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**Commission recommendations for Denmark'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 DENMARK'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 Denmark. The recommendations are based on analysis of the state of play, the needs and the priorities for agriculture and rural areas in Denmark. The recommendations address the specific economic, environmental and social objectives of the future CAP 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 Denmark, 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**

Maintaining the competitiveness of agriculture and food production in Denmark while encouraging farmers to take up more sustainable management practices is a future challenge.

Income per worker in the agricultural sector is very volatile and stands at about 42% of the average wage in Denmark between 2015 and 2019.

Besides the usual weather and market conditions, an important reason for the volatility of income in Denmark's agricultural sector is its high dependency on global markets.

CAP payments based on areas and animals accounted for 32% of agricultural factor income in 2018. Although Danish agriculture is highly productive, entrepreneurial income is lower than agricultural factor income.

The profitability of the sector is low, and there is a shortage of sector-specific skilled labour. It is a challenge to attract workers with the skills to make full use of new technology and, with that, to increase productivity and maintain competitiveness. The current system for knowledge sharing and targeted advice for farmers has been assessed as fit for that purpose, but it must continue to adapt to new challenges, particularly those linked to the Green Deal targets.

Cooperation between farmers is highly structured, with cooperatives (for processing and marketing of dairy, meat and arable products and the supply of inputs) and recognised producer organisations (in the fruit and vegetables sector) playing an important role. Overall, the high degree of organisation and vertical integration in the food supply chain has given farmers a solid position. However, business to consumer sales are less developed, which may present an opportunity for farmers, as there is increasing demand for quality, niche products.

A sustained approach to marketing is important to maintain the position of Danish agriculture on global markets. The close control exercised by farmers over the processing and marketing of food helps to finance a high level of investment in research, development and marketing and maintain the competitiveness of farming.

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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.

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

The EU's environmental objectives are an issue for Danish agriculture, given its overall structure and intensity, as shown by several key indicators.

Regarding total greenhouse gas emissions (GHG), agriculture and land use, land-use change, and forestry (LULUCF) emissions are large relative to the size of Denmark. The share from agriculture is significant and has increased in recent years; cropland is a large source of emissions, ahead of agricultural soils, enteric fermentation and manure management. This reflects an intensive livestock-related farming sector.

The increase in ammonia emissions entails a risk of non-compliance with emission reduction commitments. Forestland in Denmark is a net source of emissions, and increased summer temperatures (and decreased precipitation) will lead to a higher risk of forest fires and more frequent droughts. This will weaken most trees, making them more vulnerable to diseases and pests.

In terms of water quality, the concentrations of nitrogen and phosphorus have been stable since 2009, though at much higher levels than the EU average. In relation to the water framework directive (WFD), not all water bodies have yet achieved a good status and agriculture is identified as a significant contributing factor. Better integration of the EU's water quality objectives in policy areas such as agriculture is necessary to meet the standards of the WFD, along with better synergies between environmental and agricultural policies. In addition to achieving nutrient reduction targets, the CAP Strategic Plan should be used to ensure relevant environmental legislation is implemented.

The share of production of renewable energy in agriculture is lower than the EU average and should be increased, although data show a positive trend. Both agriculture and forestry have a higher level of energy use than the EU average, even if energy efficiency has improved since 2015.

Biodiversity in Denmark is not in a favourable situation, even though the sales of pesticides, for example has declined sharply over the past decade. The farmland bird index shows a considerable drop in farmland birds over the period 1995-2014 and a high number of pollinators are on the red list. The most important habitat types for species on the 2019 Danish red list were forests, grasslands and arable land.

Semi-natural habitats have declined considerably and remain highly fragmented, while the share of Natura 2000 areas in Denmark is below the EU average. In 2018, only about 15% of the territory was covered by forest, and 69% of forest habitats had a deteriorating conservation status. For species, however, the overall situation is more favourable than for habitats.

A key issue is the lack of space for nature in Denmark. With regard to Natura 2000, Denmark should consider a more targeted use of the CAP to support conservation measures on farmland and other areas impacted by farming activities, which could contribute to the Biodiversity Strategy. Overall, farming intensity has decreased in recent years. The area being farmed organically has increased and there is strong consumer demand for organic products.

Denmark might experience certain positive effects on agriculture due to climate change. On the other hand, certain annual crops may experience shorter growing seasons and more varied yields. Higher temperatures could lead to a wider spread of plant and animal diseases,

changing rainfall patterns may have an impact on agricultural productivity and require better drainage systems, while more extreme temperatures will increase the need for irrigation and lead to higher water demands for livestock farming.

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

The transition towards more sustainable agriculture while maintaining high productivity requires skilled young people as well as skilled managers and workers.

The population in Denmark is growing, although less in rural than in urban areas. Rural areas face an increasing share of people over 65 years old, and a declining share of people under 15 years old, whereas urban areas are seeing an increase in young people. The average age of farmers has increased to 57 years old, the share of young farmers is well below the EU average and there is a significant gender imbalance, with few young female farmers. However, although the total area managed by young farmers has declined, young farmers on average manage larger holdings.

Denmark must take account of the specific needs of women in agriculture and rural areas to deliver on gender equality and close the gender gaps in employment, pay, pensions, care and decision-making.

Protecting agricultural workers, especially those in precarious, seasonal or undeclared jobs, will play a major role in ensuring respect for legal rights. This is an essential element of the fair EU food system envisaged by the Farm to Fork Strategy.

Access to land remains a challenge, as land prices are high and an average farm represents an investment of about EUR 3.5 million. The employment rate is relatively high in rural areas and around the national average; the unemployment rate is relatively low in rural areas for age groups, but unemployment among young people is higher than for rural areas in general.

GDP per inhabitant (in purchasing power standard) is significantly above the EU average, but rural areas are closer to the EU average. Rural areas currently account for 24% of the gross value added.

Turnover in the bio-economy sector in agriculture has grown slowly in recent years, and employment in this sector has declined. Further development of biomass production and bio-refining may present opportunities for rural areas.

The system for handling and controlling of the use of pesticides is robust. However, Denmark should continue to promote the sustainable use of pesticides, particularly by ensuring the uptake of integrated pest management practices.

Denmark has low usage of antimicrobials and well-developed policies covering their availability and use.

Denmark should continue to address animal welfare, particularly the persistent practice of tail docking. The focus needs to be on promoting animal husbandry systems and practices that improve animal welfare, and particularly to reduce stress for pigs.

Denmark should make an effort to shift towards healthier, more environmentally sustainable food choices, in line with national dietary recommendations, as it has – among others – a low consumption of fruits and vegetables.

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

The agricultural knowledge and innovation system (AKIS) in Denmark is robust and well integrated, and has a key role in helping Danish agriculture maintain its position as a global player and front-runner in employing new green solutions.

The advisory services in Denmark are responsive to the needs of farmers and concerns from civil society. They also advise farmers on complying with various requirements and on new technologies.

The successful cooperation between applied science and end users has the potential to develop further. However, Denmark has decided not to support operational groups under the European innovation partnership. Therefore, the agriculture and forestry sectors are not benefitting fully from of innovation and knowledge sharing activities at EU level, and will miss the opportunity to participate in cross-border operational groups.

Despite the relatively good coverage of fast broadband in rural areas, this remains a challenge in some areas. Denmark needs to address this challenge through a complementary use of CAP, other EU, or national funding.

Around 60% of people in rural areas have digital skills at basic level or above, which is well above the EU average.

## **1.5 Recommendations**

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

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

- **Enhance competitiveness and market orientation** by maintaining a strong focus on research, development and innovation to be able to adapt agricultural production to future challenges and thereby stay competitive and be able to maintain a strong position on the global markets, particularly in the field of high-quality and sustainable/green production and processing methods.
- **Focus on preserving and reinforcing the cooperative structure**, considering that the high level of control by farmers of the food supply chain facilitates long-term investments to adapt to future challenges, including managing operational risk for the primary producers.
- **Ensure the viability of farms.** Consider a better targeting of support by reducing income gaps between different farm sizes a more even distribution of support (using, for example, the complementary redistributive income support for sustainability and the reduction of payments) and advancing in the internal convergence process.

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

- **Promoting climate change mitigation**, reducing greenhouse gas emissions, in particular from enteric fermentation and manure in line with the Methane Strategy. Measures could target improved feed management. Encourage carbon farming and improve management practises for carbon-rich soils and peatlands in order to enhance the current carbon sinks and reduce carbon losses. Consider rewetting of peatlands.
- **Promote climate adaptation and increase resilience** via targeted investment in research and development of management practises and resilient plant species. Promote better water management on farmland.
- **Contribute to the EU Green Deal target on reducing nutrient losses** and address the impact of intensive farming on water quality and air emissions. Particular attention should be drawn to leaching of nutrients, run off and discharge into watercourses and the sea. Measures to encourage sustainable nutrient management practises, such as precision farming, set aside of lowland, catch crops, buffer strips along watercourses and conservation/zero tillage, should be considered.
- **Contribute to the EU Green Deal targets on biodiversity**, in line with the actions of the Biodiversity Strategy, in particular through interventions to maintain and restore the status of **habitats**, such as grasslands, peatlands and other wetlands and protected species, farmland birds and wild pollinators in line with the prioritized action framework for CAP funding. Denmark should in particular consider **high diversity landscape features** in intensively managed agricultural landscapes.
- **Improve air quality**, in particular by reducing ammonia emissions from the livestock production, by means of requirements and schemes supporting sustainable management practices.
- **Contribute to the EU Green Deal target on organic farming** by supporting farmers for the conversion to and maintenance of organic production in line with the development of consumer demand.
- **Increase sustainability in production and use of energy** along the food supply chain, by supporting the use of improved technologies for efficient energy use and increasing the share of renewable energy in the energy mix.
- **Fostering sustainable forest management and afforestation**, enhancing multi-functionality, forest protection and restoration of forest ecosystems to reach good condition of habitats and species linked to the forests. Enhance ecological services and biodiversity to build resilience to threats such as climate change impacts on forests.

