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Commission recommendations for Malta's CAP strategic plan

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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 MALTA'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 Malta. The recommendations are based on analysis of the state of play, the needs and the priorities for agriculture and rural areas in Malta. 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 Malta, in its CAP Strategic Plan, to set explicit national values for the Green Deal targets¹, taking into account its specific situation and these recommendations.

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

The Maltese agricultural sector is characterised by small and micro farm holdings with fragmented parcels, making it difficult to achieve economies of scale and be competitive on the international market. Furthermore, Malta's island characteristics, limited agricultural land and lack of natural resources, make Malta dependent on imports from other countries (especially for feed), which further increases production costs. Downward trends in agricultural income per worker and in the productivity of the agricultural sector after joining the European Union in 2004 show how difficult it is for Maltese farmers to compete on the international market. Moreover, cooperation in Malta's agricultural sector is poor, with a significantly low share of value added going to the farming sector. In addition, in order to foster the resilience of agriculture (e.g. against extreme weather events linked to climate change), Malta should rely on risk management tools and try to solve the specific issues that prevented it from activating these tools in the last programming period.

Rather than competing based on price, Malta's farm sector should focus more on adding value to agricultural products and orientate towards producing for niche markets. In this way, it would be able to charge premium prices for its products and become a more sustainable sector. The use of EU quality labels, like protected designation of origin and protected geographical indications, can help Malta to improve the marketing and branding of its products and eventually increase its farming income. To reduce Malta's import dependence on fodder for livestock production, the sector should explore growing protein and fodder crops for animal feed; this would also reduce production costs.

Collaboration among farmers should be stimulated to improve knowledge sharing, reduce production costs and gain more bargaining power by pooling resources and placing products on the market together, in particular for the fruit and vegetables sector. Promoting knowledge exchange, advisory services, innovation and education is vital to moving the sector towards more cooperation on value added production and increasing the sector's efficiency and productivity.

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

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

Malta's agricultural sector has high emissions of greenhouse gases (GHG) per hectare, mainly coming from livestock. The country should focus on measures and investment to decrease methane emissions from enteric fermentation and manure, in line with the methane strategy. The land use, land-use change and forestry (LULUCF) sector emits more carbon dioxide than it absorbs, making Malta one of the few Member States where this sector is a source and not a sink.

The share of ammonia emissions from agriculture is still relatively high and Malta has been found to be at high risk of non-compliance with its ammonia emission reduction commitments. Actions to reverse this situation are planned.

The agriculture sector's energy consumption is relatively high, and continues to increase. Malta has the potential for renewable energy exploitation in rural areas, which would ensure an efficient energy transition.

Malta has a high risk of soil erosion and faces severe water challenges, both in terms of water quantity and water quality. In terms of the Water Framework Directive (WFD), not all of Malta's water bodies are in good status yet and agriculture is identified as the most significant pressure. This situation could be further worsened by decreasing precipitation, increasing risk of droughts and extreme heat. Climate change will further exacerbate these risks, with the agricultural sector being particularly vulnerable to its impacts. Livestock production could also become increasingly difficult, with heat stress on animals and forage crop failure growth. Increased water demand for irrigation may lead to competition with other sectors. In response, targeted investment in more eco-friendly and adaptive systems, as well as less water-intensive farming, should be explored.

Malta's particular situation and its poor soil conditions constitute real obstacles to tackling biodiversity issues and preserving habitats and landscape. Nevertheless, the potential of the agricultural sector to help maintain and improve biodiversity is not fully exploited. Maintenance of landscape features and voluntary schemes, addressing an enhanced management of those elements, could make a contribution in this direction. In addition, Malta's strategic plan could also contribute to the enforcement of the Birds and Habitat Directives by supporting the funding of measures for the management of Natura 2000 sites, as well as measures beneficial to species and habitats that show declining trends. The plan should also take into account the prioritised action framework (PAF) for Malta, which sets the key priorities and financial needs for implementing the Natura 2000 network.

Although forests do not hold any economic significance in Malta, they are still important in terms of environmental and social benefits.

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

The socio-economic fabric of Malta's rural areas is threatened by several factors, including an ageing farming population and a shrinking number of registered female and young farmers. Furthermore, a difficult business environment makes the sector unattractive. In fact, the primary sector contribution to gross value added (GVA) is declining as farm income becomes more irregular. Capital investment in agricultural innovation and digital skills training is severely limited.

The concentration of economic activities, basic services, and quality job opportunities in urban centres results in intensive commuting and creates a territorial imbalance, which has a negative impact on both urban and rural areas, as well as the environment. Although all of Malta is covered by next generation broadband, only 50% of its rural population had basic or above basic digital skills in 2019. Natural areas are threatened by both urban sprawl and climate change. The transition towards green and modern agriculture is an opportunity to respond to the challenge of generational renewal, while diversifying economic activities and investments in this area represents untapped opportunities for Maltese farmers.

Furthermore, Malta should carefully consider the specific needs of women in agriculture and rural areas in order to deliver on gender equality and close the gender gaps in employment, pay, pensions, care and decision making.

In general, ensuring the protection of agricultural workers, especially the precarious, seasonal and undeclared ones, will play a major role in ensuring the respect of rights enshrined in legislation. This is an essential element of the fair EU food system envisaged under the Farm to Fork strategy.

There are clear weaknesses in Malta's ability to ensure that antimicrobials are used in a prudent manner, where monitoring procedures and veterinarians are lacking. Moreover, Malta should make efforts to improve animal welfare and support more sustainable livestock management practices. The use of pesticides decreased by 16 % between 2017 and 2018, but pressures linked to the use of pesticides still exist. Malta's national action plan (NAP) for sustainable use of pesticides was only partially enforced, especially as regards the general principle for integrated pest management and controls on all type of operators.

Furthermore, food waste prevention and recycling practices do not yet appear to be well established in Malta. Dietary habits are shifting away from the Mediterranean diet to favour ready-made meals and sugar-rich processed food, with obesity and overweight levels on the rise among the population, including in children. Malta should make an effort to shift towards healthier, more sustainable diets as it has very high overweight and obesity rates.

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

Tackling the economic, environmental and social challenges outlined in the previous paragraphs is an essential step in the transition towards sustainable food production, which will also require an effort to bring to the field new technologies and innovation.

A well-functioning agricultural knowledge and innovation system (AKIS) should facilitate an efficient flow of knowledge between actors to respond to farmer's growing information needs, for quicker innovation and better valorisation of existing knowledge to achieve the CAP objectives. AKIS covers not only agriculture, but also other rural activities related to the landscape, environment, climate, biodiversity, food and non-food systems.

However, the Maltese AKIS is fragmented and its shortcomings may limit the country's ability to transition towards the greener and more digital agriculture foreseen by the Farm to Fork strategy. Malta programmed 8.2% of its total rural development envelope for knowledge, advice and innovation, but so far, none of the programmed funds has been

spent. Collaboration of researchers and advisors with farmers should be stimulated to improve knowledge exchange and to focus the co-creation of knowledge on farmers' specific needs and challenges.

It is essential to improve links between public and private advisors, and invest in their training and skills. Additionally, advisors should be supported to help capture innovative ideas coming from the grass roots and to develop these ideas by setting up and implementing European innovation partnership (EIP) operational group innovation projects.

1.5 Recommendations

To address the above challenges, the Commission considers that the Maltese CAP strategic plan needs to focus its priorities and concentrate its interventions on the following points, while adequately taking into account the high territorial diversity of the Maltese agriculture and rural areas:

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

- **Improving value added in the agricultural sector** by supporting investments in cost reduction, in quality production – for example through national and EU quality schemes – and in developing niche markets.
- **Enhancing the position of the farmer in the value chain** by supporting increased membership of producer organisations, leading to improved knowledge exchange and co-operation. Improved co-operation should take place between farmers (in particular in the fruit and vegetable sector) but should also involve farmers more in downstream activities.

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

- **Reducing GHG emissions and increase removals of CO₂ to contribute to the EU 2050 climate neutrality objective** by boosting climate change adaptation and mitigation in agriculture and forestry. It can be achieved by: improving the overall carbon farming capacity and reversing the trend in emissions from cropland, supporting the reintroduction of local breeds and crop varieties that are more resilient in drier conditions, promoting afforestation, improving energy efficiency and fostering renewable energy production.
- **Cutting ammonia emissions in agriculture** by supporting low-emission management practices and related investments, including precision farming.
- **Halting and reversing the depletion of natural resources in agriculture** by supporting management practices which reduce water-induced soil erosion, and investments in modern productive systems, enhancing sustainable water management and other practices lowering nutrient losses to water and air.
- **Improving biodiversity on farmland and natural areas** by fostering maintenance and development of high-diversity landscape features and supporting appropriate sustainable management practices – especially within

collective approaches – including (but not limited to) organic farming, in line with the prioritised action framework for CAP funding.

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

- **Enhancing agricultural modernisation and improving farm business development to attract young farmers** by addressing the entry barriers to the sector (i.e. access to land) and incentivizing the use of smart, green and digital technologies.
- **Increasing employment and creation of high-quality jobs in rural areas** by investments in diverse economic activities and in developing basic services.
- **Contributing to the EU Green Deal target on reducing antimicrobial resistance** by putting in place sizeable efforts to significantly reduce the use of antimicrobials in farming, considering that the figures indicate sales of antimicrobials above the EU average. Malta is encouraged to use all available tools, including instruments under the CAP, to support the farmers e.g. by promoting best practices on reduced and prudent use of antimicrobials, together with improved livestock management, biosecurity, infection prevention and control.
- **Improving animal welfare** by supporting, among others, more sustainable livestock management practices.
- **Contributing to the EU Green Deal target on reducing the risk and use of pesticides** by supporting lower use and the use of less hazardous pesticides, via schemes fostering a switch to sustainable farming practices, including integrated pest management practices.

