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Feeder Report 2021 - Agriculture

Introduction

1.1 Agriculture impacts on the aquatic environment, in particular when nitrogen and phosphorus in fertilisers and manures and other agrochemicals such as pesticides run off of the land or are emitted to air and redeposited. Agriculture is subject to various drivers of change including global food value chains, economic growth, diet shifts, innovation and trust in science, all of which can affect consumption and environmental impacts (OSPAR, 2021). Reducing environmental pressures from food will require changes along the whole food value chain, starting with a more sustainable agriculture, sustainable food processing and transport, as well as diets that rely less on foodstuffs with high environmental impacts (EEA, 2018). Agriculture also consumes considerable volumes of plastic and there is the potential for this to leach as microplastics and impact on the marine environment.

1.2 This paper summarises the status and trends in agriculture in relation to potential impacts in the OSPAR Regions and measures taken to manage these impacts. It briefly notes key messages from the Quality Status Report (QSR) 2010 (/en/ospar-assessments/quality-status-reports/quality-status-report-2010/) and the Intermediate Assessment (IA) 2017, (/en/ospar-assessments/intermediate-assessment-2017/) and reports on progress since then.

1.3 Eurostat compiles data on agricultural inputs and productivity across the European Union (EU) and also includes Norway, Switzerland and Iceland.

OSPAR QSR2023

(/en/ospar-assessments/quality-status-reports/qsr-2023/)

Distribution and Intensity

2.1 Agriculture is the major land use across the OSPAR Contracting Parties, occupying around 110 million hectares of land in 2016, around 34% of the total land area (Eurostat 2019; Statistics Norway 2019; Swiss Federal Statistical Office 2019; World Bank 2018)[1] (/en/ospar-assessments/quality-status-reports/qsr-2023/other-assessments/agriculture/#1). In the EU, agriculture employs around 9,7 million people. More detailed land-use data can be accessed from the Copernicus Land Monitoring Service and CORINE database (https://land.copernicus.eu/ (https://land.copernicus.eu/)).

2.2 The OSPAR region is a major global producer of dairy products (the EU and United Kingdom together account for more than 20% of global production) and of cereals (the EU and United Kingdom together account for 13% of global production) (Eurostat, 2019). The EU is an important producer of livestock. Since the 1980s, there has been a shift towards larger-scale, specialised livestock holdings, with an increase in poultry, veal and pig production and a decrease in beef, sheep and goat production (Eurostat, 2019). The general pattern of development in the agricultural sector has been towards a greater concentration of agriculture within the hands of relatively few large, often corporately owned, farms (Eurostat, 2019). So, while overall agricultural production has increased, the number of farms and farmers has decreased and the average farm size is larger (Eurostat, 2019).

Economic value

3.1 The output of the agricultural industry across all of the OSPAR countries has been relatively steady from 2013 to 2018 at around €300 billion (Eurostat, 2019). This created a (gross) value added of €123 billion in 2018, which equated to around 1% of their Gross Domestic Product (Eurostat, 2019).

3.2 Over the last 50 years, EU agriculture has received substantial support under the Common Agricultural Policy (CAP), which currently has an annual budget of approximately €59 billion, including funding for rural development programmes. The CAP for the period from 2014 to 2020 aims to respond to the three main challenges facing agriculture: economic, environmental and territorial. An important feature of the CAP is the recognition that farmers should be rewarded for the services they provide to the public even though they may not have a market value.

Future trends

4.1 The European Commission EU Agricultural Outlook report published in 2019 examines overall trends on agricultural production from 2019 to 2030 (European Commission, 2019a). The report is based on assumptions around current trade policies and the implementation of the 2013 Common Agricultural Policy. The report suggests a continued increase in the areas of cereals, protein crops and maize, and a small decrease in the areas of oilseeds and permanent pasture. Dairy production is expected to increase and intensify and beef production will continue to decline. Pig meat production is projected to increase initially and then decline while poultry production could continue to grow steadily over the period studied. The suggested increases in cereals, dairy, and poultry production could lead to increased nitrogen and phosphorus emissions to water unless further measures to reduce these are put in place.

4.2 A revised CAP was due to be implemented by January 2021, although the Commission has now delayed adoption of the new legal framework until at least 2022. The Commission proposals for the reformed CAP state nine objectives, including climate change action, environmental care and preservation of landscapes and biodiversity. Mandatory measures are proposed to ensure the use of a nutrient management tool to improve water quality, reduce ammonia and nitrous oxide levels as well as to preserve carbon-rich soils, and ensure crop rotation.