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

- **Promote generational renewal** while paying attention to the gender imbalance, by encouraging use of CAP instruments for young farmers in combination with national policies.
- **Promote higher levels of animal welfare** by putting in place more ambitious measures to support farmers in improving their livestock management practices, especially as regards the welfare of pigs.

- **Contribute to the EU Green Deal target on access to fast broadband internet** by further increasing digital connectivity in rural areas to improve living and business conditions, in complementarity with other EU or national funding.
- **Support the development of the bio-economy sector** to better exploit the potential of non-food products based on agricultural raw materials and promote this business opportunity for farming and rural areas. Consider measures to reduce food loss and waste in agricultural production.

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

- **Reinforce knowledge on sustainable production methods** in the food supply chain by playing a more active role in the European Innovation Partnership, by supporting establishment of operational groups, and support for stronger cross-border cooperation.



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

The agricultural sector in Denmark has high productivity. The sector is well consolidated and able to take up new technology and research. The food supply chain up to the level of retail is largely controlled by farmers via their cooperatives, notably for dairy, meat and arable products. The output value has been increasing over time and the net trade balance is strongly positive. Labour costs are high but partly offset by high labour productivity. There is a shortage of skilled labour. The number of young farmers entering the sector has been declining. The intensive farming has negative impacts on the environment and climate, such as nutrients leaching, GHG emissions, loss of habitats and biodiversity. Rural areas are doing well in respect of employment rate and social inclusion. Overall, the population in rural areas in Denmark is increasing; however, the share of young people has decreased. Broadband coverage is good, though clearly not as good in rural areas than for Denmark as a whole.

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

In Denmark, the entrepreneurial agricultural income per worker fluctuates strongly. Out of 14 years, 2 years were loss making, in 6 years the income was between 0% and 30% of the average national income, and in 3 years only, agricultural income was higher than 60% of the national average income.<sup>1</sup>

The average agricultural factor income per worker has also shown high volatility between 2005 and 2018, fluctuating between EUR 22 000 in 2008 and EUR 60 700 in 2012.<sup>2</sup> The agricultural income per worker is on average EUR 36 000, which is about 42% of the average wage in the whole economy between 2015 and 2019. However, after 2015 the income has fallen, being even negative, for the farms with economic size below EUR 100 000. These would in many cases be part time farms without an objective to generate an operational surplus. In particular, the agricultural entrepreneurial income (including wages) per Annual Work Unit remains very low or negative for the cattle sector, in spite of the increased level of support<sup>3</sup>. Danish agriculture is highly performing in adding value but this does not reward the farmers for the remuneration of own production factors as the entrepreneurial income is quite lower than the agricultural factor income.

From 2013 to 2018, the share of direct payments in income varied between 21% and 30%. Payments under rural development (except investment support) accounted for approximately 2% of the factor income. No payments for areas facing natural or specific constraints are granted under rural development, whereas farmers based on islands without bridged connection receive a top-up to direct payments.

The income per worker was above the average agricultural factor income for milk, granivores, and other field crops, but below average for the cattle and sheep & goats sectors.<sup>4</sup> Most arable land receive direct payments of EUR 250-300 per hectare, except for cattle farms where additional coupled support is paid and the average payment was approximately EUR 490/ha in 2018<sup>5</sup>. In 2018, 20% of the beneficiaries farmed 73% of the land and received 75% of direct payments.<sup>6</sup> In 2016, about 47% of the beneficiaries received less than EUR 5 000 of direct payments, out of which 26% received less than EUR 2 000.<sup>7</sup>

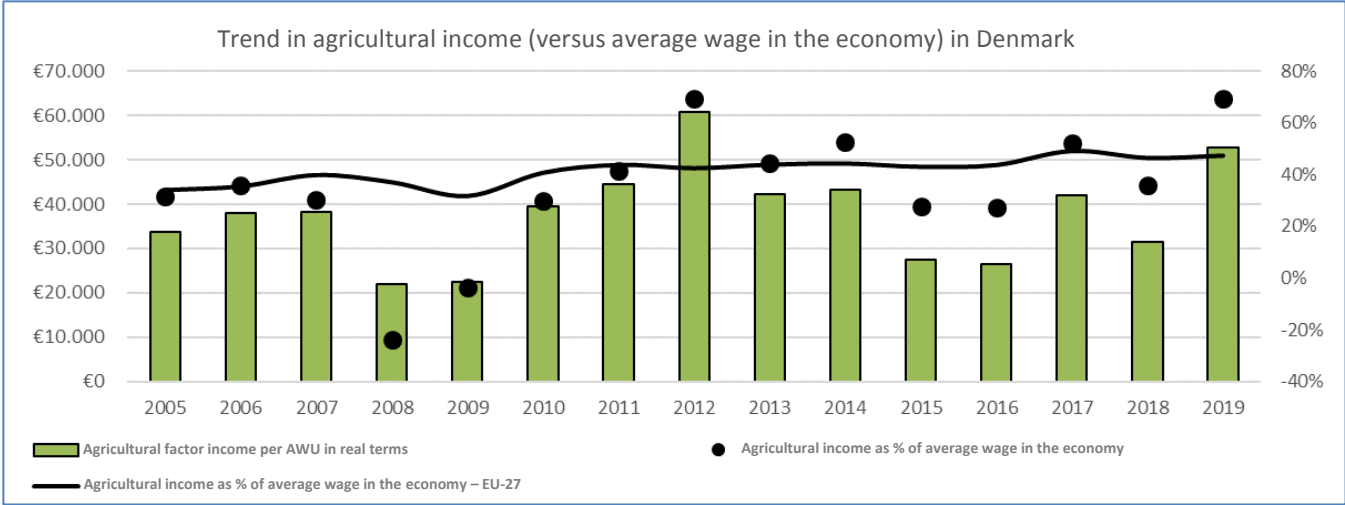
The average holding size in Denmark is 111<sup>8</sup> hectares, one of the largest of the EU-27<sup>9</sup>. The same applies to the average economic size of holdings, which reaches EUR 404 000 per farm in 2018. The very small holdings are often capital and labour intensive livestock farms. However there is a gap in income when it comes to small- and medium-sized farms (between 20 and 75 hectares), which represent 38% of the entire population of agricultural holdings and

cover about 14% of the total agricultural land. In particular, for this class of farms between 20 and 75 hectares, the agricultural income in 2018 is only 25% of the national average<sup>10</sup>.

Denmark is facing continuous labour shortages in certain sectors, including agriculture. The shortages concern mainly sector-specific skilled workers. While higher numbers of vocational education and training graduates would help meet labour market needs, participation in such schemes remains low.<sup>11</sup>

Multi-peril crop insurance is not available in Denmark but the insurers offer various types of other insurance solutions<sup>12</sup>. There is a need to deploy risk management instruments and strategies. As far as crop insurance covering climatic risks is concerned, uptake in Denmark is below 25% of farms<sup>13</sup>. The low uptake in various income stabilisation schemes is probably due to the fact that such solutions are considered less cost efficient by farmers. Danish agriculture is well consolidated and the control over the food supply chain via the cooperatives is relatively high. This means that the platform for farmers to jointly focus on marketing, research and innovation, and thereby develop contemporary products and stay competitive, is good. In case of demand shocks, enterprises with a high market power, controlled by the farmers, can be used to reach new outlets or to shift focus into other products. The well-functioning cooperation between farmers and a competitive food processing industry are probably an efficient income stabilisation tool.

A stabilisation of farmers’ income can be done with instruments outside the CAP as well. For example, the use of measures within the fiscal system to balance income between years could be a cost-efficient way for individual enterprises.



Graph: Trend in agricultural income (versus average wage in the economy)<sup>14</sup>

N.B.: the agricultural income as percent of the average wage is calculated as agricultural entrepreneurial income plus wages and salaries in the agricultural sector per worker (thus different from the agricultural factor income). After deduction of rented capital and land, the agricultural entrepreneurial income is negative in Denmark for 2008 and 2009.