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

- **Supporting and ensure uptake of various AKIS actions**, including integration of advisors (strengthening the link between the farming community, advisors and researchers), promotion of collaboration and learning, ensuring that innovation support services are available to capture grassroots innovative ideas.
- **Training farmers how to access and deploy smart digital technologies and innovation capacities**, supporting the provision of relevant data to increase the effectiveness of digital technologies and productivity and sustainability.

2. ANALYSIS OF AGRICULTURE AND RURAL DEVELOPMENT IN MALTA

Malta is the smallest member of the European Union and the one with the highest population density. Together with scarcity of natural resources and specific territorial constraints, these characteristics have an important impact on the agricultural sector. The country relies on import for many agricultural products. The sector is characterized by small and micro farms with an average size of 1 hectare, with a low degree of competitiveness and productivity. Competitiveness and productivity will be likely hampered also by climate change, which may have important repercussions on natural resources, already scarce.

The urban sprawl and the increase in the population have impacts on the exploitation of natural resources and on the protection of biodiversity and natural landscapes.

Rural areas are closely interlinked with urban ones and counts for 13% of the territory. Within the rural areas different social-economic conditions are present. Next generation broadband cover all the territory.

Against this context CAP funds are pivotal to improve current situation by enhancing the production of quality products, boost farmers income, foster cooperative actions, sustain biodiversity and natural areas protection and adopting advanced farming techniques and technologies.

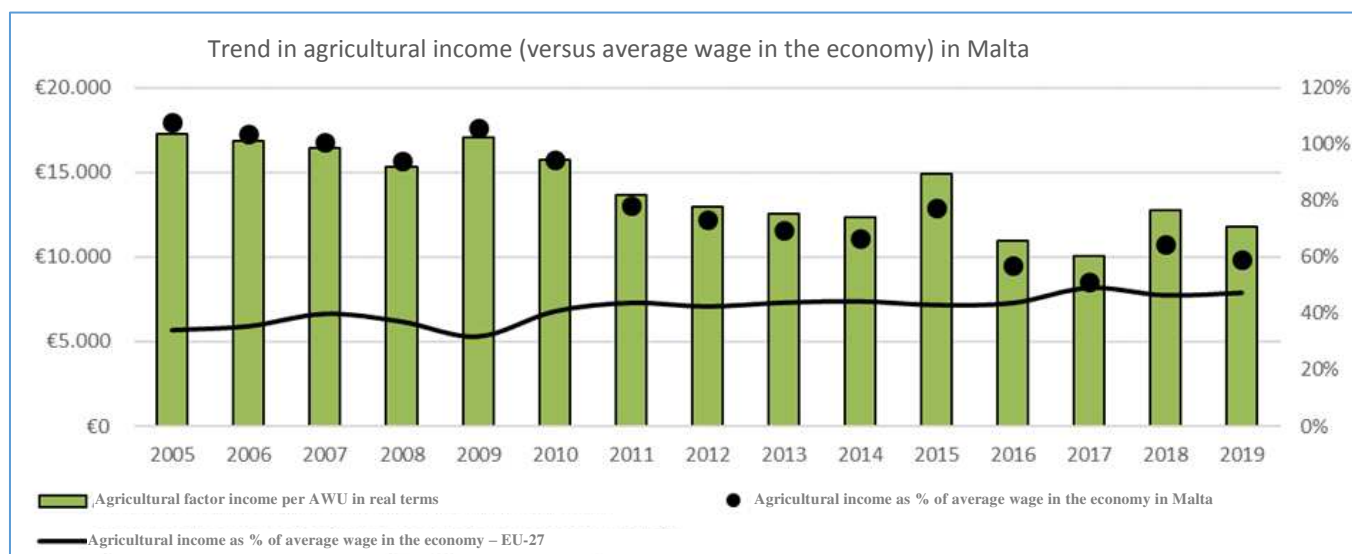
2.1 Support viable farm income and resilience across the EU territory to enhance food security

The Maltese agricultural sector has some particular characteristics with very small and micro farm holdings, due to its fragmented land structure, and many part-time/recreational farmers (with about 30% of farms consuming more than 50% of production themselves). Malta has 15 420 persons¹ working in the agricultural sector on 9 210 farms², equal to about 5 340 full-time equivalent jobs. To illustrate the importance of part-time farmers, 70% of the persons work in agriculture work less than 25% of a full-time equivalent job, whereas about 1 350 farms work more or equivalent to a full time job³. Moreover, around 5 000 Maltese farms have a production of less than EUR 2 000 in standard output, and are therefore considered as very small⁴. In 2018, 5 070 farmers receive direct payments, equal to 55% of the farming population⁵. The amount of registered farmers is thus high, but the population of farmers that professionally produces food for the Maltese island and beyond is limited. This has an effect on the possibility to benefit from economies of scale and thus affect the income position of Maltese farmers.

The development of the income position in Malta is not favourable considering the trend in the agricultural factor income per worker, as shown in the graph below, and the total entrepreneurial income in the sector. The agricultural factor income per worker reduced over time from about EUR 14 500 in 2005 to EUR 11 100 in 2018, whereas the income trend in the EU is positive. Moreover, the attractiveness of working in the agricultural sector reduces as the agricultural income decreased to about 50% of the average income in Malta in 2018. An important explanation is the increase in labour in the agricultural sector (by 23% between 2005 and 2017). The continuous reduction in livestock (especially in pigs but also in cattle) by 35% between 2007 and 2016 reduced the total (animal) output, goes together with a substitution to more labour intensive production in Malta like horticulture and fruit production which probably explains this trend.

Total subsidies (both direct payments and rural development) amount, on average, to 18%⁶ of factor income of the sector for Maltese farms between 2013 and 2017 (among which about 10% for direct payments). However, these support rates are higher for cattle and dairy farms, with the direct payment received per hectare being significantly higher for dairy farms and farmers with larger farm sizes. These higher shares are partly explained by the current implementation of voluntary coupled support for dairy and beef (which together receive about EUR 2 million or a bit less than 20% of the annual direct payment envelope), in addition to sheep and tomato production used for *Kunserva*. The dairy and tomato industry form the most important sectors in Malta in terms of agricultural production output, with beef production being an offshoot of the dairy sector. The tomato production is one of the most important crops considering the processing industry attached to it and the employment it provides on the island.

The insularity of Malta combined with its dependency on bought-in feed for the livestock sector, makes Maltese livestock farmers more sensitive to external price fluctuations. Even though climatic conditions are favourable with long growing seasons, Malta has higher yield risks than the EU average for arable, dairy and egg production linked to its dependency on rainfall⁷. To mitigate the risks from the market, risk management instruments can provide a solution. However, the small farm size/sector and lack of knowledge forms as obstacles for Maltese farms to implement or use well-functioning instruments. For example, no relevant livestock insurance or mutual funds exist currently in Malta. Such a measure was included in the 2014-2020 RDP but due to the lack of local expertise in agriculture insurance schemes and absence of historical data (mainly quantification of damages) this measure was never activated. Better farmer advisory systems and more cooperation between farmers could be a possibility to make these tools more attractive.



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.

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

The structure of the Maltese agricultural sector and its insular characteristics result in specific physical and structural constraints that hamper its competitiveness as compared to other European countries. As Malta is a small, densely populated island with relatively little agricultural land, it is dependent on imports of inputs, in particular feed for the dairy industry. In addition, small-scale farming limits bargaining power. Moreover, the fragmentation of agricultural land parcels, linked to unfavourable inheritance law³, does not allow generating sufficient economies of scale.

Different agricultural sectors face problems with their competitiveness. For example, due to land scarcity and small farm sizes, several products like wine and egg cannot compete on quantity. Due to a lack of sufficient and reliable rainfall there are no pasture areas for grazing, a shortage of high quality fodder crops and a lack of cereals produced on the islands³. As the cattle industry is an off-shoot of the dairy sector, the Holstein Frisian are not as competitive with other beef cattle breeds. More importantly, due to the land scarcity, livestock remains inside: increasing housing, feed and energy costs. Pig producers required to restructure and invest once the market opened up after EU accession to comply with EU standards, but lost market share while being in transition and profitability in this sector disappeared. With respect to sheep and goats, the sector is fragmented with many small herds. The production and total herd is in decline while the farm population is ageing and no investments are taking place.