4.3 The United Kingdom is now developing its own agricultural policies following its exit from the EU. Legislation has yet to be finalised at the time of writing of this report, but the proposals outline a move away from direct payments based on farmed areas and towards a system based on public money for public goods. An Environmental Land Management Scheme will start fully in 2024, with the ambition of improving the health of the environment, on a far greater scale than achieved under the CAP.

4.4 Both sets of reforms move in the direction of reduced environmental impacts from agriculture and so a reduced contribution to eutrophication and other harmful emissions might be expected. However, the scale of change will depend on the details which have yet to be decided.

Quality Status Report 2010 and Intermediate Assessment 2017

5.1 QSR 2010 reported that eutrophication (which is mostly attributed to agricultural emissions) was still a problem in the Greater North Sea, the Celtic Seas, and the Bay of Biscay and Iberian Coast, and the objective of no eutrophication would only be partly achieved by 2010. Reductions in phosphorus discharges exceeded the OSPAR target of 50% compared to 1985, but nitrogen discharges mainly from agriculture remained the main problem. The report noted the growing concern about atmospheric nitrogen inputs, particularly ammonia from agricultural sources.

5.2 The report encouraged OSPAR Contracting Parties to work together to tackle eutrophication by:

1. implementing OSPAR and EU measures to reduce nutrient inputs to eutrophication problem areas and take additional action if needed to eliminate eutrophication problems;
2. setting appropriate reduction targets for nutrient inputs to individual problem areas;
3. promoting consideration of marine eutrophication when implementing the EU Nitrates Directive and in the revision of international nitrogen air emission targets and standards, for example, those set by the EU, UNECE and International Maritime Organization;
4. refining OSPAR's assessment methodologies, including modelling of nutrient transports;
5. improving OSPAR's monitoring framework through coordinated use of novel observation tools and coordination of data collection on sources, inputs and environmental status.

5.3 IA 2017 showed that, for the period from 2006 to 2014, eutrophication still occurred in the OSPAR Maritime Area, particularly in areas sensitive to nutrient inputs, such as estuaries, fjords, and bights, and in areas affected by river plumes. In particular, there was high eutrophication pressure on the south-eastern coast of the Greater North Sea and some localised areas of the Celtic Seas. This is despite the reduced input of nutrients (for example by around one quarter for nitrogen and a half for phosphorus in the Greater North Sea since 1990) and lower concentrations of nutrients observed in the marine environment.

5.4 Although the extent of eutrophication in the OSPAR Maritime Area has continued to decline since 1990, concerns about atmospheric and riverine inputs of nutrients identified in QSR 2010 still remained.

Analysis of specific pressures, impacts and measures

Eutrophication

6.1 Nutrients (e.g. nitrogen, phosphorus, and potassium) are essential for both crop production and animal and human nutrition. However, their overuse can lead to nutrient emissions that affect soil, air and water quality and have a considerable negative impact on biodiversity and ecosystems.

6.2 Eutrophication is the result of excessive enrichment of water with nutrients. This can cause accelerated growth of algae (phytoplankton) and plants. This may result in an undesirable disturbance to the balance of organisms present and ultimately to a decline in the overall water quality. Eutrophication is not always a local problem. Water masses continuously move and interact, and the associated transport of nutrients can lead to eutrophication effects away from the source.

6.3 OSPAR's strategic objective in its 2010 Environment Strategy was to combat eutrophication in the OSPAR Maritime Area, with the ultimate aim to achieve and maintain a healthy marine environment where anthropogenic eutrophication does not occur.

Nitrates

6.4 The sum of all of the nitrogen inputs to farmed land (from fertilisers, imported feed and manures) minus the nitrogen removed in food for human consumption and other products is known as the nitrogen balance (which can be calculated in several ways). It is a good overall measure of the quantities of nitrogen in soils with the potential to leach to water or volatilise to air.

6.5 Across the OSPAR Regions, there has been a decrease in the agricultural nitrogen balance between 2000 and 2015, which is an indication of an improving trend. The main decrease was between 2000 and 2010; after that, the balance was relatively constant or decreased only marginally (Eurostat, 2019).