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

The food production makes a considerable contribution to Danish economy. Investments in research and technological development are needed in order for the sector to continue improving its productivity and develop its strong global position. With a total level of investment in research of almost 3.0% of GDP in 2015, Denmark invests more in research than the OECD average of 2.4%<sup>15</sup>. The largest share of investments in research is made by the private sector. Active international research collaboration is also an essential condition for

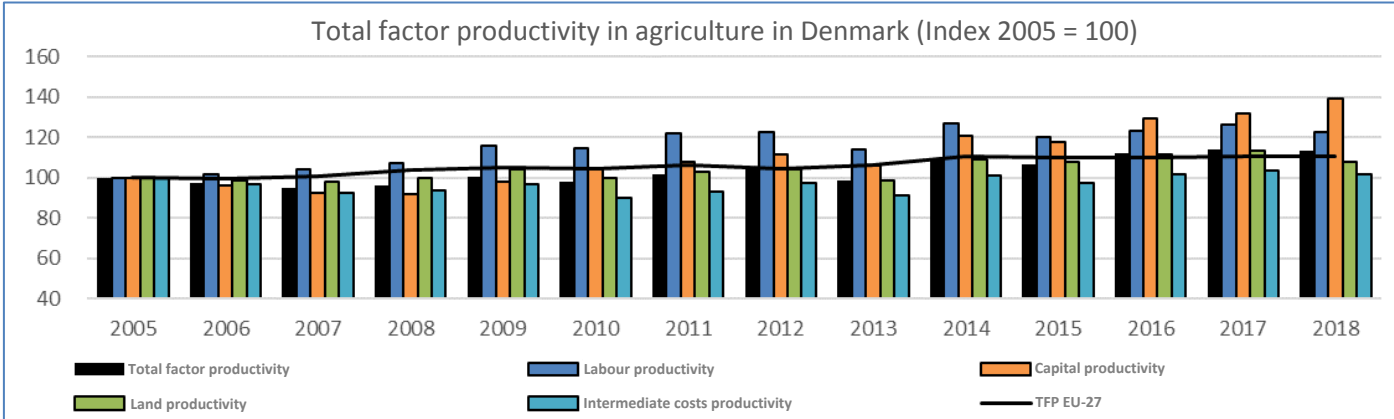
maintaining and developing competitiveness in the food sector. It is crucial that private companies benefit from the international research and innovation initiatives, for example through participation in EU Research and Development programmes. There is a growing demand among consumers for innovative food. Safety, quality, animal welfare, the environment as well as ethics play a role in consumers' choices. Food businesses must produce and market high-quality products under sustainable conditions to be able to stay competitive. There is also an important need for a focus on food security and traceability in a farm-to-fork perspective, for example through increased digitalisation.

The agri-food net trade balance was EUR 4 770 million in 2018, whereof EUR 4 089 million was generated from non-EU Member States<sup>16</sup>. The high dependency on global markets makes the sector vulnerable to external shocks (commodity prices, trade barriers, geopolitical risks/events).

The total factor productivity in Danish agriculture is higher than the EU average<sup>17</sup>. Labour productivity is sticking out as the second highest in the EU. Labour costs are high thus requiring that labour productivity remains high. From 2009 to 2017, the average net on-farm investments have been EUR 1 363 million per year<sup>18</sup>.

Technologies for a more accurate use and targeted allocation of fertilisers, etc. (precision agriculture) is widely adopted by Danish farmers, in particular on large holdings. Precision technology is applied on 66% of the total agricultural area. The share of the number of farms using precision technology was 24% in 2019<sup>19</sup>. Denmark has an effective system for knowledge-sharing, agricultural advice and cooperation between public institutions and farmers, translating new knowledge from research into practice. A challenge for the exploitation of new technologies may be the low rate of generational renewal<sup>20</sup>.

The educational system in the area of agriculture and forestry provides a sufficient number of highly qualified persons for the needs of the agricultural sector; nevertheless, recruitment is difficult since farming is not always seen as the most attractive field of employment. The lack of sufficient qualified staff is a threat to the continued development of the agricultural sector.



Graph: Total factor productivity in agriculture in Denmark<sup>21</sup>

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

The Danish primary production is focused on commodities, in particular dairy and pig meat, to be processed and later exported. The share of products suitable for business to consumer sale or for on-farm processing (such as fruit and vegetables) is relatively low. From the total agricultural output, crops represented 35%, whereof cereals 13% and animals 65%, whereof

pig meat 31% and dairy 21%. In 2017, Denmark produced 8.3% of all pig meat and 3.7% of the milk in the EU-28<sup>22</sup>.

Non-recognised producer organisations in the form of cooperatives have a long history and large market share in marketing farmers' primary production, in particular on dairy, meats and arable products, and in the supply of agricultural inputs, such as machinery, fertiliser, seed and feed. The cooperatives are competitive and give the farmers control over an important part of the food chain. The agricultural sector has gained a significant position on the global markets, in particular in Asia for pig meat and dairy products, turning Denmark into a large net exporter.

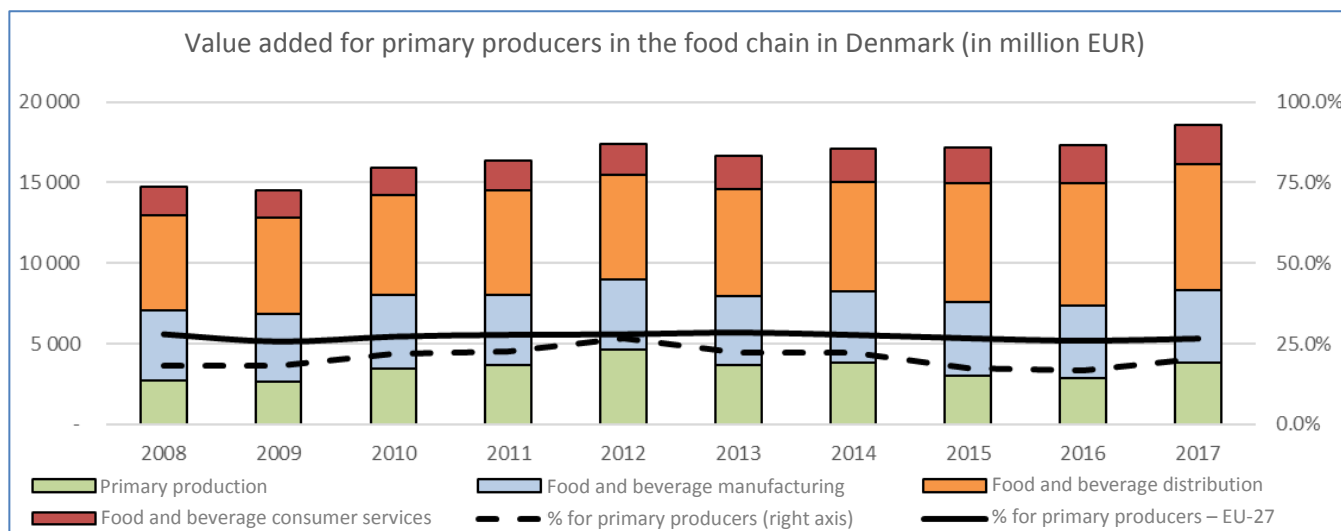
The share of the value added captured by the agricultural sector in Denmark is close to the EU-average (21% in 2017 vs. EU-27 average at 27%)<sup>23</sup>. The share has remained approximately at the same level since 2008. Part of the value added generated by the cooperatives in the food processing stages and returned to its members/farmers as dividend or retroactive payments is not included in the value added as defined here.

The market for business to consumer sales (on farm sale, open markets etc.), where the farmer is capturing a large share of the value added, is less developed. This partly explains why the share of value added captured by the farmer is relatively low. This is not necessarily a weakness. The farming and processing is well consolidated and profits from economies of scale. Farmers capture a high net value added/farmer in absolute terms. The prices on food and non-alcoholic beverages in Denmark are considerably above EU-27 average with an index at 129 (2019)<sup>24</sup>.

There are only two recognised Producer Organisations in Denmark, both in the fruit and vegetables sector. The producer organisations are marketing 55% of the fruit and vegetables production, which is slightly higher than the EU average of 50%<sup>25</sup>. Prices and volumes are volatile on an annual basis. There are no recognised interbranch organisations (IBO).

The strong position of the cooperatives has led to a significant degree of concentration in the dairy and meat sectors, which has opened business opportunities for specialised dairies in recent years. The demand for locally produced food (niche products) increases and food is marketed more widely on alternative platforms, such as targeted supermarkets, online, food communities, directly to restaurants etc. Therefore, there are more possibilities for farmers to strengthen their position in the food supply chain by diversifying outlets and/or in food communities than engaging in direct sales on the farm.

By September 2020, 13 products are registered under the EU quality schemes whereof five in the category of wine and four in the category of cheese.<sup>26</sup>



Graph: Value added for primary producers in the food chain in million EUR<sup>27</sup>

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

In 2018, greenhouse gas (GHG) emissions from agriculture in Denmark amounted to 11 million tonnes of CO<sub>2</sub> equivalents, which represents about 2.8% of EU emissions from agriculture, a share that has been relatively stable in recent years (2008: 2.83%). Agriculture accounts for 20.14% of total GHG emissions in Denmark in 2018, an increase from 17.14% in 2008 and nearly double the EU average for GHG emissions from agriculture of 11.27% in 2018 (2008: 9.70%)<sup>28</sup>. The main sources of GHG emissions in agriculture are enteric fermentation at 34% (mainly cattle, lower than the EU average of about 44%), manure management at 27% (of which swine manure 46% and cattle manure 45%) well above the EU average of about 14% and soil management at 37% (EU average 38%)<sup>29</sup>. For methane specifically, in 2018 emissions from agriculture in Denmark were 239.6 thousand tonnes, a slight increase from 236.75 thousand tonnes in 2016.<sup>30</sup> Of the methane emissions in agriculture 99.95% come from livestock (stable ratio over the years). In 2016 to 2018, about 73% of livestock emissions of methane were from ruminants (cattle and sheep). In 2016 methane emissions were 203 kg/ruminant LSU in Denmark, whereas for EU-27 it was 163 kg/ruminant LSU.<sup>31</sup>

The (draft) SWOT takes account of the high emissions from agriculture, however notes that in Denmark GHG emissions are 3.71 kg CO<sub>2</sub> per kg meat produced, far less than the EU average 8.14 kg (2016)<sup>32</sup>. However, it is also noted that as climate-efficiency is already there, there is no immediate potential for a further fast reduction. On manure the SWOT points to further use of technology (acidification, cooling) to reduce emissions, particularly methane and ammonia.