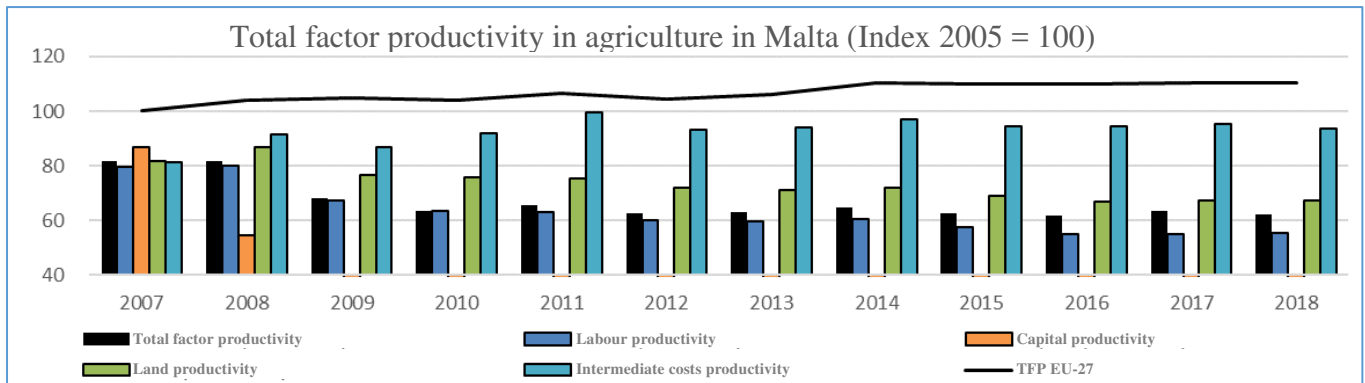
Given the unfavourable production conditions as compared to other European countries, most agricultural products are produced for domestic consumption, with the exception of some vegetables (mainly in the form of tomato paste) and spring potatoes. The need to import agricultural products is also reflected in the agri-food balance, which is strongly negative and declining even stronger over time. About 1/3 of the agri-food products are imported from Italy, which is the most important origin of agri-food trade. Nonetheless, considering the agri-food trade balance with non-EU member states, the balance is modestly negative with the Middle East being the main destination (account for 25% of the total agri-food exports with UAE and Saudi Arabia being the most important countries).

Apart from an unfavourable competitiveness that requires a boost, also the productivity of the sector needs an improvement. The total factor productivity, reflecting input and output ratios, is decreasing over time in Malta after its accession to the EU in 2004. All components of the factor productivity follow a downward trend between 2005 and 2018 as indicated in the graph below. Several factors explain this trend. From the output side, as indicated in section 2.1, the total animal output declined after 2007, which was not compensated in an increase in output from other sectors. On the input side, labour input increased, explaining partly the downward trend in labour productivity. The labour productivity (at about EUR 12 000 per worker) is at 60% of the EU average⁸.

Investments can improve the productivity in the sector. After EU-accession in 2004, dairy farmers made high investments (among others through the rural development programme) to modernise their farm to improve their sustainability as the Maltese market orientation increased. Those farms not able to invest left the sector, while those who did invest increased their financial burden. Up to 2010, total annual farm investments followed a positive trend with a doubling from about EUR 5 to 10 million a year after EU accession. After the financial crisis, the investments went down, being around EUR 8.5 million on average between 2016 and 2018, which is 16.4% of the gross value added

in Maltese agriculture, almost half the EU average⁹. However, the return on investments was not high enough to increase significantly output, which explains the downward trend in capital productivity.

Finally, in addition to land, labour and capital, entrepreneurship and human capital is considered as the fourth production factor. In terms of innovation and skills, the traditional mentality of some older farm managers constraints on-farm investments for younger generations. Innovative initiatives takes place occasionally and on an individual basis. Due to the fragmentation and the individualism, most sectors are not ready to benefit from innovative initiatives due to the lack of networks and investors³.



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

2.3 Improve farmers' position in the value chain

As highlighted under section 2.1 and 2.2, the small and micro farm holdings typical of the Maltese agricultural sector are characterised by a lack of economies of scales in their agricultural activity. Increased economies of scale, however, could be effectively generated through cooperation amongst farmers/producers (collective acquisition and provision of goods, placing produce on market, services etc.). This would increase the bargaining power, which should lead to lower overheads and enhance profits.

The share of the value added for primary producers in the food chain is decreasing over time in Malta in favour of the food and beverage consumer services¹⁰. In 2017, only 11% went to primary producers, which is well below the EU average of 27%¹¹.

This demonstrates that there is unexplored potential for farmers and cooperative structures to join forces as most of products are mainly sold on local markets. There are four cooperatives in Malta in the wine sector, of which one is recognised producer organisation¹². Besides this producer organisation, different forms of cooperation structures exist in Malta providing also basic services to farmers. Facilitation of cooperation activities of farmers through pooling of farmers through knowledge, mentoring activities and good practices is another aspect. There is no interbranch organisations (IBO) recognised so far in Malta.¹³

Most farms in Malta are livestock farms (30%) and horticultural farms (17%) followed by some other agricultural activities (potatoes, vegetables and wine)¹⁴. The dairy sector (excluding sheep and goats) is organised through a vertical structure where the milk producer cooperative has managed to shorten the supply chain and produce a range of dairy products through effective marketing and branding exercises. This sector can be used as a best practise model for other Maltese farming sectors that are still less

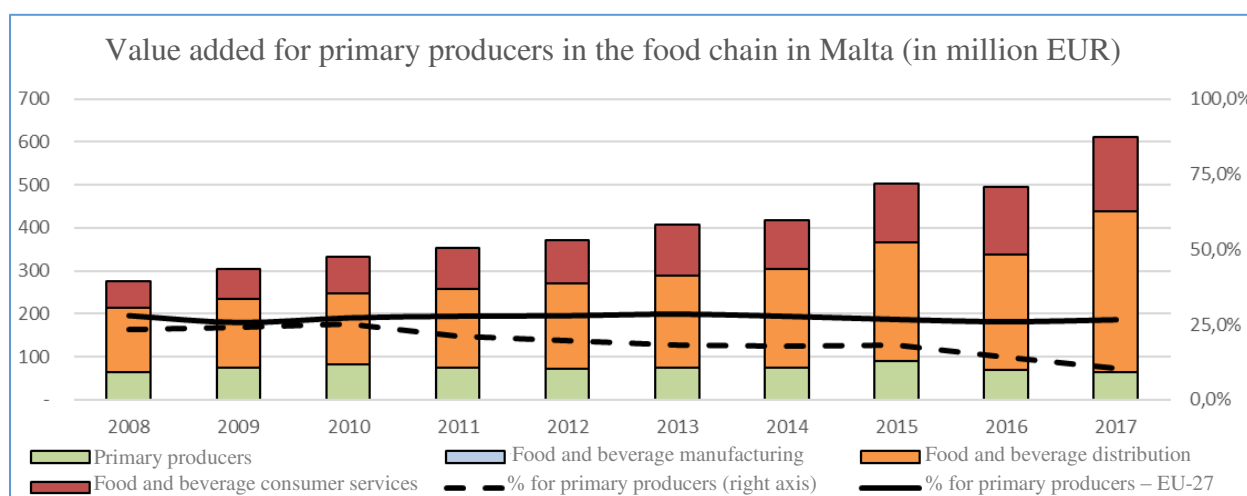
organised and depend more on intermediaries or processors for decision-making. However, market niche products (ice creams, cheese milk drinks, new ranges of yoghurts and cheese spreads) are not yet fully explored. Furthermore, healthy food that the Farm to Fork Strategy calls for (fruits, vegetables, animal products with reduced salt and fat levels) has a potential.

Spring potatoes are exclusively grown for the export to among others the Netherlands and Germany, making it the most important cash crop in Malta. Tomato processing for the traditional *Kunserva* tomato paste and other products has a traditional link to open field cultivation.

Crop farming in Malta is composed of arable farming that relies on rain to grow mostly fodder, onions, garlic, broad beans, potatoes and some permanent crops such as vines, olive trees and fruit trees, and irrigated farmland, which is used to grow a wider range of fruit and vegetables.

The performance of agro processing industry varies depending on sector, types of processing and dimensions of its activity. Some sectors such as dairy, tomato processing and wine production have developed a strong processing industry. Whilst other such as the sheep cheese and honey sectors are more producer based and carried out on a small scale. Meat processing historically intended for swine meat now is further expanded to other meat sectors (beef, chicken, rabbit, goat, lamb, and horse).

Malta does not have any specific legislative instrument to address Unfair Trading Practices¹⁵.



Source: European Commission. [CAP indicators – Data explorer](#).
CAP Result indicator RPI_03 Value for primary producers in the food chain.

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

In 2018, agricultural emissions of greenhouse gases (GHG) in Malta amounted to 65 400 tonnes of carbon dioxide (CO₂) equivalents, down 14.4% since 1990.¹⁶ The overall share of the agricultural sector in total national emissions has not fluctuated much in the past, starting at 3.6% in 1990 and being around 3% in 2018,¹⁷ a low value compared to the EU average (around 12% in 2016).¹⁸ However, Malta has the third highest figure among the Member States in terms of GHG emissions from the agricultural sector per hectare of agriculture land of 5.6 CO₂ equivalent (EU average of 2.38 tonnes, CO₂ equivalent).¹⁹

Malta has also the second highest total livestock density in the EU (2.9 livestock units per hectare compared to 0.8 at EU average)²⁰.