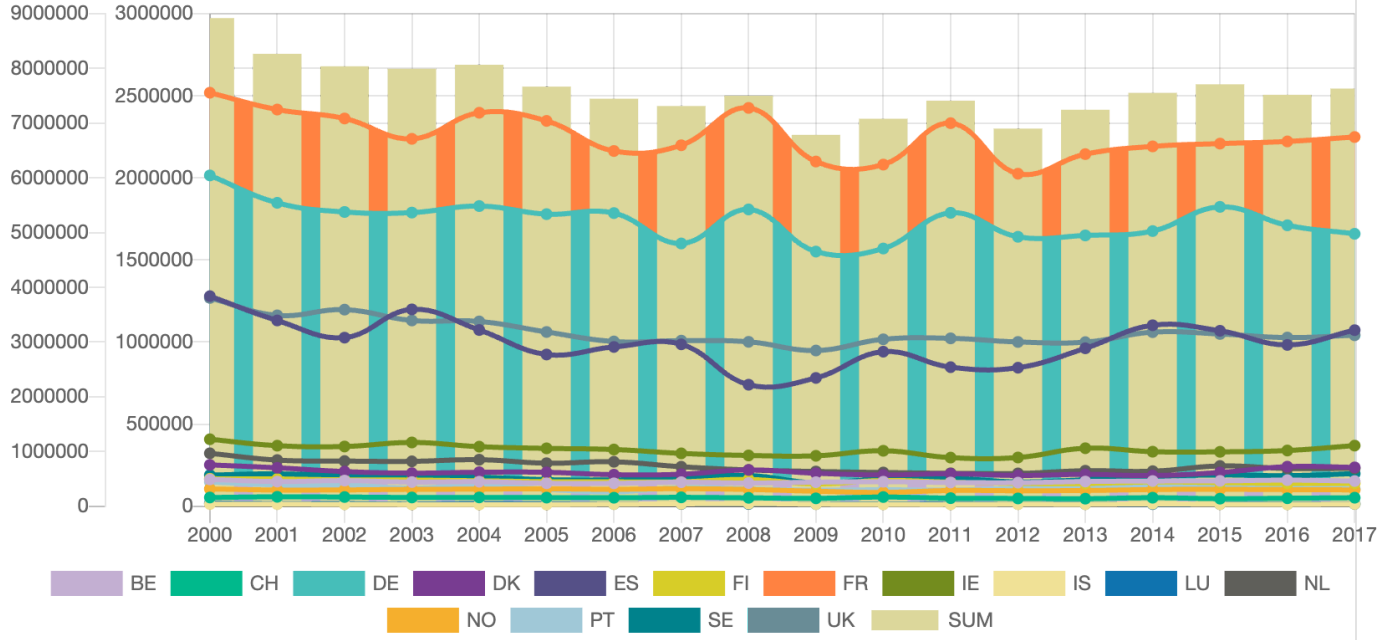
6.6 Among the OSPAR countries, the Netherlands, Belgium, Luxemburg, Norway, the United Kingdom, Denmark and Germany had the highest nitrogen surplus (189-80 kg/ha in 2015), while Spain[2] (/en/ospar-assessments/quality-status-reports/qsr-2023/other-assessments/agriculture/#2), Sweden, Portugal, Ireland and France had nitrogen balances of around 40 kg/ha or lower in 2015. The EU reports that the average nitrogen surplus on agricultural land across the EU was 49 kg/ha in the period from 2013 to 2015. However, even in countries with low national averages, there can be regions with high nitrogen loadings because of agricultural intensity, such as livestock density. Further efforts are therefore considered necessary to reduce the balance.

Table 1 Gross Nitrogen Balance per hectare UAA (kg of nitrogen per ha). (Source: Eurostat 2020a)

	2000	2005	2010	2011	2012	2013	2014	2015
Belgium	189,9	145,7	142,0	143,2	143,1	137,9	131,7	132,0
Denmark	131,7	111,3	90,0	88,0	83,4	87,1	79,8	80,0
Finland	54,9	48,6	57,1	50,2	47,5	46,5	47,5	49,5
France	58,0	50,7	40,2	52,3	39,8	45,1	45,3	42,0
Germany (until 1990 former territory of the FRG)	110,0	85,2	77,7	88,6	75,1	78,9	65,9	81,8
Ireland	71,2	63,8	44,6	28,2	35,1	50,4	45,7	47,8
Luxembourg	156,6	129,5	126,8	138,3	124,9	127,3	128,7	129,0
Netherlands	254,3	203,7	171,7	172,3	169,3	170,6	161,8	191,5
Norway	85,3	96,3	82,9	97,1	90,2	102,3	89,2	86,8
Portugal	39,1	44,5	38,5	39,5	43,7	38,1	44,7	44,1
Spain	40,2	38,3	35,2	29,5	33,6	28,7	39,4	38,5
Sweden	54,6	44,7	38,2	42,2	31,2	34,5	30,7	31,7
Switzerland	67,3	66,2	71,5	61,4	64,4	69,9	68,8	68,4
United Kingdom	107,0	91,0	89,7	85,3	87,5	88,3	85,1	83,3

6.7 In 2017, 7,5 million tonnes of nitrogen fertiliser were used in agriculture in the OSPAR countries, a decrease from 8,9 million tonnes in 2000

Figure 1 - Consumption of inorganic Nitrogen fertilizers



Unit: Tonne (data from Eurostat 2020b)