Methane represents 54% of the total GHG emissions (in CO<sub>2</sub> equivalents) from agriculture excl. land use, land use change and forest (LULUCF). Methane emissions predominately originate from livestock production, in particular cattle and pigs. All categories of the LULUCF sector are emissions, except for harvested wood products. Cropland is an important source of emissions, representing 37% of the total GHG emissions from agriculture<sup>33</sup>. The increase of GHG-emissions from soil management 2013-2018 was +2.65%, (EU average +2.02%)<sup>34</sup>. 2.6% of the soil in Denmark is peatlands<sup>35</sup>.

The production of renewable energy in agriculture in 2018 is 7.1% of the total in Denmark, up from 3.6% in 2015 but below the EU average of 12.1%<sup>36</sup>. Forestry accounted for 42.9% of the

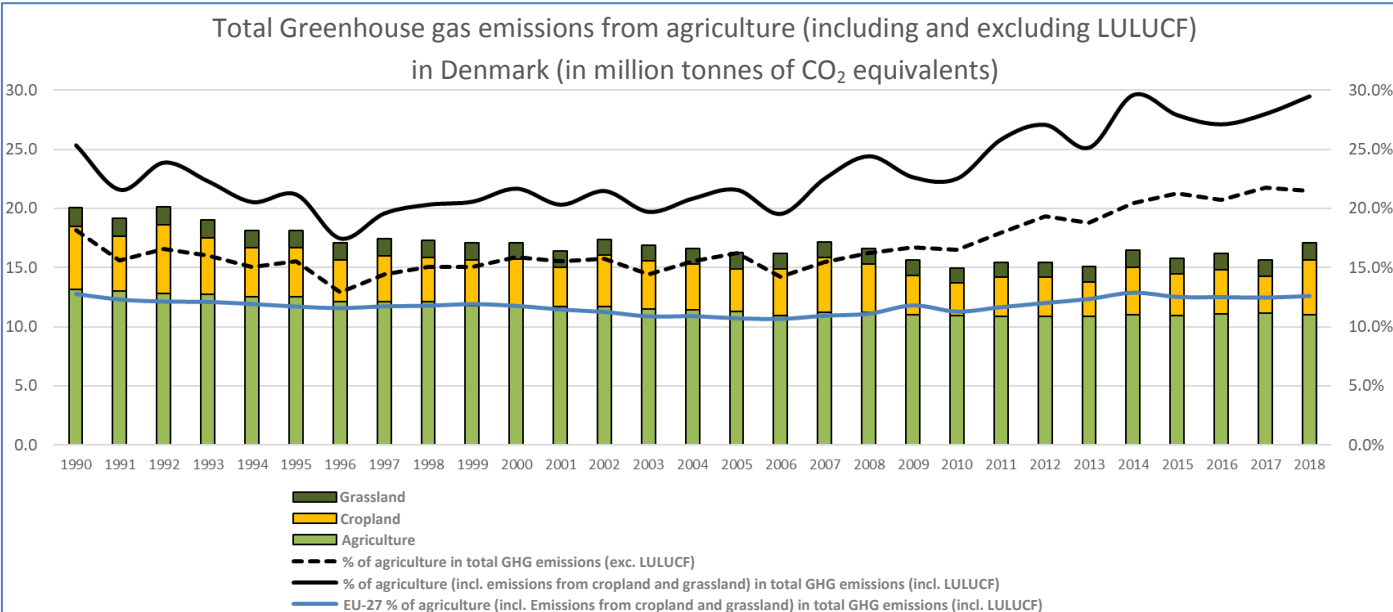
production in renewable energy in 2018, just above the EU average of 41.4%, and a small decrease from 45.1% in 2015. The energy use in agriculture and forestry<sup>37</sup> in 2018 is 4.3% (2015: 4.5%) of total energy consumption, among the highest in the EU and above the EU average of 2.9%. The direct use of energy in agriculture and forestry decreased from 195.4 kg of oil equivalent hectare of agricultural and forestry area in 2015 to 184.4 kg of oil equivalent in 2018 (i.e. energy efficiency improved).

The trends for renewable energy and energy efficiency are overall favourable in Denmark, notably the trends for Indigenous production of energy from forest and agriculture 2013-2018 at 35.1% (EU average 0.13%), and for energy from other biogases from anaerobic fermentation 2013–2018 at 256.55% (EU average 21.39%).

The mean organic carbon content has decreased from 27.5g/kg in 2012 to 25.8 g/kg in 2015, and the total estimate of organic carbon content in arable land has fallen to 258 megatons in 2015.

In 2018 only 0.28% of total UAA was under management contracts (under the Rural Development Programme) targeting reduction of GHG and/or ammonia emissions. The National Energy and Climate Plan in respect of the dimension of decarbonisation includes need for investments to reduce emissions in agriculture and subsidies for the conversion of arable land on organic soils to nature<sup>38</sup>. In the SWOT setting aside of agricultural lowland areas is assessed to be a cost-efficient way of achieving reductions in CO<sub>2</sub> emissions<sup>39</sup>. Denmark already has planned national measures for afforestation and for rewetting of agricultural land (carbon rich lowland) to reduce greenhouse gas emissions from agriculture for the period 2021 to 2030<sup>40</sup> and to deliver more biodiversity.

The effects of climate change may affect agriculture in different ways. The temperature increase will lead to higher productivity for many crops due to longer growing seasons, and may lead to growing new crops in Denmark, whereas e.g. rapeseed and cereal may experience shorter growing seasons. Furthermore, higher temperatures are likely to lead to a wider spread of plant diseases, and further spread of animal diseases. Changing rainfall patterns and increased risk of droughts might impact agricultural productivity in Denmark.



Graph: Total Greenhouse gas emissions from agriculture (including and excluding LULUCF)<sup>41</sup>

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

Ammonia emissions from Danish agriculture have decreased by 41% from 127 030 tonnes in 1995 to 75 510 tonnes in 2013. From 2013 to 2018, emissions have had a small overall increase by 2% to 77 010 tonnes, with fluctuations between the years. Agriculture has accounted for some 93-95% of Denmark's ammonia emissions since 2000 (before this was slightly higher), this is close to the average for EU-28 of 92.88%. Some 75-80% of emissions from agriculture stem from the livestock sector, a share that until the late 1990's was a bit lower. In 2017, 21% of the NH<sub>3</sub> emissions originated from the pig farming sector, 11% from the cattle dairy sector, 11% from the use of synthetic Nitrogen fertilisers, and 5% from the non-dairy cattle sector; 50% of the ammonia emissions stem from the category "other agricultural sectors"<sup>42</sup>. Denmark is among the Member States considered at high-risk of non-compliance with emission reduction commitments for ammonia. In 2020-2029, there is a need for a reduction of 12% from current levels, and from 2030 and beyond there is a need for a reduction of between 10% and 30% from current levels<sup>43</sup>. However, recent developments related to the fur industry following the Covid-19 pandemic is likely to contribute to the reduction of ammonia emissions.

The quality of soil, expressed as the soil organic carbon content (SOC), is low compared to the EU-average. The mean organic carbon content has decreased from 27.49 g per kg in 2012 to 25.8 g in 2015, compared to 43.1 g per kg for EU-28<sup>44</sup>. In terms of soil erosion, the soil loss rate by water (RUSLE2015 Model) is 0.5 tonnes per hectare per year, compared to the EU average of 2.5<sup>45</sup> (JRC). The estimated agricultural area affected by severe water erosion (>11 t ha<sup>-1</sup> yr<sup>-1</sup>) shows that such area is negligible (0.002% of agricultural area) in Denmark<sup>46</sup>. Yet, locally soil erosion by water can still be a concern with unsustainable land management practices. In Denmark, the wind erosion is a concern as the losses due to wind erosion in arable lands is among the highest in EU.<sup>47</sup> In Denmark 88%<sup>48</sup> of tillable UAA is conventionally tilled and a shift to low-impact practices such as conservation/zero tillage should be considered. The impact of soil improving measures may be increased by linking them to research, innovation and demonstration activities available under the forthcoming Horizon Europe Mission on soil health.

Both the estimated nitrogen and the phosphorus surplus on agricultural land<sup>49</sup> in Denmark have decreased over time since 2004, as shown in the graph below, but stayed rather stable since 2009, with 80 kg N/ha and 7.0 kg P/ha in 2015. The surplus remains high compared to the EU average of 46.5 kg N/ha and 0.5 kg P/ha<sup>50</sup>.

