AGRICULTURE AND WATER POLICIES: MAIN CHARACTERISTICS AND EVOLUTION FROM 2009 TO 2019[1]

NORWAY

This country profile reviews recent changes in agriculture and water policies. The content of the profile is based on a survey conducted in 2019 by the OECD Secretariat[2] and additional official sources.

A. Agriculture and Water Characteristics

- Norway's agriculture mainly focuses on cattle (for milk and meat), sheep farming and cereals. **Livestock** accounted for 75% of the total agricultural production in 2018 (OECD, 2020c).
- Agriculture accounted for 28% of total water abstractions in 2007 (OECD, 2011). Irrigated lands represented 3% of the Norwegian agricultural area in 2018 (OECD, 2020c). Norway normally have sufficient amount of water for irrigation needs but extreme drought like in 2018 can impact the sector.
- Agriculture has long been the largest anthropogenic source of **nitrogen inputs** to Norway's south-eastern and south western coastal waters. Eutrophication is expected to be a continuing challenge, with agriculture and aquaculture as the main sources (OECD, 2011). Nutrient surpluses have declined since 2000 but are still higher than the OECD averages: the nitrogen balance decreased from 98 to 95 kg/ha, and the phosphorus balance went down from 12 kg/ha to 11 kg/ha between 2000 and 2018 (OECD, 2020c).

Table 1. Main challenges related to water in agriculture

Water use	Water pollution	Water-related risks
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Agricultural water abstractions represent 28% of total water abstractions	Key pollutants from the agricultural sector are, nutrients (phosphorus and nitrogen), erosion and soil particles. Pollution from pesticides is relatively acceptable	The summer of 2018 was very warm and dry; Norway is also regularly affected by floods

Note: +: Minor issue; ++: Problematic issue; +++: Major issue. Source: OECD (2011, 2019).

[1] This document, as well as any data included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

[2] For more details, Gruère, G., M. Shigemitsu and S. Crawford (2020), "Agriculture and water policy changes: Stocktaking and alignment with OECD and G20 recommendations", *OECD Food, Agriculture and Fisheries Papers*, No. 144, OECD Publishing, Paris, http://dx.doi.org/10.1787/f35e64af-en.

B. Key Agriculture and Water Policies & Main Evolution from 2009 to 2019[3]

B.1. Cross-Cutting Agriculture and Water Policies & Governance

The Ministry of Environment is responsible for Water quality in general, the Ministry of Petroleum and Energy is in charge of water quantity, water uses and management of water bodies, and the Norwegian Food Safety Authority manages drinking water and water to irrigation. The Norwegian Water Resources and Energy Directorate is under the Ministry of Petroleum and Energy and deals with water quantity, water uses and management of water bodies.

Table 2. Key agriculture and water policies and policy changes

Key Policies	The main policy governing the use of fresh water resources in Norway is the 2000 Water Resources Act. Its main objectives are to promote sustainable development and to maintain biological diversity and natural processes in river systems. The Act also introduces a licensing system whereby a license applying to all types of works which might cause significant damage is required. The EU Water Framework Directive (WFD) was incorporated into Norwegian law with the adoption of the Water Management Regulations in 2007. The regulations provided the basis for establishing environmental standards to foster integrated protection and sustainable use of water bodies, and adoption of regional management plans. The National Environmental Programme (NEP) was introduced in 2004 to better co-ordinate a range of agri-environmental payments with the objective of reducing pollution and protecting biodiversity. It required each farmer to establish an environmental plan. The NEP have means at both national (NMP), regional (RMP) and local level, to address the water related challenges within agriculture and to target the measures in a cost-effective way. Water resource management, including managing watercourses and their safety, licensing water use and small hydropower stations, and planning for flood emergencies, is carried out by the Norwegian Water Resources and Energy Directorate under the Ministry of Petroleum and Energy (MPE).
Main changes between 2009 and 2019	► The first River Basin Management Plans (RBMPs) were established for 2016-2021, covering the entire country and synchronised with the schedule of the second cycle of implementation of RBMPs in EU countries. ► National (NEP) and Regional Environmental Programmes (REP) for agriculture are revised every 4-5 years and were last updated in 2019: The requirement of environmental plans for each farm was removed in 2015. The reason was that the environment plan had a good effect the first years, giving increasing environmental awareness amongst farmers, but this plan has now been replaced by more targeted incentives, more advisory services etc. The regional programmes were harmonised across the country, in order to ensure the implementation of common national strategies for protecting water resources.
Consistency between water and agriculture policies	The implementation of the WFD has resulted inregional plans (RBMP) for all River Basin District, and these RBMPs also include plans for agricultural measures. Challenges regarding agriculture and water quality have also led to increased budgets for national and regional environmental measures to improve water quality in agricultural areas.