6.8 Nitrogen losses to water from agriculture are mostly in the form of nitrates, but there are some important differences between OSPAR Contracting Parties. In 1991, the EU introduced the Nitrates Directive, which aimed to reduce water pollution caused or induced by nitrate from agricultural sources. In the EU in 2012, 45,3% of agricultural land was classed as Nitrate Vulnerable Zones (NVZ) under the Directive. These are areas of land where Member States apply specific agricultural action programme measures. These programmes are required to promote best practice in the use and storage of fertiliser and manure by four key measures:

1. limiting inorganic N fertiliser application to crop requirements;

2. limiting organic manure applications;
3. seasonal restrictions on the application of slurry, manure sand sludge;
4. maintenance of farm records that encompass cropping, livestock numbers and fertiliser management.

6.9 In 2010, five OSPAR countries (Germany, Denmark, Ireland, Netherlands, and Finland) designated their entire territory as an NVZ.

6.10 In their 2018 report on the implementation of the Nitrates Directive, the European Commission reported that the quality of national action programmes had improved, with tightened measures and improved methodologies to reach balanced fertilisation and sustainable manure management (European Commission, 2018a). However, they report that challenges remain, such as how to properly take into account all nutrient inputs from different sources, and how to prevent nutrient losses to water and air through effective manure management. Although water monitoring steadily improved between 2012 and 2015, strengthened water monitoring, especially of saline surface waters, would improve the comparability of the data on nitrogen pollution and provide a more detailed picture of the overall quality of the EU waters.

6.11 The implementation of the EU Nitrates Directive has led to falling nitrates concentrations in both surface and groundwater. Eutrophication has also decreased, while sustainable agricultural practices in relation to nutrient management have become more widespread. Despite this positive overall trend, nitrates pollution and eutrophication continue to cause problems in many Member States. Several Member States and regions still have a high percentage of nitrate-polluted and eutrophic waters. Based on the reported data, the highest percentage of polluted groundwater stations in the OSPAR region are found in Germany and Spain. For freshwater, the highest percentage is found in Belgium and the United Kingdom.

Ammonia

6.12 Ammonia (NH_3) is another prevalent form of nitrogen loss from agriculture. It is a gas formed by the decay of organic vegetable matter and from animal excrement. When released into the atmosphere, ammonia increases the level of air pollution. Once deposited in water and soils, it can cause eutrophication.

6.13 The agricultural sector is currently responsible for around 90% of ammonia emissions in the European Union (Eurostat, 2019). Ammonia emissions from agriculture mainly occur as a result of volatilisation from livestock manures, in livestock housing, manure storage, urine, and dung deposition in grazed pastures, or following manure spreading on agricultural land. A smaller proportion of ammonia emissions result from the volatilisation of ammonia from nitrogenous fertilisers and from fertilised crops.

6.14 The EU National Emissions Ceiling (NEC) Directive 2010 aims to reduce the total emissions of the four pollutants responsible for acidification, eutrophication, and ground-level ozone pollution (sulphur dioxide, nitrogen oxides, volatile organic compounds, and ammonia). These targets were subsequently broadly incorporated into the parallel and international UNECE Convention on Long-Range Transboundary Air Pollutants (LRTAP) — the so-called Gothenburg Protocol.

Table 2: Ammonia emissions (national total for the entire territory) Source: Eurostat (2020c)

	1990	2010	2017
Belgium	129 782	74 743	69 862
Denmark	127 026	81 123	77 317
Finland	34 785	36 645	32 318
France	653 422	605 355	598 844
Germany (until 1990 former territory of the FRG)	760 055	640 784	665 679
Iceland	5 865	5 306	5 537
Ireland	109 794	108 095	118 449
Luxembourg	6 655	5 922	5 954
Netherlands	350 035	132 602	131 123
Norway	33 825	33 977	33 556
Portugal	75 692	56 195	56 974