In relation to the Water Framework Directive, around 48% of surface waters were in less than good ecological status and for chemical status the majority have unknown status and less than 1% are failing good status. For groundwater, 1% is failing good quantitative status, 25% are failing good chemical status and 31% are in unknown chemical status. Diffuse agricultural pollution is a significant pressure for coastal and lake water bodies but is not assessed for river water bodies and this has been reported as a gap as it is likely to be an impact on river water bodies also.

In this context, special attention is to be paid to the Baltic Sea. Eutrophication is among the most influential and long lasting environmental pressures in the Baltic Sea. At least 97% of the region was assessed to be below good eutrophication status, including all of the open sea area and 86% of the coastal waters. Indicators reflecting nutrient levels were generally furthest away from good status. Long term trends shows signs towards improved eutrophication status in the westernmost Baltic Sea. Although signs of improvement are seen in some areas, effects of past and current nutrient inputs still influence the overall status<sup>51</sup>.

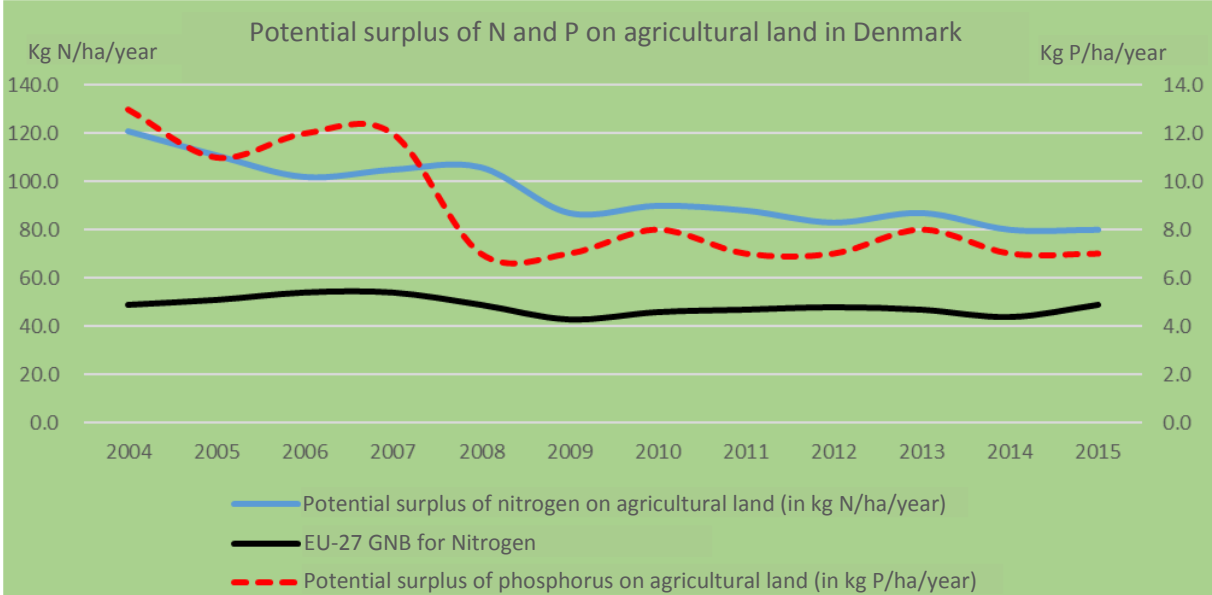
Nutrient inputs to the Baltic Sea around Denmark however have significantly decreased for nitrogen in the Danish Straits and Kattegat, and for phosphorus in Kattegat.<sup>52</sup>

In 2017, 44% of the ground water bodies in Denmark were in good chemical status, 25% are failing good status and 31% were unknown.<sup>53</sup> In 2017, 15% of surface water monitoring sites were of high quality, which is status quo compared to 2012, and 2% were of poor quality, which is an improvement compared to 2012 (5%)<sup>54</sup>. 16.6% of the water stations monitored in the context of the Nitrates Directive show nitrates concentration above 50mg/L for the period 2012-2015.

According to the Commission report on the nitrates Directive implementation<sup>55</sup>, Denmark had a high decrease of the livestock density of 14% since 2010, with an EU average of a 3% decrease (EU-28). Denmark still has a high livestock density (1.57 livestock units per ha of utilised agricultural area in 2016)<sup>56</sup>.

Denmark has since many years spent EAFRD funds for non-productive investments (such as establishment of wetlands) and management commitments to improve water management, and has a target for 2023 of supporting management commitments on 26% of the utilised agricultural area (UAA) for that purpose.

The renewable freshwater resources in Denmark are M2.8 m3 per 1,000 inhabitants. This is a bit higher than the EU average of M1.6 m3<sup>57</sup>. The share of irrigable area is 8.3% of the total UAA (2016)<sup>58</sup>. The EU-27 average was 8.9% of UAA. The total water abstraction in agriculture was almost M96.9 m3 in 2012<sup>59</sup>. The share of irrigation in the gross water abstraction were 14.9%, which however was much higher the year before (25.0) – the figure varies a lot according to the weather conditions of the year. The EU average for 2012 was 28.0<sup>60</sup>. There are significant variation in the Water Exploitation Index for Denmark, which was 1.28% for Jutland and 24.94% for Zealand in 2015<sup>61</sup>.



Graph: Potential surplus of N and P on agricultural land in Denmark<sup>62</sup>



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

The situation for the conservation status of agricultural habitats (grassland)<sup>63</sup> is among the worst in the EU with 11% unfavourable-inadequate and 89% unfavourable-bad. This has remained unchanged over the two reporting periods 2007-2012 and 2013-2018. In 2018, the total area of fallow land was 35 700 hectares<sup>64</sup> and covered 1.4% of UAA (compared to EU-average of 4.1%). 0.4% was covered by landscape elements (EU-average 0.5%).<sup>65</sup>

Farming intensity<sup>66</sup> (C.33) overall has gone in the direction of lower intensity in recent years, in 2015 17.5% of UAA was managed with low input intensity increasing to 42.7% in 2017 (EU-average 27%). Over the same period, high intensity farming on 48.7% of UAA decreased to 27.5%. Livestock density peaked at 1.86 LSU per ha of UAA in 2010 and has decreased to 1.58 in 2016.<sup>67</sup>

The share of UAA in Natura 2000 areas however has decreased in recent years, from 4.7% of agricultural area including natural grassland in 2016 to 4.0% in 2018, even if some of the decrease may be that agricultural areas in Natura 2000 cease to be farmed. Denmark falls behind the EU-average that has increased over the period from 7.2% to 11.2%. 20.1% of forest area was under Natura 2000 in 2018, with the EU average at 31%. Of the total territory 8.3% was under Natura 2000 network, slightly increasing to 8.4% in 2018, and much below the EU average of 19.8%. The Ministry of food, agriculture and fisheries estimates that in 2016 there were 340 000 ha of semi-natural grassland in need of management and that 50% of these occurred on High Nature Value farmland outside Natura 2000. Currently 100 000 hectares of grassland and semi-natural grassland are under agri-environment commitments for extensive farming to preserve the grassland biodiversity.

A key issue for Denmark is the lack of space for nature. The area of open natural habitat has declined considerably over the past century but is now relatively stable at around 10% of the territory. Greening of agricultural land and management practices remains a challenge for developing green infrastructure overall in Denmark<sup>68</sup>. Denmark has made insufficient progress even with regard to stopping deterioration of protected habitats. A related need identified was to ensure an overview of measures adopted under various legal commitments, such as addressing nitrate pollution as part of water planning, in terms of making progress toward Favourable Conservation Status.

Landscape fragmentation remains one of the primary challenges for the implementation of the EU nature directives<sup>69 70</sup>. The Danish environment protection agency has also identified that the natural habitat areas are today generally small and far apart<sup>71</sup>. The farmland birds index had decreased from 93.9 in 2009 to 77.4 in 2013, up to 88.3 in 2014 and then fell again to 74.4 in 2018, indicating a long-term decline.

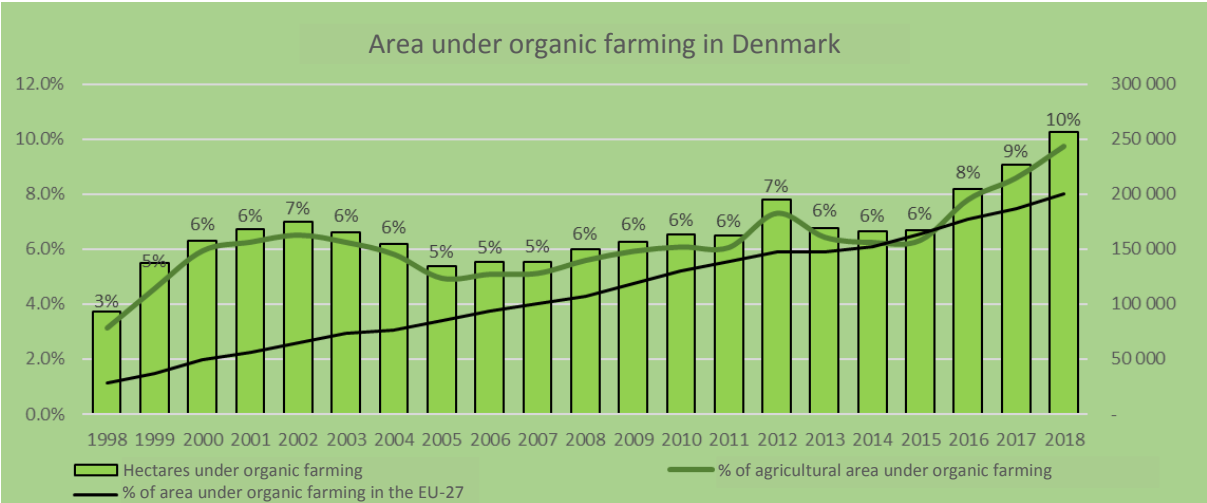
The assessment of species is generally more favourable than the assessment of habitats. 34% of species (except birds) have favourable status (compared to EU-average 23%). 13% of species (except birds) have status unfavourable-inadequate (EU-average 42%). 28% of species however have unfavourable-bad status (EU-average 18%).<sup>72</sup>

