrd.ec.europa.eu/leader-clld/lag-database/en?f%5B0%5D=im+field+enrd+lag+country%3A19211)
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