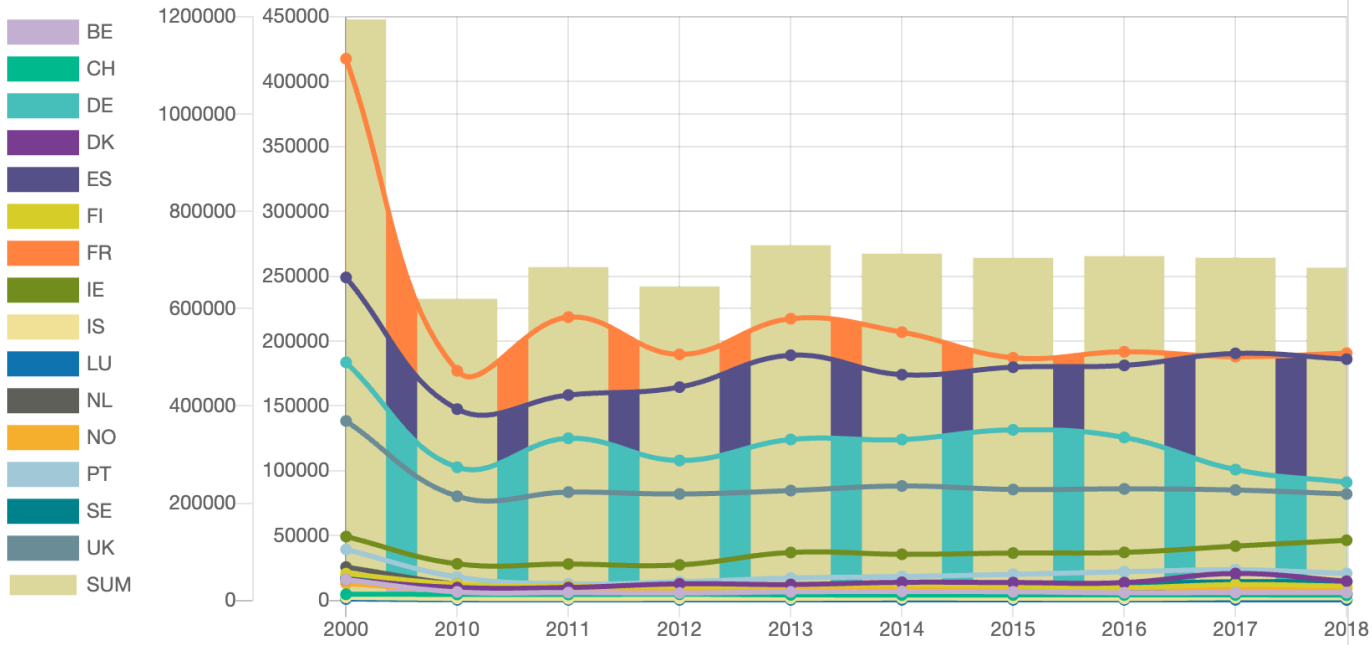
	1990	2010	2017
Spain	462 533	430 592	479 185
Sweden	60 321	54 670	53 277
Switzerland	68 795	59 059	55 389
United Kingdom	323 264	258 231	278 307

6.15 Between 2010 and 2017 annual emissions of ammonia from OSPAR countries rose by around 4% from 2,6 million tonnes to 2,7 million tonnes, having fallen by over 20% over the previous 20 years (Eurostat, 2019). Among the OSPAR nations, ammonia emissions increased most in France, Germany, and Spain with Germany, Spain, and Sweden exceeding their NH3 emissions ceilings under the National Emissions Ceilings Directive in 2015.

Phosphorus

6.16 Phosphorus can be a significant contributor to marine eutrophication, particularly in estuarine areas. Agriculture is a major source of phosphorus in waters along with effluent from domestic wastewater. Phosphorus fertiliser use in OSPAR countries declined by more than 50% between 2000 and 2010 but rose by 14% from 619 000 tonnes in that year to 700 000 in 2017 (Eurostat, 2019).

Figure 2 - Consumption of inorganic Phosphorus fertilizers



Unit: Tonne (data from Eurostat 2020b)

6.17 As with nitrogen, the sum of phosphorus inputs minus the phosphorus removed in products is a good overall measure of the potential of land to release phosphorus into water courses. Phosphorus losses vary with soil properties such as iron, calcium and aluminium content, rainfall pH, ground cover and not least with slope and erodibility. The phosphorus surplus in 2015 is less than half of the value in 2000 in most OSPAR countries (Eurostat 2019). The Netherlands and Belgium had the highest phosphorus balances of all of the OSPAR countries in 2000, but this had declined to only 13% and 25% of the earlier value by 2015. Phosphorus balance in Norway declined only slightly over the period and Norway had the highest phosphorus balance among OSPAR countries by 2015. Germany, France, and Sweden had consistently low phosphorus balances and in 2015 were at zero or negative net balance. However, while the average nutrient surplus provides a picture of overall trends in the region, many regional and local nutrient surplus hotspots exist, often in areas of intensive agriculture and livestock production.