With regard to pollinators, 44% of bumblebees and 35% of butterflies were on the national red list of threatened species (2019)<sup>73</sup>. Furthermore, managed honeybees are important pollinators for a number of pollinator-dependent crops and may also contribute to pollination of wild plants. Pesticides are among the biggest threats to insects - the sales of pesticides have decreased by 31% from 2011 to 2018.<sup>74</sup>

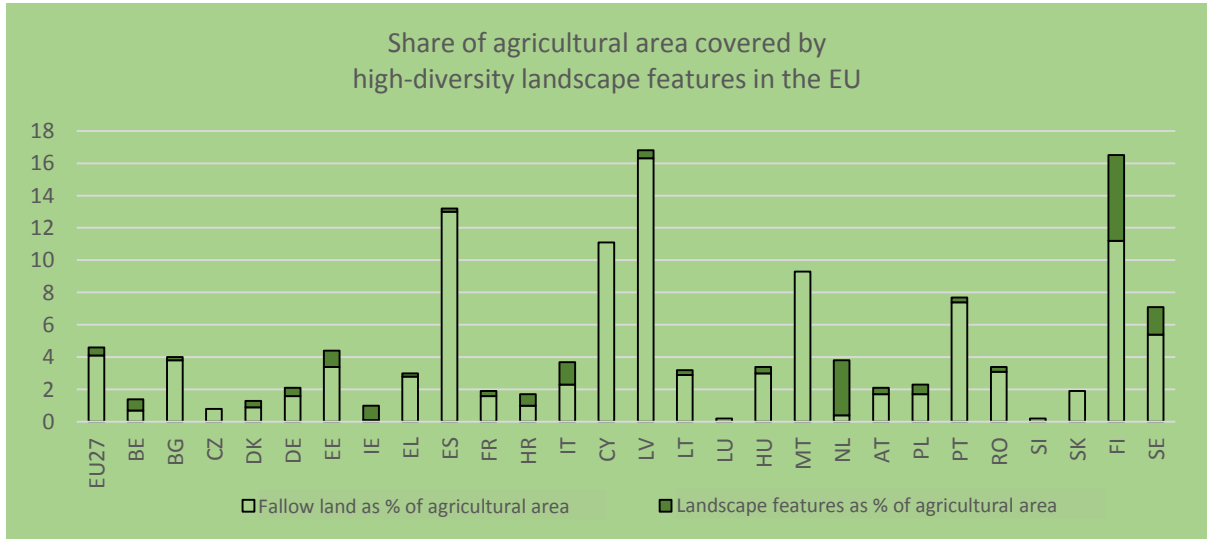
Agricultural area under organic farming has increased slowly but steadily in recent years and was about 10% in 2018 (EU average 8%) and the area under conversion as percentage of UAA is increasing which indicates a continued growth<sup>75</sup>. Further, and in addition to areas under organic farming, areas under agri-environment-climate commitments covered more than 3% of UAA in 2018 (EU average 15%).

The market for organic products is well developed in spite of relatively limited surface dedicated to organic production. Danish consumers spend the most money on organic food in the EU: EUR 312 per capita /year (second in the world after Switzerland). Moreover 11.5% of the Danish grocery is organic, the highest share all over the world (mostly: eggs, milk, fruit and butter). Production is growing slowly but demand is growing significantly, which indicates potential for increasing the national production.

In 2020, about 15% of the area in Denmark is covered by forest<sup>76</sup>, and of the forest area 20.1% is under Natura 2000<sup>77</sup>. Of the forest and wooded land 5.6% was protected for biodiversity conservation and 13.2% protected to conserve landscapes and specific natural elements<sup>78</sup>. The conservation status of 31% of forest habitats was assessed as stable but the other 69% as decreasing<sup>79</sup>.



Graph: Area under organic farming<sup>80</sup>



Graph: High diversity landscape features<sup>81 82</sup>

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

Danish agriculture is characterised by a high percentage of ageing farmers. In 2017, the average age of farmers was 57 years<sup>83</sup>.

In 2016, the 910 young farmers (aged below 35 years)<sup>84</sup> corresponded to 2.6% of all farm managers (much lower than the share of 5.1% for EU-27). This share has continued to decrease from 2005 to 2013 (from 7.3% to 2.5%), but stabilised in the following years (2.6% in 2016). This trend is different from the EU-27 where it first increased between 2005 and 2010 (from 6.9% to 7.5%) and subsequently decreased to 5.1% in 2016<sup>85</sup>. This is also confirmed by the old age dependency ratio<sup>86</sup>: whereas in 2010 there were 11 young farmers for every 100 farmers above 35 years of age (14 in EU-27), in 2016, they were only 4.8 (9 in EU-27)<sup>87</sup>.

The ratio was least favourable in the Central Denmark Region (Midtjylland) and in the Zealand Region (Sjælland)<sup>88</sup>. It should be noted that the ageing within the group of young farmers is progressing: between 2005 and 2016 the number of those aged below 35 years decreased by 76%, whereas those above 65 decreased only by 6%<sup>89</sup>.

The ratio of young female managers to male managers is very low: only about 8% in 2016, a sharp decline from about 15% in 2005/2007. The EU trend has increased to 30% in 2010, and since then remained stable<sup>90</sup>.

The total area managed by farmers under 35 years old fell from 9.4% in 2005 to 4% in 2016. The average farm size however tends to increase and this tendency is more evident for the young farmers. Compared to the elderly, young farmers tend to have bigger farms and a higher economic (standard) output<sup>91</sup>: Farmers under 35 years old managed on average 110 hectares (+64% since 2005) compared to 69 hectares for farmers from 55 to 64 years (+41%) and 45 hectares for the ones 65 years old, or older (+20%). The average economic output in 2016 was EUR 218 000 for farmers under 25 years old, EUR 484 000 for farmers between 25 and 34 years, EUR 226 000 for farmers from 55 to 64 years old and 107 000 EUR for the ones aged 65 years or older. Whereas farmers between 25 and 34 years old of age have the highest standard output per farm (+117% compared to 2005), in 2016, farmers under 25 years old remain below the average and even decreased (-5% compared to 2005). The data material for this category is however limited (40 or 0.1% of the total)<sup>92</sup>.

In 2016, 59% of all farmers under 35 years managed a livestock farm, a decrease from 67% from 2005. 62% of all farms in Denmark are livestock farms.

In 2016, farmers under 35 years old had the highest livestock intensity (329 LU per farm) compared to the Danish average of 180 LU per farm. Farmers above 65 years have 72 LU per farm on average<sup>93</sup>.

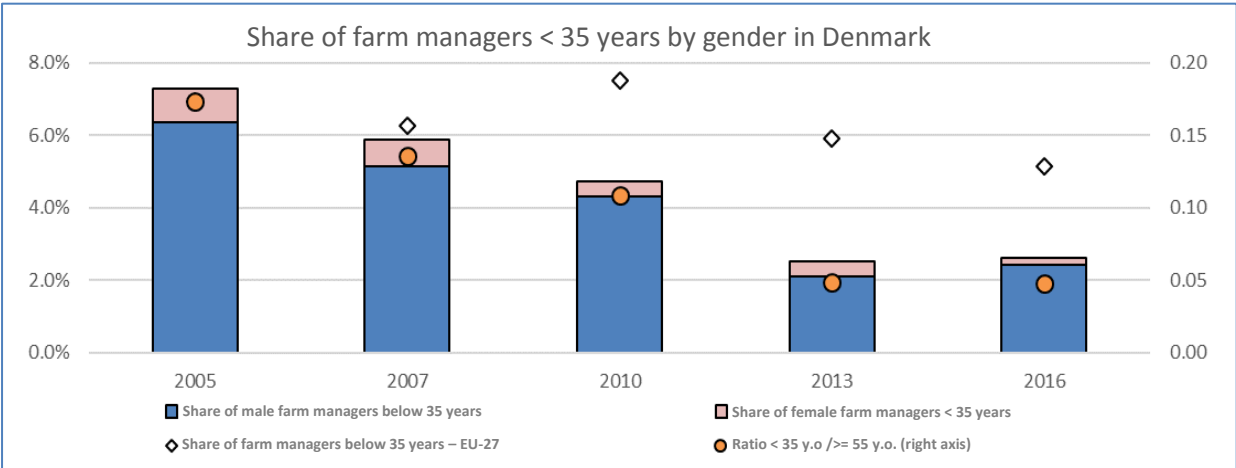
Between 2005 and 2016, the share of young farmers with basic training increased from 51% to 58%, compared to a slight increase in EU-28 (21% in 2016). The share of young farmers with full training remained around 9% (EU: 22% in 2016). Young farmers tend to be better trained than the general farming population. The share of farm managers with full training was only 7% in 2016.<sup>94</sup>

The financing gap in the Danish agricultural sector<sup>95</sup> is estimated to amount to between EUR 76 million and EUR 79 million of which about 36% may be attributed to young farmers and new entrants. Access to land is an issue particularly for young farmers, as buying a farm is costly and represents an investment of approximately EUR 3.5 million for an average farm.