With 49%, emissions from enteric fermentation account for the largest share of agricultural emissions (primarily cattle, followed by sheep and swine), followed by emissions from agricultural soils (29%) and emissions from manure management (23%) in 2018. Methane emissions from enteric fermentation and manure management have declined since 1990 levels because of decreasing livestock populations (except for rabbits and horses) due to a rise in the import of meat and dairy products.²¹ Anyway, the high share of emissions from manure management is the result of a national manure management system still largely rudimentary and with limited enforcement.²² The total agricultural area and area with fodder crops have also decreased since 1990. Consequently, so have the nitrogen application rates and the nitrous oxide emissions.²³

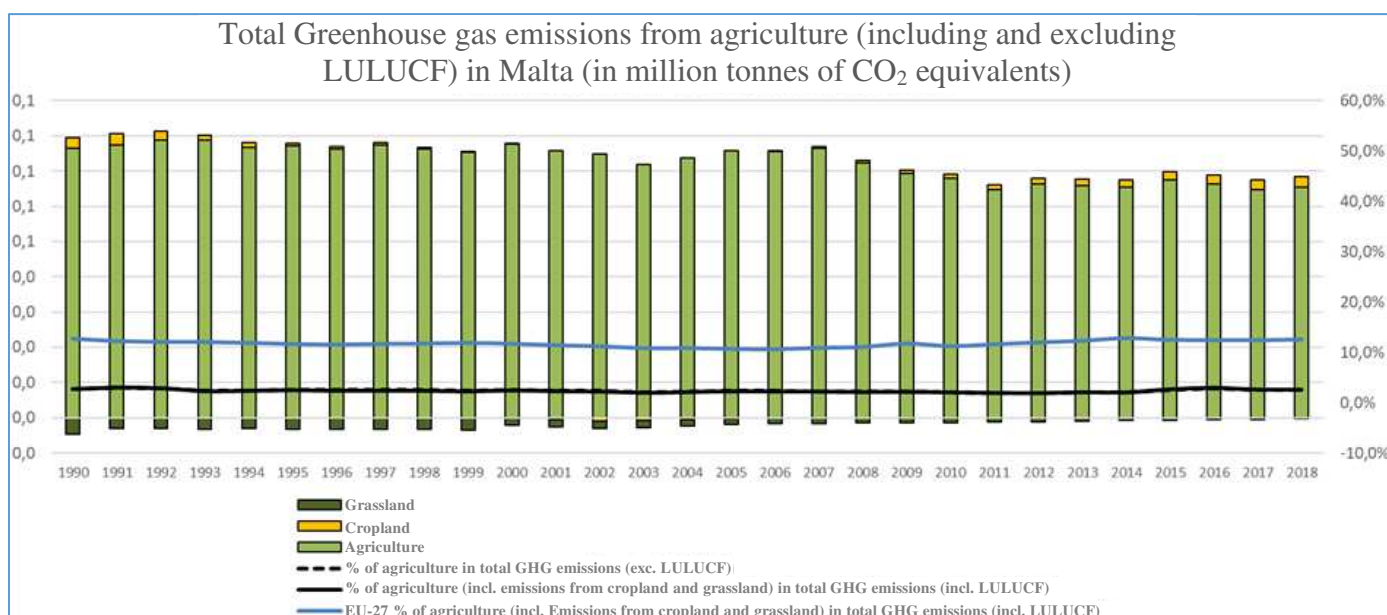
In 2018, Malta has reported net GHG emissions linked to land use, change of use of agricultural land and forestry (LULUCF) amounting to around 4 000 tonnes of CO₂ equivalents, the same level reported in 1990, with cropland having produced 3 000 tonnes of CO₂ equivalents.²⁴ Emissions from cropland have significantly increased in recent years. Between 1990 and 2002, the sector's contribution had decreased (in 2002 net emissions were slightly above 1 000 tonnes of CO₂ equivalents), but between 2002 and 2018 it went back to the 1990 levels.²⁵ Since Malta lacks permanent tree crops and woodland cover compared to other Mediterranean islands (Malta's woodland areas total about 200 hectares),²⁶ many afforestation projects have been undertaken in recent years to enhance CO₂ removals, but the scale of such projects is expected to be very limited.²⁷ Furthermore, due to the inadequacy of some areas for afforestation because of geological and microclimatic conditions, enhancing sinks in LULUCF in Malta remains difficult.²⁸ However, a range of permanent fruit trees or fodder crops that are adapted to warmer climates could be tested in Maltese conditions to identify areas of intervention for carbon sink creation purpose in the future. Trees that are considered permanent crops for their ability to provide a commercial viability to farmers (e.g. olive trees, figs and stone fruit trees) should be promoted in recreational farms and along margins of commercial farms.²⁹ For this purpose, the rural development programme 2014-2020 dedicates an investment measure for afforestation purposes. Considering its high population density, its limited land availability and the local climatic conditions (such as limited rainfall), Malta's potential for further reduction of CO₂ emissions through carbon sequestration in vegetation is envisaged to be minimal.³⁰

According to its National Energy and Climate Plan, total GHG emissions in the agricultural sectors are expected to be stable around 65 600 tonnes of CO₂ equivalent per year in the period from 2021 to 2030. Nitrous oxide (N₂O) emissions from the use of fertiliser is expected to decrease over time as improved cultivation practices are adopted, principally through the application of the Code of Good Agricultural Practice and the Nitrates Action Programme.³¹

In 2018, the share of agriculture in the production of total renewable energy in Malta amounted to 4.8%, well below the EU-27 average (12.1%).³² No renewable energy was produced from the forestry sector. Energy consumption in Maltese agriculture and forestry has the second lowest share in total final energy consumption (0.9%) in the EU-27, whereas direct use of energy in food processing amounted to 1.2%, reflecting the small scale of the agricultural sector compared to the rest of the EU.³³ However, in terms of energy efficiency, energy consumption by agriculture and forestry per hectare is increasing over time (by 67% between 2013 and 2018, which is significantly higher than

the EU level, 8%). Moreover, energy consumption per hectare is already 2.5 times higher in Malta than the EU average³⁴, Agricultural measures that link with climate change mitigation include renewable energy initiatives such as the installation of solar photovoltaic panels on farm structures like barns that are more suitable for the Maltese climatic conditions and aim towards meeting future challenges. Generation of energy from manure or crop residues also has a great potential value.

Malta’s agricultural sector is particularly vulnerable to the impacts of climate change.³⁵ Malta’s National Strategy for Climate Change and Adaptation (2012) identified four major concerns connected with climate change: (i) reduction in crop yield and quality as the result of reduced water availability and precipitation variability, (ii) direct financial loss for stakeholders exacerbated by the need for increased spending as a result of damage caused by extreme weather events (iii) reduced crop yields caused by increased summer temperatures and drought risk and (iv) additional problems arising from the introduction of new pests and disease.



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

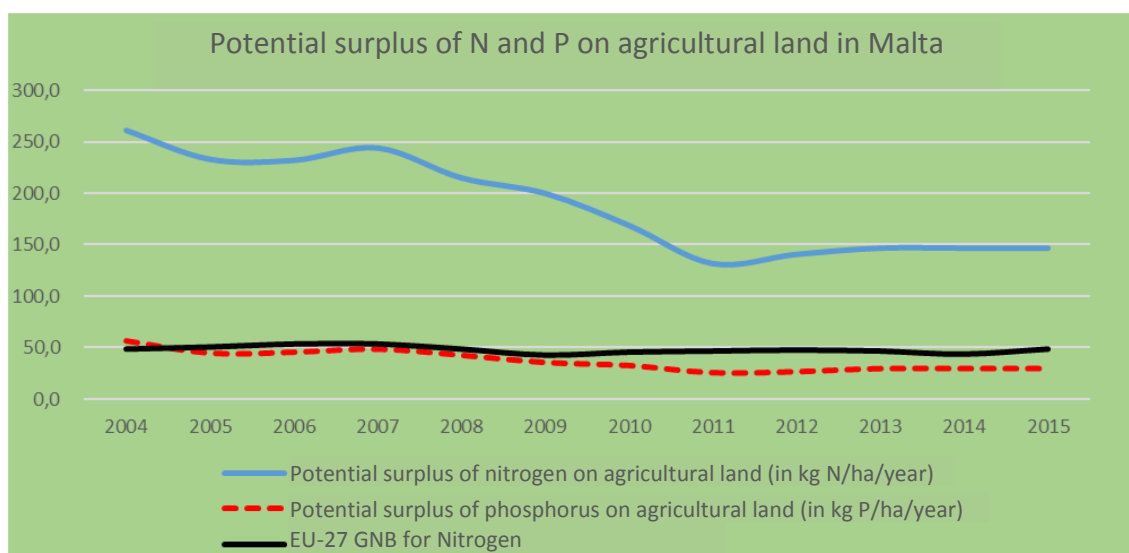
2.5 Foster sustainable development and efficient management of natural resources such as water, soil and air

Air: Despite an uptick in 2018, ammonia emissions in Malta have decreased between 2013 and 2017, bucking the recent trend in the EU-28.³⁶ This is also the case for ammonia emissions from agriculture³⁷. The share of ammonia emissions from agriculture in total ammonia emissions in Malta (almost 94%) is above the EU-28 average.³⁸ This also applies to NH₃ emissions from agriculture per hectare.³⁹ Linked to this is the fact that, due to a high livestock density⁴⁰, the relative contribution of the livestock sector to ammonia emissions from agriculture in Malta is considerably higher than the EU-28 average.⁴¹ The reduction in NH₃ emissions from agriculture over time is largely due to a decrease in livestock (density and numbers).⁴² The latest reported ammonia emission levels (2018) are below Malta’s NECD (National Emission Ceiling Directive) emission ceiling for ammonia for this year⁴³. However, reviews of the Maltese National Air Pollution Control Programme (NAPCP) and air pollutant emission projection, commissioned by the European Commission, have found that Malta is at high risk of

non-compliance with the 2020-2029 and the 2030 onwards reduction commitments for NH₃.⁴⁴

Soil: Agricultural land fragmentation and abandonment, limited soil agriculture suitability, certain agricultural practices (such as 100% of tillable area being under conventional tillage)⁴⁵, rapid urbanisation, limited water resources, and rapidly modernising social structure further exacerbate soil erosion pressures.⁴⁶ The mean soil organic carbon content (15.6 g/kg) concentration in Malta is considerably lower than the EU28 average.⁴⁷ Soil sealing index grown from 100.1 in 2009 to 100.8 in 2015.⁴⁸ The share of the estimated agricultural area affected by moderate to severe erosion due to water (>11 tonnes per hectare per year) is higher than the EU28 average⁴⁹, as is the estimated rate of soil loss by water erosion⁵⁰. As at 2019, around 7.5% of the agricultural area in Malta was under contracts to improve soil management and/or prevent erosion.⁵¹ In the future, Malta can address these key issues in synergy with activities under the Horizon Europe mission on Soil Health.