Table 3 Gross Phosphorus Balance per hectare UAA (kg of phosphorus per ha). Source: Eurostat (2020a)

	2000	2005	2010	2015	2017
Belgium	20	11	5	5	:
Denmark	13	11	8	7	:
Finland	7,7	6,5	4,9	4	5,8

	2000	2005	2010	2015	2017
France	8,9	5	0,6	0,3	1
Germany (until 1990 former territory of the FRG)	3,6	0,1	-1,4	-2	-5
Ireland	24,3	22,2	17,9	20,9	23,1
Luxembourg	9	7	4	4	:
Netherlands	22,5	15,5	11,6	3,9	2,3
Norway	12	13	9	10	:
Portugal	5,2	9,7	4,4	4,5	6,3
Spain	4,9	6	3,2	3,9	8,3
Sweden	1,8	1,4	-0,1	-1,6	-0,7
Switzerland	3,6	3,3	3,6	3,8	3,3
United Kingdom	10	9	6	5	5,8

: not available

6.18 The EU Water Framework Directive 2000 (WFD) is the key legislative instrument to tackle phosphorus pollution from agriculture (along with all causes of poor water quality) The Directive establishes a framework for sustainable water management through the development of River Basin Management Plans and Programmes of Measures with the objective of preventing deterioration of the aquatic environment and of achieving good status of all water bodies by 2015.

6.19 In 2019, the European Commission reported that all member states had approved their River Basin Management Plans and that 74% of EU groundwater bodies had achieved good chemical status. However, only 38% of surface waters had achieved good chemical status and only 40% achieved good ecological status. The report concludes that European waters remain under significant pressure from both diffuse (e.g. agriculture, transport infrastructure) and point-source (e.g. industry or energy production) generated pollution, over-abstraction and hydro-morphological changes stemming from a range of human activities (European Commission, 2019b).

Pesticides

6.20 Pesticides are routinely used in agriculture across the OSPAR region and quantities of pesticides are detected in aquatic systems as a result of run-off, particularly from arable land. The specific impacts of pesticide run-off on marine ecosystems are not well documented. However, several studies indicate likely effects on freshwater and estuarine crustacea[3 (/en/ospar-assessments/quality-status-reports/qsr-2023/other-assessments/agriculture/#3)], while others suggest effects can cascade through aquatic ecosystems[4 (/en/ospar-assessments/quality-status-reports/qsr-2023/other-assessments/agriculture/#4)]. The OSPAR CEMP Assessment reports on levels and trends in marine contaminants and their biological effects (/en/ospar-assessments/committee-assessments/hazardous-substances-and-eutrophication/mime/cemp-levels-and-trends-marine-contaminants/) show that the Convention area continues to be affected by historical pesticide use, despite use of the relevant pesticides being banned (OSPAR, 2020).

6.21 The European Union operates a two-tiered approach for the approval and authorisation of pesticides. Firstly, before a pesticide can be put on the market, the active substance of the pesticide needs to be approved by the European Union. Only after approval of an active substance, a procedure of authorisation of the Plant Protection Product (PPP) can begin in the individual Member States. In case of approval, maximum residue levels (MRLs) are set and need to be adhered to. A monitoring programme carried out by EFSA ensures the pesticide residues in food are below the limits set by the European Food Safety Authority (EFSA).

6.22 The use of pesticides in the EU is regulated by the Plant Protection Products Regulation 1107/2009 in cooperation with other EU Regulations and Directives (e.g. the regulation on maximum residue levels in food and the Directive on sustainable use of pesticides). This legislation aims to mitigate unintended consequences of pesticide use by regulating the authorisation of individual pesticides based on an assessment of the risks to human and environmental health and through a framework for the sustainable use of pesticides which promotes Integrated Crop Management and the use of alternatives to pesticides.

6.23 Available data from OSPAR countries shows that pesticide use overall increased slightly from 2011 to 2018; use declined in some countries such as the United Kingdom and Portugal but significantly increased in others such as France and Finland (Eurostat 2019). However, the sales of pesticide cannot be directly equated to the risk to human health and the environment and does not provide insight into whether or not the use of pesticides is sustainable. This is because the risks relate to the activity and potency of individual pesticide molecules as well as their exposure, i.e. mobility and degradation in the environment and their uptake and potential accumulation in plants, animals, and humans.

6.24 The EU has developed two Harmonised Risk Indicators (HRIs) for pesticides to better reflect their potential for environmental and/or health impacts. The first HRI is calculated by multiplying the quantities of active substances placed on the market in plant protection products by a weighting factor. Active substances are grouped into four categories, intended to reflect their roles in the sustainable use of pesticides and to reduce the risk and impact of pesticide use. In 2018, this indicator showed a decrease of 17% since the baseline period of 2011-2013, but no change compared to 2017.

6.25 Harmonised Risk Indicator 2 (HRI 2), which is based on the number of emergency authorisations for new and emerging crop health issues, shows an increase of 56% since the baseline period in 2011-2013, and an 8% increase compared to 2017 (European Commission, 2020). The European Commission concludes that these results show that there is no room for complacency in the goal to reduce the risks associated with pesticides. To this end, the Commission has committed to:

1. increase efforts to ensure the full implementation of existing EU rules on pesticides;
2. ensure the full implementation of Integrated Pest Management (IPM);
3. ensure that, under the CAP, the Member States' Strategic Action Plans show a high level of ambition with regards to pesticides;
4. carry out an evaluation and possible revision of the Sustainable Use of Pesticides (Directive 2009/128/EC), including consideration of establishing mandatory national targets at Member State level.