Availability of labour is an increasing concern for Danish farmers. The labour gap in agriculture has soared from approximately 6% in 2015 to 18% in 2017. It is expected that Denmark will lack numerous educated farmers by 2025. This has resulted in large scale recruitment of young people from particularly Eastern Europe<sup>96</sup>.

In Denmark, young farmers are currently supported via the top-up payment in Pillar 1 and via different Pillar 2 measures, which however are not specifically targeting young farmers. Denmark has not programmed any measures under sub-measure 6.1 supporting the set-up of young farmers. Pillar 1 support for young farmers absorbs about 0.5% of the direct payment expenditure, which is below the EU average.

Agriculture, forestry and fisheries are important sectors for the employment in rural and predominantly rural areas, but also industry and the construction sector are important for employment, according to the Draft SWOT for the CAP Strategic Plan for Denmark<sup>97</sup>. Whereas employment in the primary sector in rural and predominantly rural areas has decreased, there has been a slight increase in employment in industry<sup>98</sup>. New business areas could have potential in the rural areas<sup>99</sup>. Relatively more businesses are established in urban areas than outside cities, but the share of new businesses operating beyond 5 years is slightly higher outside urban areas<sup>100</sup>.



Graph: Share of farm managers below 35 years of age in Denmark.<sup>101</sup>

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

In Denmark, 51% of the territory are predominantly rural areas. This is higher than the average EU-27 share of 45%. Intermediate regions account for 47% (46% for EU-27)<sup>102</sup>. 28% of the Danish population lives in rural areas. The population in rural areas has increased by 1.2% from 2015-2019. In urban areas, the increase is 4.5%<sup>103</sup>. The EU average is a small population decline in rural areas of 0.5%<sup>104</sup>.

From 2014 to 2019, rural areas have experienced a 10% increase in people older than 65 years for men and 8% for women. In urban areas, the increased share of elderly people is 7% for men and 4% for women. The share of people younger than 15 years in rural areas has decreased by 3% for both genders, whereas the figure in urban areas shows an increase of 3% equally for both genders<sup>105</sup>.

The total employment rate in rural areas for people aged 15-64 years has increased since 2013 to around 75% in 2019<sup>106</sup> and higher for men (78%) than for women (71%). The employment rate in total and in rural areas is at the same level. At EU level, the employment in rural areas was 68% in 2019. By level of education the employment rate overall is higher in rural areas than in cities (2018), and higher for men than for women. In 2017, 4.2% of the employment was in agriculture, 2.0% in the food industry, 0.1% in forestry, and 2.0% in tourism, amounting to 8.3% of the employment in those sectors<sup>107</sup>.

The total unemployment rate has been decreasing since 2013, and the unemployment in rural areas for people aged 20-64 of below 4% is just a little lower than the total unemployment of 5%, in 2019<sup>108</sup>. Overall, the unemployment rate in rural areas is low compared to the EU average of almost 6%. The female rural unemployment is 5%. The unemployment among young people in rural areas (20-24 years of age) is 8%, and has decreased from 14% since 2015. In 2018, around 8% of young people aged 15-24 in rural areas were neither in employment, nor in education or training. In total, this figure is less than 7%<sup>109</sup>.

The GDP per inhabitant in purchasing power standard in Danish rural areas is just above, but very close to the total EU average. In urban areas, however, the figure for Denmark is significantly above the EU average (around 190 in 2017, with EU=100)<sup>110</sup>. This means there is a significant urban-rural gap of almost 90% in Denmark. Rural areas account for 24% of the gross value added (2017); this figure has been stable since 2005.

As regards the tourism sector, the number of bed places in rural areas has been stable since 2012 at around 310 000 places (2017), out of a total of 425 000 for the whole of Denmark<sup>111</sup>.

When it comes to the poverty rate – people at risk of poverty or social exclusion – it amounts to around 14% in rural areas (2019) – well below the EU-27 average poverty rate of about 24% in rural areas (2018) – and almost the same level as in towns and suburbs (13%), but significantly lower than in cities (21%)<sup>112</sup>. The overall trend is that rural poverty has been slightly decreasing since 2005.

The level of local development and quality of life in rural areas is considered high compared to the EU average. Through indicators<sup>113</sup> such as rural population participation in informal voluntary activities (44% in 2015 compared to the EU average of 24%)<sup>114</sup>, and rural population participation in any cultural or sport activities the last 12 months (85% in 2015 compared to the EU average of 60%)<sup>115</sup>. The share of people who do not participate in activities such as cinema, live performances and cultural sites or sports events because it is not possible in the neighbourhood are lower than the EU average<sup>116</sup>.

In the 2014-2020 period, 26 LEADER Local Action Groups (LAG) have been selected for EAFRD support<sup>117</sup>, covering 56 out the total of 98 Danish municipalities, including small islands, and 54% of the rural population<sup>118</sup>. Several LAGs cover rather large areas and often more than one municipality. In 2019, an evaluation of LEADER in Denmark concludes that it contributes positively to a balanced territorial development of rural areas through job creation and increased transition capacity among the actors involved, in synergy with other public support instruments<sup>119</sup>.

Only 15% of Denmark's territory is forest, and the employment in the forestry sector is estimated at around 6 000 AWU (2017)<sup>120</sup>. The productivity is just below the EU average with a gross value added per employed person of around EUR 50 000<sup>121</sup>.

The turnover in bio-economy increased from 2009-2015 by 33%, amounting to EUR 51.7 billion. In 2015, 52% of this was in the food, beverage and tobacco sector, 19% in bio-based

chemicals, pharmaceuticals, plastics and rubber (excl. biofuels), and the agricultural sector accounted for 18%. The turnover per person employed in the bio-economy sector was almost EUR 294 000, compared to an EU average of EUR 119 000<sup>122</sup>. In 2017, 165 000 persons were employed in the bio-economy, of which 62 000 in agriculture. Turnover of bio-economy in agriculture has grown by 25% from 2008 to 2017, even if growth has been slow since 2014. Employment has fallen by 6% over the same period. The draft SWOT points to a potential for increased demand for biomass that is produced mainly in rural areas. Furthermore, production of biomass generally has lower impact on environment and climate than traditional crops. Looking forward, further investments in bio-economy may give opportunities to gain a lead in the development of bio-refining of proteins.<sup>123</sup> Bio-economy is also an important option to valorise food waste in agriculture thereby contributing to its reduction.

## **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.**

Ensuring the safety of pesticides and controls on their use is integral to sustainable food production. The Commission has noted that a reduction in the risks posed by pesticides is a political priority and there is a high level of social partner and public engagement in this area. Nonetheless, the implementation of Directive 2009/128 remains a key issue, and there is a need to have effective controls on the implementation of the general principles of Integrated Pest Management (IPM) for all types of professional users. Denmark has planned additional measures to enter into force as of 1 January 2021.

The Figures published by the Danish authorities for the harmonised risk indicator 1 for pesticide use shows a decrease in the risk associated with pesticide use of 48% for the period 2011-2018, compared to a 17% reduction at EU level. This reflects the success of the Danish action plans relating to the reduction in use of and/or the risks to human health and the environment arising from pesticides (see graph 1). The sales of pesticides has decreased by 31% from 2011 to 2018.<sup>124</sup> Part of this decrease in the sale and the use of pesticides, could be attributed to the differentiated pesticide tax, among other factors.

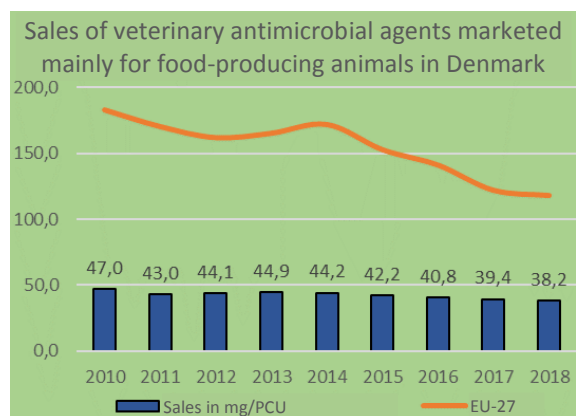
Emergency authorisations reflected in HRI 2 varied in Denmark for the last 4.5 years and are low compared to other Member States. From 2016 to mid-2020, Denmark had granted 63 emergency authorisations according to the PPPAMS. Denmark grants emergency authorisations only in situations where there are no alternatives. Since 2018, Denmark has granted emergency authorisations for the use of seeds for sugar beet treated with neonicotinoids every year. The overall challenge for Denmark is to maintain the positive trend in order to meet the Farm to Fork targets.