Water quantity and quality: Malta is a country that faces severe water challenges.⁵² Malta has the lowest volume of freshwater resources per person in the EU.⁵³ Practically all of its naturally occurring freshwater comes from groundwater bodies, which are threatened by over-extraction as well as nitrate pollution. Although monitoring data suggests that the imbalance between abstraction and recharge is progressively being reduced⁵⁴, there are still significant problems with the quantitative status of groundwater bodies in Malta⁵⁵. In relation to the Water Framework Directive around 51% are in unknown ecological status with 12% failing to achieve good ecological status and around 47% of surface waters are also failing to achieve good chemical status. For groundwater 13% are failing to achieve good quantitative status (but not all water bodies are monitored for quantitative status) and 80% of ground waters are failing good chemical status⁵⁶. The most significant pressure on ground waters was diffuse agricultural pollution followed by abstraction or flow diversion for agriculture. As groundwater is recharged largely by rainwater, climate change is expected to result in additional pressure on groundwater resources, as changes in drainage of soils caused by reduced rainfall may lead to increased soil salinity and damage to soil structure leading to desertification. Despite a significant decrease between 2007 and 2011, both nitrogen and phosphorus surpluses in Malta are still comparatively high and have remained stable in recent years.⁵⁷ Nitrogen usage efficiency is also quite low, although there is a positive trend.⁵⁸ Half of all monitored ground water stations in Malta are of poor quality and on average equal or exceed 50 milligrams of nitrate per litre.⁵⁹ For groundwater bodies, the most significant pressure is agriculture.⁶⁰ Linked to this, Malta has one of the highest livestock densities in the EU. With an irrigable area of 31%⁶¹, Malta also has one of the highest irrigation intensities worldwide⁶², and irrigation accounts for 48% of all water abstractions⁶³. In addition, irrigation could further reduce the water availability for habitats/species. The entire Maltese islands are a designated nitrate vulnerable zone⁶⁴ so sustainable water management is critical in terms of meeting future water demands and for compliance with EU regulations to minimise agricultural pollution. In 2018, over 4% of agricultural land in Malta was under contracts to improve water management.⁶⁵ In this regard, the National Agricultural Policy for the Maltese Islands highlights the necessity of investment in water in order to secure climate change resilience. Some measures aimed at optimising the management of rainwater runoff through valley management initiatives and the development of on-field storage facilities, in particular aimed at addressing the demand of the agricultural sector, have already been taken.⁶⁶



European Commission. *CAP context indicator C.40 Water quality*. Based on EUROSTAT [[aei_pr_gnb](#)]

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

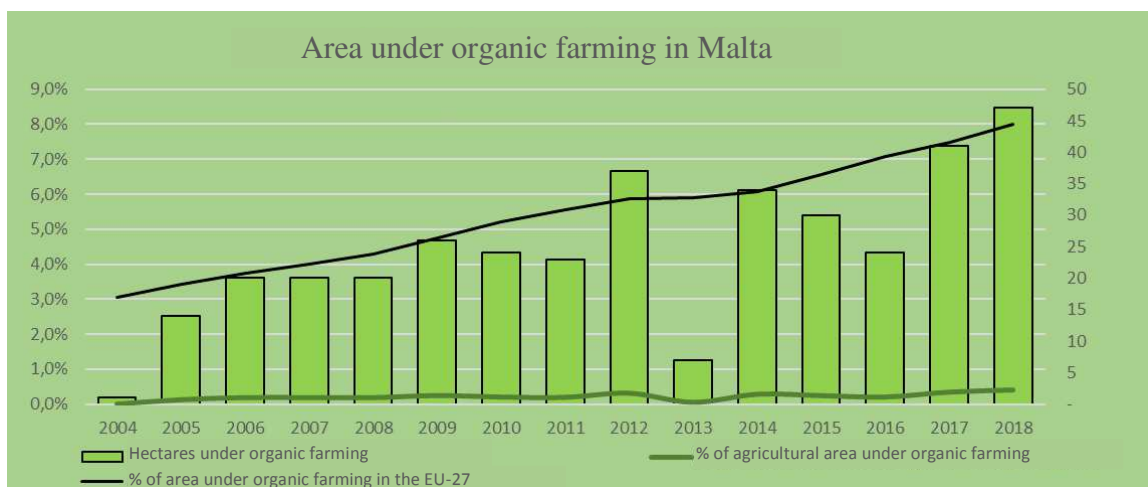
The agricultural area in Malta increased over time from 10 250 in 2005 to 11 580 hectares in 2016. This increase is coupled with land parcelling and fragmentation while the total farming population is decreasing. Yet, more than 70% of all agricultural holdings cover less than one hectare⁶⁷ and the total area of grasslands represents approximately 4.5% of the agricultural area (527 hectares)⁶⁸.

The implementation of agri-environment and climate measures is programmed to cover 13% of Maltese agricultural area in the current programming period⁶⁹. The budget allocation is insufficient according to the Strategic Environmental Assessment on the rural development programme for 2014-2020, which makes it even more difficult to achieve organic farming and environmental-friendly practices. The share of land under contracts supporting biodiversity is 15.5%⁷⁰, in line with the EU average (15% in 2018). The share of the agricultural area protected under Natura 2000 is 8 % (11% for EU-28 average⁷¹) and 70% of the network is located within functional urban areas. Natura 2000 is complete for the terrestrial network but not for the marine. The Farmland bird index was 81.9⁷² in Malta in 2013, which is low compared to the EU average the same year (83⁷³). The majority of protected habitats assessments are unfavourable conservation status (2013-2018 data), including all protected grassland habitats assessments and the vast majority of the forest habitat assessments.

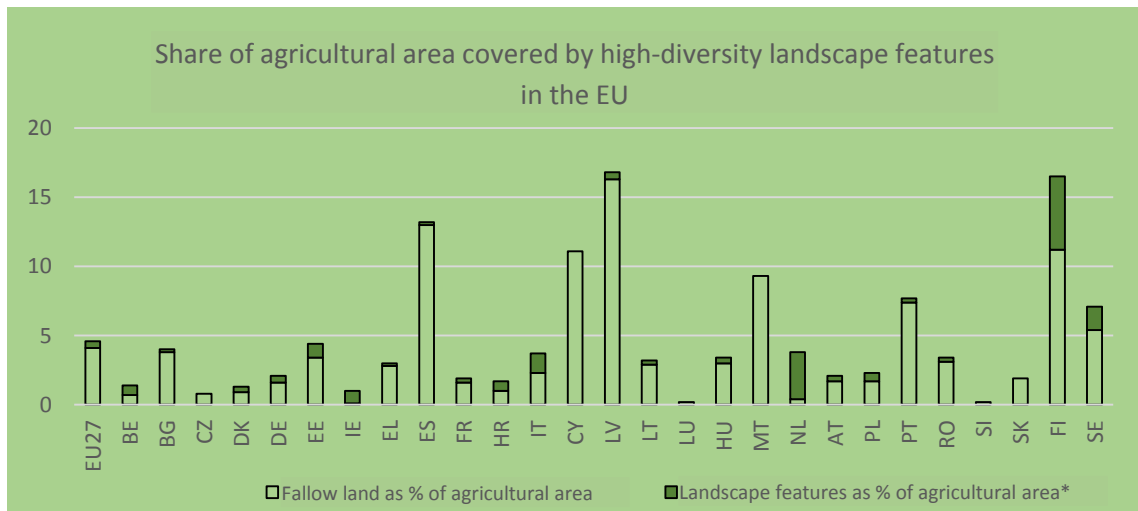
Organic farming practices can benefit biodiversity. However only 0.4% of total agricultural area is estimated to be organic (55 hectares of organic crop in 2019 or 14 farmers producing organic food⁷⁴). This is the lowest share in the EU. The EU average has increased progressively to reach 8% in 2018 while it is fluctuating in Malta⁷⁵. A major challenge for organic farming is the small parcel size and the fragmented Maltese farmland, due to possible sources of contamination between parcels. Besides fragmentation, issues encountered by organic farmers include proximity to roads and conventional farmers, windy conditions resulting on pesticide drift, poor soil conditions and the availability of allowed plant protection products for organic farming⁷⁶. In addition, the administrative burden, often perceived as long and complex dissuade farmers from converting to organic farming⁴.