Plastics

6.26 Plastics are used for a number of purposes in agriculture such as mulch films, tunnels, irrigation systems and silage films, nets and twines for storing feed for livestock. Pesticide and fertiliser bags and containers are considered as packaging. Mulch films are most commonly used to preserve soil moisture and suppress the proliferation of weeds. They reduce the need for water and pesticide and protect against harsh climate conditions.

6.27 Plastic is also used in Controlled Release Fertilisers (CRF). CRF is used in garden products, and then with the suffix cote, for example Osmocote, Basacote and Nutricote. In a report, the UN's advisory group, the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) has pointed to controlled release fertiliser (CRF) as a global source of microplastics. CRF has benefits, such as reduced nutrient leakage, but can also result in microplastic pollution (GESAMP, 2016).

6.28 Agricultural plastics accounted for 3,3% of the total plastics market in Europe in 2015 (1,6 million tonnes) (European Commission, 2018b). Although the quantities are low in comparison to other sources, there are risks e.g. that plastic films could be left on agricultural soils in amounts that may reduce soil fertility and that may run off into surface waters with associated impacts to riverine and marine life.

6.29 Additionally, microplastics may migrate from sewage sludge applied to agricultural land and make their way into the marine environment, although there is little data on the importance of this source. OSPAR's Recommendation OSCOM 80/1 requires a steady improvement in sewage sludge quality, but being an old recommendation lacks a reporting framework. HASEC 2021 agreed a reporting round in order to determine whether the recommendation needs revision. A review of the EU sewage sludge directive 86/278 is planned after revision of the Urban Wastewater Treatment directive 81/271.

6.30 Despite agricultural plastics having a high potential for recycling—due to them being produced in large quantities and composed of relatively homogeneous material - only 28% of agricultural plastics are recycled in EU, while 30% are sent to energy recovery facilities and 42% to landfill. In the absence of specific EU legislation, five OSPAR countries (France, Spain, Germany, Ireland, Sweden) have introduced recycling initiatives for agricultural plastics. Sweden has a voluntary recycling initiative for agricultural plastics. SvepRetur[5 (/en/ospar-assessments/quality-status-reports/qsr-2023/other-assessments/agriculture/#5)] is a non-profit industry association for manufacturers, importers and retailers of silage film, plastic bags and cultivation foil. This association works through its materials company for an environmentally adapted and flexible recycling solution for farmers, growers and horse owners and others. SvepRetur aims for 70% of agriculture's used plastic to be collected. At least 30% of the collected plastic must go to material recycling (i.e. go back to production to become new products). The rest goes to energy recovery, which means combustion where the energy is used in the form of heat and electricity.

6.31 The European Commission is assessing how to improve and increase recycling agricultural plastic waste rates across the EU, building on positive examples from Member States having set deposit refund schemes and well-functioning collection and recycling schemes and an assessment of the potential impact on the environment.

Other

6.32 Sediment running off from agricultural land can lead to degradation of river spawning fish. OSPAR Recommendation 2015/03 on furthering the protection and conservation of the sea lamprey includes proposed measures to assist agriculture and forestry to find ways to reduce destruction or degradation of spawning habitats and river migration routes. It is not clear whether progress has been made in implementing this measure.

Conclusions

7.1 Key messages[6 (/en/ospar-assessments/quality-status-reports/qsr-2023/other-assessments/agriculture/#6)]

1. agriculture is the largest land-use in the OSPAR countries. Agriculture impacts the marine environment through emissions of nitrogen and phosphorus from fertilisers and manures and from other agrochemicals such as pesticides run-off;
2. measures to curb nutrient emissions have reduced their input and lowered their concentrations in the marine environment but levels are still too high in some regions which are still affected by eutrophication, such as the south-eastern coast of the Greater North Sea and some localised areas of the Celtic Seas. OSPAR could further develop the evidence base and tool kits to identify and quantify relevant sources, and consider nutrient reduction needs for countries to combat eutrophication;
3. planned reforms to the CAP and a new regime in the United Kingdom could provide incentives to lower emissions further;
4. the use of pesticides and risks associated with different products is monitored across the EU/European Economic Area. This has shown the quantities and risks from pesticides declined from 2011 to 2017 but then plateaued. The increase in the number of emergency authorisations for new and emerging crop health issues over the same time period is a potential cause for concern;
5. plastics used in agriculture have the potential to leach as microplastics and impact on the marine environment. OSPAR could encourage countries to replace, reuse or recycle a higher proportion of plastics used in agriculture, taking a lead from the small number of countries that currently have schemes in place.