**Animal welfare** is another priority area for the Farm to Fork strategy, which is also vital for the sustainability of food systems. The most recent audit report on animal welfare in Denmark from 2017<sup>125</sup> concludes that actions taken by the Danish authorities have not yet resulted in better compliance with the provisions of the Pig Directive with regard to the avoidance of routine tail docking of pigs. Since 2017 certain initiatives has been taken with the aim to reduce the number of tail-docked pigs. The action plan for better pig welfare is a long-term project needs to make significant efforts to comply with these rules.

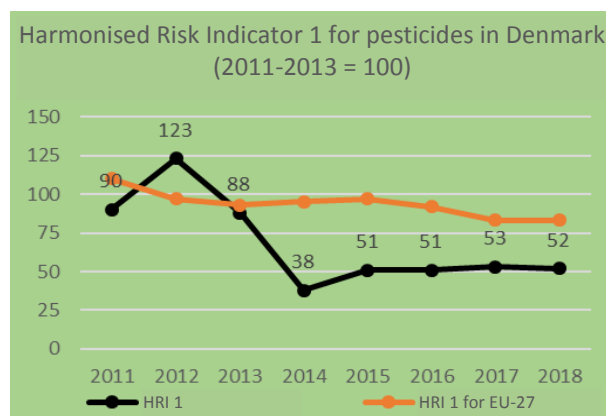
On antimicrobials, Denmark has one of the lowest usage of antimicrobials in the EU (see graph) with an average well below the EU 118mg<sup>126</sup> per PCU. The latest audit report<sup>127</sup> concluded that that there are longstanding and highly developed official and voluntary (professional and industry) policies in place regarding the availability and use of antimicrobials (including the critically important antimicrobials) in animals. The challenge will be to identify any further actions to keep the use of antimicrobials low.

Denmark has a low consumption of fruits and vegetables<sup>128</sup> with only 17% of the adult population meeting The official dietary guidelines at 600g/day<sup>129</sup>. Consumption patterns indicate a need to further encourage consumer demand for healthier food choices. Efforts should focus on shifting towards healthy sustainable diets, in line with national tribute to reducing the incidence of non-communicable diseases and improve 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.

The Danish waste prevention program from 2015<sup>130</sup> does not address food loss and waste occurring at the primary production level and the early stages of the supply chain. This could be addressed in the expected national food waste prevention program<sup>131</sup>.



Source: DG AGRI after ESVAC, Tenth ESVAC Report (2020)<sup>132</sup>



Source: EUROSTAT [aei\_hri]

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

The agricultural knowledge and innovation system (AKIS) in Denmark is considered strong. Denmark's farm advisory services are integrated in a knowledge and innovation system, which covers farm advisors, research institutes, public authorities and private companies. The AKIS and advisory services are responsive towards the needs of the farmers and the demands from public. This cooperation is expected to continue and to be expanded.

Advisory services in Denmark are provided by the farmer-owned Danish agricultural advisory services (DAAS). SEGES, the Danish knowledge centre for agriculture, is part of DAAS, and acts as the national research and knowledge facilitator. Alongside the DAAS cooperation, advisory services are provided by several private small-size independent consultancies. All farmers, including non-members, have access to an adviser within this system, and the 31 local DAAS advisory centres (with around 2 500 employees) cover all parts of Denmark. The system provides farmers and advisors with national up-to-date knowledge and high-level professional advice on all aspects of farming and farm management.

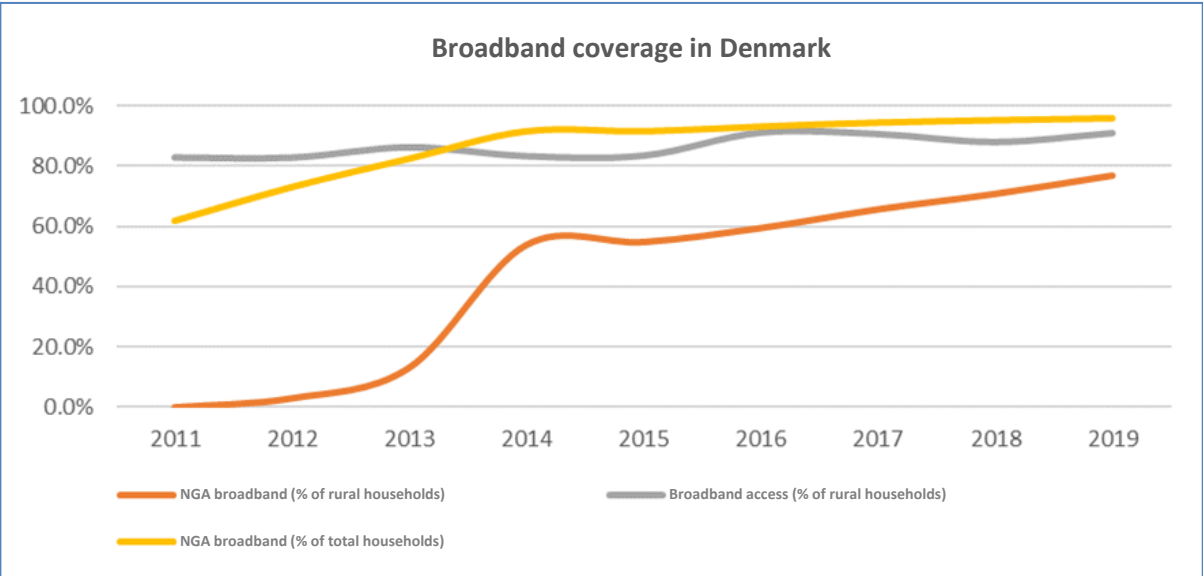
The agricultural sector brings stakeholders together around development and implementation of research and innovation, in line with the principles of EIP Operational Groups<sup>133</sup>. Stakeholders have been active in the European Innovation Partnership for agriculture (EIP), but only in EIP Focus Groups. There are no EIP Operational Groups set up in Denmark.

The digital infrastructure is good, and 77% of rural households have access to fast broadband, compared to 96% of all households. 96% of the rural households have access to (less fast) broadband<sup>134</sup>. Nevertheless, the objective of 100% fast broadband coverage by 2025 for all households has not been reached yet. Increased connectivity, supported by the CAP or other EU or national funds in complementarity, will further improve the conditions for rural

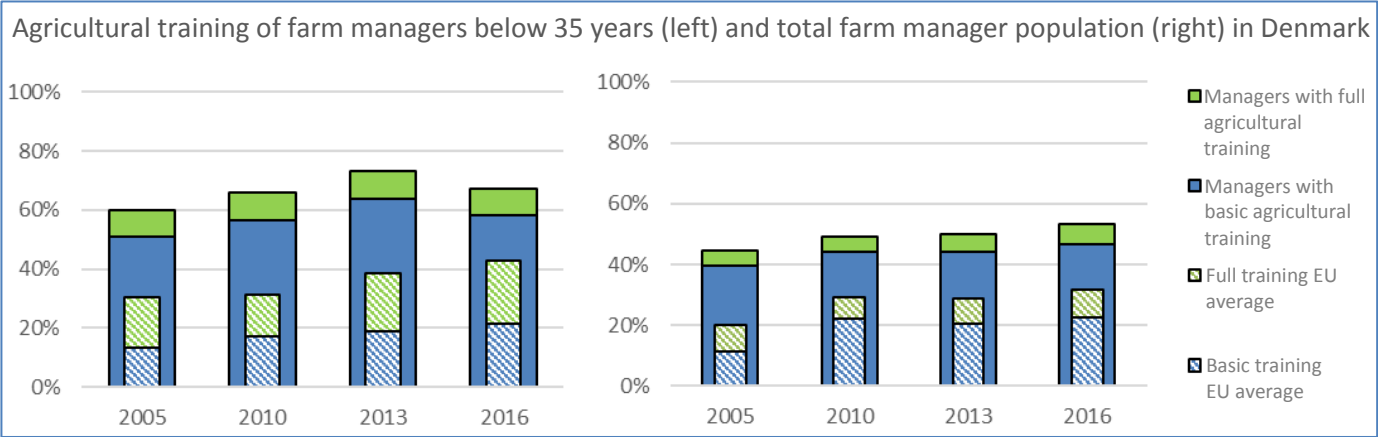
businesses and quality of life in rural areas. The share of people with basic or above basic digital skills is well above the EU average, with 70% of the total population<sup>135</sup> (EU: 58%<sup>136</sup>), and 62% of the rural population<sup>137</sup> (EU: 49%<sup>138</sup>).

Overall, the capacity for uptake of new technology is good, and e.g. technology for precision farming is used by 25% of farmers. As shown in the draft SWOT<sup>139</sup>, farmers younger than 50 years of age use new technology almost twice as much as the rest. With the ageing of farmers and fewer young farmers entering the sector, this may lead to less investment in and uptake of new technology.

Under the programming period 2014-2020, Denmark programmed about 4% of their total rural development envelope (EAFRD + national contribution) under Measure 1: knowledge transfer and information actions and Measure 16: Co-operation. This is around the EU-28 average.



Graph: Broadband coverage<sup>140</sup>



Graph: Training of farm managers<sup>141</sup>



- <sup>1</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>2</sup> Directorate General for Agriculture and Rural Development. Own calculations based on FADN data (up to 2018).
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- <sup>7</sup> Directorate General for Agriculture and Rural Development own calculations based on CATS (Clearance of Accounts Trailing System) data (up to 2017)
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