As urban sprawl in Malta is one of the highest in Europe, overdevelopment is a cause of loss of biodiversity and natural landscapes. However, national strategies address these issues in Malta. The National Biodiversity Strategy and Action Plan (2012-2020) promotes the build-up and maintenance of soil organic matter and the enhancement of soil biodiversity. The National Environment Policy (2012-2020)⁷⁷, address long-term sustainability priorities such as air and water quality, biodiversity, and climate change. Overall, the particular situation of Malta and its poor soil conditions constitute real obstacles to tackle biodiversity issues and preserve habitats and landscape.

The land laying fallow contributes to the area under high-biodiversity landscape features. In Malta 9.3% of the total agricultural areas is land laying fallow in 2018 (versus 4.1% at EU-27). In 2019, under the current greening measures only 1% of arable land in Malta fell under the Ecological Focus Area obligation for the benefits of biodiversity, equal to 51 hectares (versus 69% in the EU)⁷⁸. This figure is low for Malta as farmers with more than 15 hectares are subject to the EFA obligation. The coverage of the EFA were limited to nitrogen fixing crops (81%) and fallow land (19%). However, according to a study performed by the JRC based on the LUCAS survey, in 2015, the share of landscape elements as a percentage of the agricultural area was 0%⁷⁹. The agricultural sector must help maintain and improve biodiversity, by creating a green infrastructure based on stonewalls, plant hedges, and vegetation buffers for example between conventional and organic farming. Anyhow, important investments are ongoing under the measure 4.4 of the RDP 2014-2020, where about 18% of the financial envelop is dedicated to non-productive investment aimed at restoring, preserving and enhancing biodiversity, such as rubble walls among other interventions.



European Commission. CAP context indicator C.19 Agricultural area under organic farming. Based on EUROSTAT [[org_cropar_h1](#)] and [[org_cropar](#)]



Directorate General for Agriculture and Rural Development. Based on EUROSTAT for land laying fallow and Joint Research Centre 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

The number of farm in Malta is declining due to both productivity growth in agriculture, low profitability of farming and better working opportunities in other part of the economy. Against this general context Malta has one of the lowest share of young farmers (3.8%) in 2016 in the total number of farm managers, below the EU-28 average (5.1%), and this share decreased by about 40% in 2005 to 2016. Among the young farmers, the share of women is among the lowest in the EU. The average economic farm size in Malta is the highest for farmers up to 44 years old. Finally the share of farmers with 55 years or older is 65.8%⁸⁰.

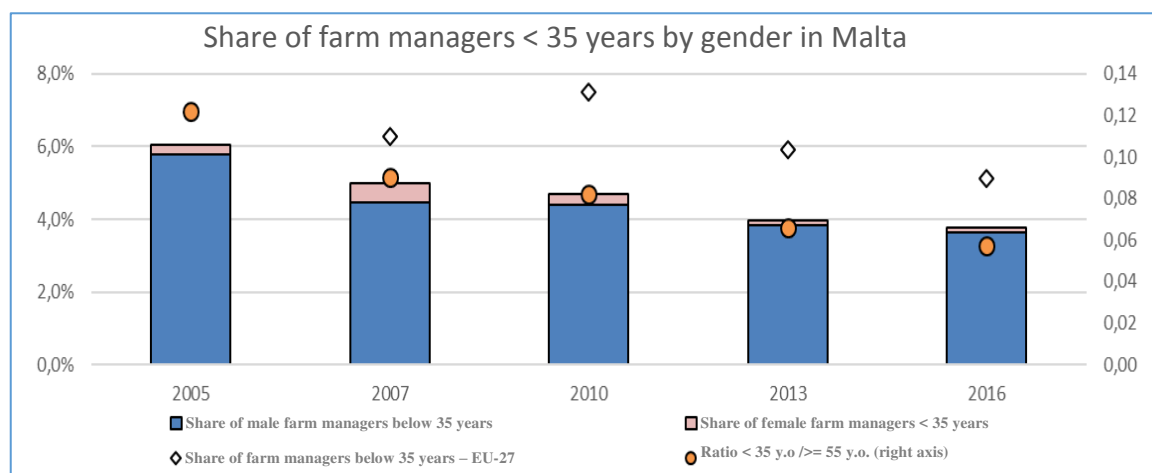
Levels of education and training among the farm labour force are often low, which has obvious knock-on effects upon standards of agricultural practice.⁸¹ The share of farm managers below 35 years of age with at least a basic level of agricultural training has improved in Malta, today is above the EU average (54% in 2016). This share is also higher than the total share of farm managers with at least a basic agricultural training (31%)⁸². Yet in rural areas there is a growing number of young people neither in employment, nor in education or training aged 15-24⁸³.

Despite a limited statistical evidence for rural areas, it is possible to highlight that over 54% of farms have a production of less than EUR 2 000 in standard output, and are therefore considered as very small⁸⁴. The gross added value of the primary sector is declining since 2010 from 1.7% to 1.0% as well as agricultural income decreased to about 50% of the average income in Malta in 2018⁸⁵. In addition, the professional farmers working in the sector are about 55% of the registered farming population⁸⁶. This has an effect on the possibility to benefit from economies of scale and thus affect the income position of Maltese farmers. Furthermore, the employment rate for male is around the 80% for different age categories and level of education⁸⁷. While low educated female in rural areas only reach the 33%⁸⁸. In the primary sector the share of woman as part of the agriculture labour force is declining from 14.6% to 14.2% between 2013 and 2016.

Faced with a situation of an ageing farming population without the ability to foster new farmers in a difficult business environment, Malta's farming system risks collapse bringing down with it the socio-environmental fabric of rural areas. This poses a serious challenge for generation renewal.

Only through an improvement in the working conditions and economic feasibility of the farming package could young farmers be incentivised to remain active in the sector. Farming is an industry that has traditionally been inherited since most skills are acquired through practice and can be improved through education and capacity building. Moreover, certain basic resources such as farmland or animal farms are not easily obtainable by persons coming from outside the sector. Capital investment is also very high and when one compares the profit margins, a farmer must have a considerable amount of productivity to make a living from the sector. In fact, most active farmers argue that it is no longer possible to make a living with small land holdings or small animal farms.⁸⁹

Under the CAP, Malta provides only few specific support to young farmers. Under Pillar I, Malta spent only 0.05% (out of the dedicated 0.4%) of the direct payment envelope to the Young Farmer Payment (YFP) in claim year 2018. The average annual YFP amounts per hectare and beneficiary are also very low: both at around EUR 20⁹⁰. This could be one of the reasons why the number of YFP beneficiaries exhibits a negative trend. It is rather exceptional in the EU. Under rural development, Malta provides about EUR 5.7 million to the installation for young farmers under measure 6 with a lump sum of EUR 70 000/beneficiary. By the end of 2019, the rural development programme (sub-measure 6.1) provided support to 60 young farmers⁹¹.



EUROSTAT. [[ef m farmang](#)]

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

The total area of the Maltese archipelago is of 316.18 km² and this includes 11,706 hectares of agricultural land (circa 37% of the total area). In Malta the degree of urbanization⁹² for Local Administrative Units⁹³ indicates that rural areas are located close to urban centres and, represent the 13.6% of the whole territory. The daily commuting between rural areas and urban centres is high and has social and environmental impacts due to air pollution. Commuting is especially high between Gozo and Malta due to lack of basic services and quality job opportunities in Gozo.⁹⁴

Malta ranks first in EU for population density⁹⁵ 1450 inhab/km², and the archipelago registered a population growth of 12.3% between 2015-2019⁹⁶. Urban sprawl is rapidly growing and soil-sealing index increased from 100.1 in 2009 to 104.2 in 2015, NATURA 2000 areas have also declined by 0.5% between 2013⁹⁷. This is threatening the islands' ecosystems. Ecosystem services related to land use are critical to Malta's economy (e.g. for lost income coming from nature-oriented tourism, loss of biodiversity and agriculture) and quality of life.

The employment rate in Malta is steadily increasing from 57% in 2000 to 73% in 2017, with similar values in rural areas reaching 75.3% in 2017. In 2017 only 0.7% of population was employed in the agricultural sector, 1.9% in the food industry and 7.6% in the tourism sector, with growth (2012-2017) registered only in the food industry (1 percent point increase) and tourism (2.6 percent point increase)⁹⁸. Nevertheless the employment rate for women in rural areas has decreased between 2013-2016 (from 14.6% to 14.2%)⁹⁹ and only 6% of farm manager are woman, well below EU average of 28%. The rate of young people not in education or training (aged 15-24) fluctuated between 2009 and 2018 and it is on the rise over 11% again in rural areas¹⁰⁰.

The structure of the economy evolved over the period 2012 to 2018. In terms of gross value added (GVA) the primary sector contribution declined from 1.7% to 1%. This sector suffers from the high parcelling of the agricultural land in small farms as well as from the lack of cooperation among farmers. In the same period also the secondary sector (which includes the food industry) showed a larger drop from 20.1% to 13.7%¹⁰¹. The Maltese economy confirms the importance of the tertiary sector. However, the total gross domestic product (GDP) per capita in Malta is increasing and converging towards the EU-average between 2009 and 2017, coming from about 80 points in 2009¹⁰². Despite this trend, the risk of poverty or social exclusion remains stable at circa 19% at national level.

Local action groups (LAGs) play an important role in local development. RDP 2014-2020 allocated about EUR 5 million counting for 5% of the total budget to the LEADER projects. Currently there are 3 LAGs whose area of operation covers the whole territory and rural population. Their European Agricultural Fund for Rural Development co-financed projects mainly aim at improved possibilities for cultural heritage and developing green infrastructure and services for local people.