Distribution and intensity of activity

7.2 Agriculture occupies around 110 million hectares of land in in OSPAR countries (2016), and in the EU agriculture, employs around 9,7 million people. The OSPAR region is a major global producer of dairy products (the EU and United Kingdom account for more than 20% of global production) and of cereals (the EU and United Kingdom account for 13% of global production). The EU is an important producer of livestock. Since the 1980s, there has been a shift towards larger-scale, specialised livestock holdings, with an increase in poultry, veal and pig production and a decrease in beef, sheep and goat production. The general pattern of development in the agricultural sector has been towards a greater concentration of agriculture within the hands of relatively few large, often corporately owned, farms.

Trends

7.3 Analysts suggest a continued increase in the areas of cereals, protein crops and maize and a small decrease in the areas of oilseeds and permanent pasture across the EU. Dairy production is expected to increase and intensify and beef production will continue to decline. Pig meat production is projected to increase initially and then decline while poultry production could continue to grow steadily over the period studied. The suggested increases in cereals, dairy, and poultry production could lead to increased nitrogen and phosphorus emissions to water unless further measures to reduce these are put in place. These potential increased pressures could be offset or mitigated by changes to the CAP and the development of a new agricultural regime for the United Kingdom.

Economic value

7.4 The output of the agricultural industry across all of the OSPAR countries has been relatively steady from 2013 to 2018 at around €300 billion. This created a (gross) value added of €123 billion in 2018, which equated to around 1% of their GDP.

7.5 Over the last 50 years EU agriculture has received substantial support under the CAP, which currently has an annual budget of roughly €59 billion, including funding for rural development programmes.

Pressures and impacts

7.6 Nitrogen and phosphorous losses from agriculture are a major cause of eutrophication which can cause accelerated growth of algae (phytoplankton, opportunistic macroalgae) and plants and can result in a decline in the overall water quality. Across the OSPAR region, there has been a decrease in the agricultural nitrogen surplus between 2000 and 2015, which is an indication of an improving trend. The main decrease was between 2000 and 2010; after that, the balance was relatively constant or decreased only marginally.

7.7 The phosphorus surplus in 2015 is less than half of the value in 2000 in most OSPAR countries. The Netherlands and Belgium had the highest phosphorus balances of all of the OSPAR countries in 2000, but this had declined to only 13% and 25% of the earlier value by 2015.

7.8 The EU indicator for the quantity and risk of pesticides in use showed a decrease of 17% since the baseline period in 2011-2013 to 2018, although the increase of 56% in the number of emergency authorisations for new and emerging crop health issues over the same time period is a potential cause for concern.

Regional summary

	OSPAR REGIONS[7] (/en/ospar-assessments/quality-status-reports/qsr-2023/other-assessments/agriculture/#7)				
	I	II	III	IV	V
Relative intensity[8] (/en/ospar-assessments/quality-status-reports/qsr-2023/other-assessments/agriculture/#8)	L	H	M	M	L
Trend since 2010	↔	↔	↔	↔	↔
Forecast trend to 2030	↔	↔	↔	↔	↔
Confidence assessment	Very high High Medium Low Very low	Very high High Medium Low Very low	Very high High Medium Low Very low	Very high High Medium Low Very low	Very high High Medium Low Very low

Footnotes

[1]The Government of Greenland notes that agriculture in Greenland is not comparable to other OSPAR countries. The agricultural industry in Greenland is very small, a total of 40 farms, it cultivates 1 100 ha and produces 20 000 lambs annually, so that it has no impact on the environment in the OSPAR area.

[2]All references to Spain's data are for the total of Spain and not only the OSPAR region. It should be noted that these include the Mediterranean part (where agriculture is more intensive).

[3]e.g. studies at https://www.sciencedirect.com/science/article/pii/S0269749119312552 (https://www.sciencedirect.com/science/article/pii/S0269749119312552) ; https://www.frontiersin.org/articles/10.3389/fenvs.2016.00071/full (https://www.frontiersin.org/articles/10.3389/fenvs.2016.00071/full)

[4]e.g https://science.sciencemag.org/content/366/6465/620 (https://science.sciencemag.org/content/366/6465/620)

[5] https://svepretur.se/om-svepretur/ (https://svepretur.se/om-svepretur/)

[6]The views expressed on key messages are those of the assessor and do not necessarily represent the views of the OSPAR Commission

[7]For the delineation of OSPAR regions see https://www.ospar.org/convention/the-north-east-atlantic (https://www.ospar.org/convention/the-north-east-atlantic)

[8]Low/medium/high

References

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