Malta is the EU country with the least forest cover (only 0.46% of the island surface in 2018¹⁰³). Forests are in their entirety plantations (semi-natural) and the large majority is public owned. Unsustainable practices and poor management within the sector are posing serious risks for the economy and the protection of biodiversity and landscape. In addition, the country disaster-risk management, and sectoral plans do not always include an assessment of how climate change may affect disaster risks while Malta is already affected by climatic changes¹⁰⁴ (see also section 2.1).

Tourism is a relevant activity for the Maltese archipelago. 97% of tourists choose to stay in hotels and only a limited number in other accommodations. Rural tourism represents only 1.8% of the total touristic offer in Malta¹⁰⁵. Rural tourism initiatives took off in the archipelago in the last few years supported by rural development programmes 2007-2013 and 2014-2020. Yet the sector in rural areas has untapped growing potential that could support farm viability and boost economic diversification.

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

(i) Societal demands on food and health

Societal expectations are shaping food markets developments in terms of health, animal welfare, climate change and environmental concerns, looking as well to convenience. These concerns represent an opportunity to tap into alternative production systems opportunities such as local, organic, or other certified products, being increasingly in demand. Yet as result of busy lifestyles it has been registered an increase of purchase of ready meals, snacks and on-the-go food, which are not always compatible with the factors described above¹⁰⁶. Moreover, in Malta as result of urbanization and globalization food consumption patterns among the Maltese population have evolved over the past few decades. A greater variety of food is available, and dietary habits no longer correspond to the traditional Mediterranean diet. A national food consumption survey conducted in 2010 revealed that Maltese adults tend to consume high amounts of pasta and sweets¹⁰⁷. By contrast, according to the latest surveys, one in every ten people over the age of 16 years had either some or a severe inability to afford a meal with chicken, fish, or vegetarian equivalent in 2018¹⁰⁸. The proportion was even higher (13.8 %) among people aged between 55 and 64 years. However, the estimated consumption of red meat¹⁰⁹ is very high. Malta has a high burden from non-communicable diseases due to dietary risk factors expressed as Disability Adjusted Life Year (DALYs) per 100 000 population attributable to diet¹¹⁰. This DALY's value is influenced by a number of dietary factors. Furthermore, a very high part of Malta's population is overweight or obese¹¹¹. Statistical data reported that the overweight rates currently stand at 62.2% in Malta¹¹². Regarding obesity, the number stands at 25.7%. Those percentages are even higher among children¹¹³. Malta has a National Food and Nutrition Policy (2015 -2020) pursuing health while reducing the burden of food related diseases and improve socio-economic conditions¹¹⁴. Efforts should focus on shifting towards healthy sustainable diets, in line with national recommendations in order to contribute to reducing overweight and obesity rates 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.

(ii) Antimicrobial resistance (AMR)

Malta has a comprehensive AMR strategy¹¹⁵ setting out a range of strategic aims and specific actions which provides a sound basis for national efforts to combat AMR. The guiding principle leading the Strategy is that of One Health. This principle recognises the inextricable link between humans, animals and the environment and emphasis that achieving optimal health outcomes for people and animals requires the collaboration and cooperation between the human health, animal health and the environment sectors.

The DG SANTE report of the AMR One Health country visit carried out with ECDC in 2017¹¹⁶ concludes that the AMR strategy would benefit from further consultation and involvement of relevant organisations from the veterinary and environmental sectors. On the veterinary side, it revealed notable weaknesses regarding both the ability to monitor the levels of AMR in the veterinary area and, more importantly, the distribution and use of antimicrobials. These weaknesses, which seemed to be further compounded by a lack of veterinarians, limit the knowledge about the situation in Malta and seriously undermine the ability to ensure that antimicrobials are used in a prudent manner and only

when considered necessary by a veterinarian. There were however indications that farmers and veterinarians were increasingly aware of AMR-related issues and steps were being taken to use antimicrobials more prudently; however there was considerable potential to support and encourage these efforts further. In 2018, the sales in antimicrobials in Malta expressed in milligrams per population correction unit (mg/PCU) amount to 150.9 mg/PCU, well above the EU average (118.3 mg/PCU)¹¹⁷.

For animal health, the data on AMR surveillance remains extremely sparse and restricted to a very limited set of isolates tested annually at the National Veterinary Laboratory, in compliance with EU minimal requirements. Even from this limited information, it appears that antimicrobial resistance in animals is a significant problem¹¹⁸.

In human health, the data suggest that major challenges are possibly due to a culture of over-prescribing antimicrobials as well as to doctors acceding to patient demands. Whilst non-prescribed use of antimicrobials has reduced drastically in the past decade (from over 18% in 2002 to around 1% of total usage as reported by the 2016 Eurobarometer survey), the same cannot be said for inappropriate prescribing.

(iii) Animal welfare actions

Animal welfare is vital for the sustainability of food systems. In relation to animal welfare, the main issue in Malta is that the tail docking of pigs is a routine practice, although this is prohibited as a routine measure by EU rules. The percentage of pigs reared with intact tails has barely changed since 2016 and conditions on farm must improve if the number of tail-docked pigs is to start to decrease.

(iv) Sustainable use of pesticides

Pesticide usage in Malta follows the typical pattern of the Mediterranean climate. Herbicide applications are mainly used in the beginning of the rainy season, which starts in September, when the weed seeds begin to sprout. Treatment with herbicides reached its peak in January whereas dry conditions in the April/September season retard weed growth. Fungicide use occurred throughout the whole season, with the main period of application occurring April to July, reaching a peak in June. In 2014, according to the Pesticides Use Survey, carried out by the National Statistics Office (NSO), the area treated with plant protection products amounted to 4 071.8 hectares or 44.4% of the area surveyed. With higher shares of area treated for vegetables and potatoes (above 90%), vines (86%), stone fruit (78%) and citrus (45%)¹¹⁹.

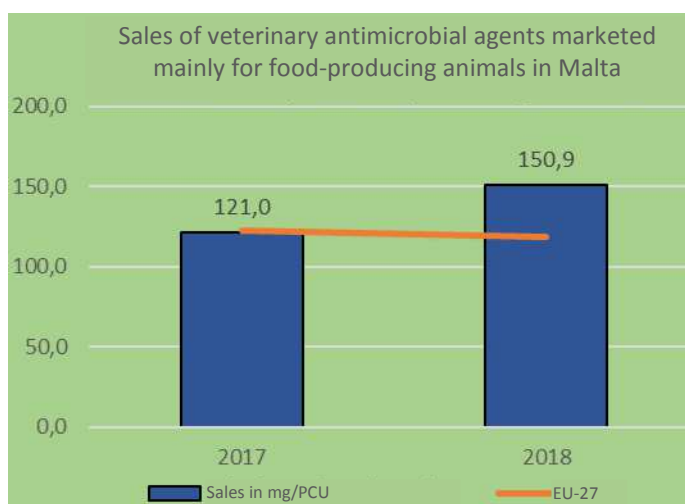
Harmonised risk indicator 1 (HRI1) shows a 19 % decrease in risks linked to pesticide use in 2018, compared to the baseline period 2011-2013. Although this reduction of risk was slightly higher than the EU average of 17 %, the use of more hazardous pesticides (candidates for substitution) was high and increasing as a percentage of total pesticide sales.

Malta's first National Action Plan (NAP) for Sustainable Use of Pesticides covering the period 2013-2018, set out a national strategy and established objectives, targets, measures, and timelines to reduce risks and impacts of pesticide use on human health and the environment, whilst encouraging Integrated pest management and alternative approaches or techniques to reduce pesticide-use dependency¹²⁰. This plan was updated in 2019 (reviewed at least every five years)¹²¹. Based on the Commission's assessment of the SUD implementation, Malta lacks enforcement of the general principle for integrated pest management at farm level.

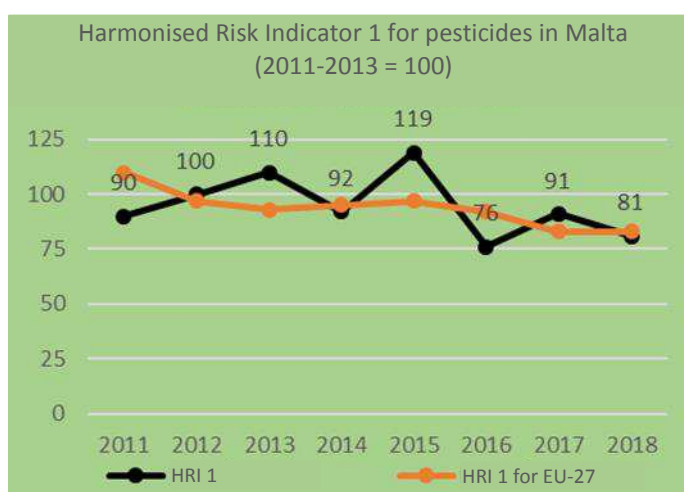
When revising the NAP 2013-2018, the health, social, economic and environmental Impacts of the outlined measures have been taken into account as well as specific local conditions and all relevant stakeholder groups' opinion including the public. The result is a combination of legislative measures and other Initiatives to maintain an efficient tool to support the sustainable use of pesticides with clear indicators on progress.

(v) Food waste and food loss

According to a 2016 dissertation¹²², food wastage accounts for 52.1% of municipal solid waste in the Maltese Islands. Leftovers, fresh vegetables/unused vegetables/rotting vegetables and bread are the most commonly wasted foods. The most common reasons why food gets wasted in Maltese households, include: 'too much food is cooked', 'leftovers are not re-used or eaten', and 'food in the freezer or fridge goes off (or left for too long)'. The study also indicated that household food waste increases proportionally with food shopping frequency. Misunderstanding of the 'Use By Date' and 'Best Before Date' might be a significant driver of food waste among respondents. Food waste prevention does not yet appear to be well established in the Maltese Islands. This could be tackled by implementing the national food waste prevention programme required by Article 29(2a) of the Waste Framework Directive 2008/98/EC.



European Medicines Agency, European Surveillance of Veterinary Antimicrobial consumption (ESVAC). *Sales of veterinary antimicrobial agents in 31 countries in 2018 – trends from 2010 to 2018 Tenth ESVAC Report.* [EMA/24309/2020](https://www.ema.europa.eu/en/press-room/2019/04/WPV-2019-001).



European Commission. *Harmonised Risk Indicator for pesticides (HRI 1), by group of active substance.* As in EUROSTAT [[SDG_02_51](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1)]

2.10 Cross-cutting objective on knowledge, innovation and digitalisation

The PRO-AKIS study¹²³ performed in 2015 classified the Maltese Agricultural Knowledge and Innovation system as fragmented. Its strength and reach is around the European average. The research already carried out is fragmented and its dissemination is minimal, with very little beneficial effect for the farming community¹²⁴. There are only two higher educational institutions training people in agriculture. Their collaboration with farmers to generate information on the impact of innovation and technology is limited, due to scarce human and financial resources and a limited pool of experts keeping up to date with international developments in agriculture. The link existing between the industry and the academia is weak, with a low level of integration of agri-business graduates within the local agricultural sector.

Under the 2014-2020 period, Malta committed to strengthen knowledge transfer and innovation in agriculture through training and advisory initiatives and address some of the problems mentioned above. Malta programmed 8.2% of their total rural development envelope (EU financing + national contribution) under Measure 1 (M.01) (knowledge transfer and information actions, to which 3.4% of the envelope is programmed), M.02 (advisory services, farm management and farm relief services, to which 1.9% of the envelope is programmed) and M.16 (Co-operation-European Innovation Platform, to which 2.9% of the envelope is programmed). This figure was the highest in the EU, where the average amounts to 3.6%. In terms of implementation, however, Malta has so far spent 0% of the funds programmed under M.01, M.02 and M.16, while the average for the rest of EU countries amount to, respectively, 34.4%, 19.5% and 21.9%.¹²⁵

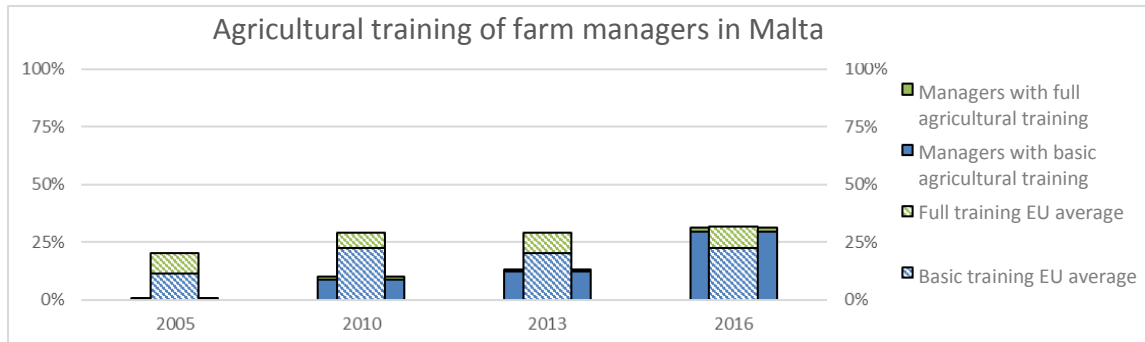
The rural development programme 2014-2020 aimed to provide funds for the creation of advisory services that assist farmers on adding value to their production either through functional extension services or a public-private partnership, both funded by the programme¹²⁶. Further, Malta targets to have four Operational Groups in the context of the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) to strengthen the link between agriculture and research.¹²⁷ So far, there are in total 5 co-operation groups of which 1 is being included under the EIP.

In 2016, 31.1% of the total farm managers in Malta attained basic or full agricultural training, in line with the EU average for the same year (31.6%).¹²⁸ More specifically, the share of farmers who attained full agricultural training is considerably low in Malta compared to the EU average, with the former amounting to 1.7% and the latter equal to 9.1% in 2016. However, the figures show a positive trend compared to 2013, when the total farm managers who attained basic or full agricultural training amounted to 13% in Malta, with managers who attained full training amounting to 0.9%.¹²⁹

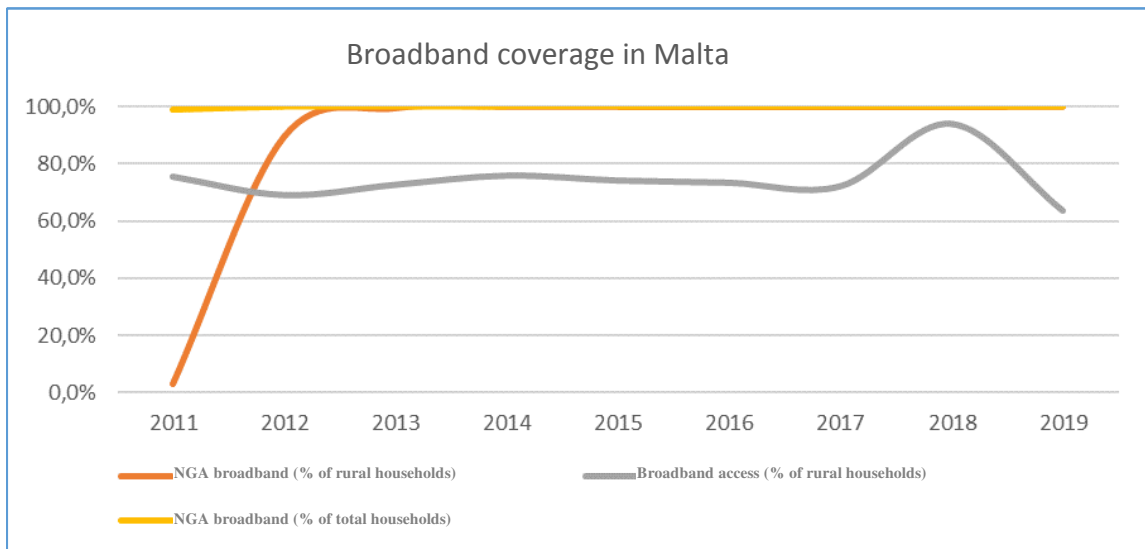
Regarding digitalisation, the overall Digital Economy and Society Index¹³⁰ (2020 data) places Malta at the fifth place in the EU, with a performance above the EU average in all the five dimensions of the index. Although all area in Malta is covered by next generation broadband, only 50% of rural population has basic or above basic digital skills in 2019.

Despite the use of e-government services and open data policies still not perfectly in line with EU average, Malta generally performs very well on broadband connectivity, human capital specialized in ICT, use of Internet by the general public and use of big data by businesses.¹³¹ Against this background, the level of digitalisation in the agricultural sector is lagging behind. While Malta is the EU country with the highest concentration of R&D personnel in the ICT sector in 2017, only scarce financial resources are available

for research in the digitalisation of agriculture¹³². Further, despite general broadband connectivity is available in more than 82% of households, there is a significant gap between urban and rural areas take-up in Malta (with households with connectivity in rural areas below 63%)¹³³. Lastly, even though Malta has the highest figure in the EU of businesses using big data technologies (24%), there exist no established practice of agronomic data gathering and storing in its farming community yet. So far, such technologies have been deployed only in small farms setups¹³⁴.



European Commission. CAP context indicator C.24 Agricultural training of farm managers. Based on EUROSTAT [[ef mp training](#)]



European Commission. Digital Economy and Society Index. DESI individual indicators – 1b1 Fast BB (NGA) coverage [[desi 1b1 fbbc](#)]

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- ¹ EUROSTAT. [[ef lf leg](#)]
- ² EUROSTAT. [[ef m farmang](#)]
- ³ *National Agricultural Policy for the Maltese Islands 2018-2028*. Final report prepared for the Ministry for the Environment, Sustainable Development and Climate change. February 2018.
- ⁴ EUROSTAT. [[ef m farmang](#)]
- ⁵ European Commission. CAP Indicator Dashboard [Farming Income support](#)
- ⁶ Directorate General for Agriculture and Rural Development. *Share of direct payments and total subsidies in agricultural factor income (2014-2018 average)*. [://ec.europa.eu/info/sites/info/files/food-farming-fisheries/farming/documents/cap-expenditure-graph5_en.pdf](https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/farming/documents/cap-expenditure-graph5_en.pdf)
- ⁷ General for Agriculture and Rural Development, ECORYS and Wageningen Economic Research. Study on risk management in EU agriculture. Publication Office of the EU, Brussels 2018. 302 pages.
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- ⁹ European Commission. *CAP context indicator C.28 Gross fixed capital formation*. Based on EUROSTAT [[nama_10r_3gva](#)] and [[nama_10r_2gfcf](#)]
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