[3] Agriculture and water policies are defined here as all policies that affect the interaction between agriculture production and water.

B.2. Policies to Manage Agricultural Water Use (Quantity)

Table 3. Key instruments for the management of water use

Quantified national future targets for the use of water resources in the agriculture sector No targets, but the sustainable use of water is the main approach to water resource planning	**Metering, monitoring and reporting** Metering: No Monitoring: No Reporting: No
Quantity targets accounting for climate change No	**Scarcity pricing** *Unspecified*
Water entitlements It is uncommon to have an abstraction permit for water abstraction for agricultural irrigation. Most irrigation systems were built before the 2000 Water Resources Act was implemented in 2001. New irrigations systems need licensing according to the Act Landowners with land bordering the watercourses have water abstraction rights for drinking water and water for livestock, but there is a limiting clause concerning environmental influence and the public interest	**Enforcement measures** *Unspecified*
Proportion of cost recovery for surface water There are no major policy instruments used to recover costs of water supplied to farmers. Each industry and household must cover the cost for water supply and water treatment	**Other policy instruments used to encourage water use efficiency** Farm advice and research : There is little focus on water use efficiency in Norway; research is centred on flood management in fields

B.3. Policies to Control Agricultural Water Quality

RBMP sets targets for good chemical and ecological status for all water bodies including agricultural areas.

Table 4. Key instruments to improve water quality

National water quality data collection tools Increased focus on water quality monitoring in agricultural areas (due to the WFD follow up) ► Ecological (including nutrients and sediments) and chemical monitoring is the most important tool ► Modelling, surveys, and databases. Remote and real-time sensing is less used for agricultural waters ► Statistics Norway (SSB) produces a comprehensive agricultural survey every 10 years (the next one is planned for 2020). SSB also produces the annual report "Agriculture and Environment – state and development"	**Main policy instruments** ► *Regulatory*: The Land Act contains provisions regarding cultivation which aim at preventing erosion and regulating the use and storage of manure, sludge and fertiliser and other inputs in the production process. Since 2014, the county governors have the authority to implement regulations for specialised methods of soil cultivation or for measures on agricultural land located in areas with high risk of soil erosion or in areas within catchments to vulnerable watercourses or coastal areas ► *Economic*: Special environmental measures in agriculture (SMIL) and Regional environmental measures (RMP). Direct payments for environmental measures to reduce runoff, and establishing vegetation zones to reduce soil erosion. RMPs have been revised in 2019 to be more understandable for farmers and better to administrate for local and regional authorities ► *Information*: web-based guidance for measures in agriculture; Agricultural advisory service for farmers
Spatial tools (e.g. topological, geometric, or geographic data analysis) to target policies in specific areas ► Erosion maps are used in models to predict effects of agricultural measures (e.g. reduced tilling)* ► Light detection and ranging (Lidar) data are used to assess the erosion in gulleys**	**Enforcement measures** ► Land Act: the county governor may impose a coercive charge on the party responsible ► If a vegetation zone is not maintained or established as required, the farmer may qualify for reduction of the direct payment, or claim for repayment

Note: Underline indicates changes since 2009 * "New soil erosion maps were developed in 2020 (with a new model, better climate data etc.). These maps will be issued in 2021 following a quality assurance procedure. **Erosion in gulleys were incorporated in the new erosion maps in 2020, focusing on areas with low erosion risk, where gullies increase the erosion.

B.4. Policies to Manage Climate-Induced Water Risks

Table 5. Water risks and responses

	Droughts	Floods
Reported Trends	The summer of 2018 was very warm and dry. There is however no study that shows that the frequency of droughts is increasing. Summer droughts may increase in the future, based on climate change scenarios.	Climate change scenarios predict more rain-induced floods during autumn, winter and spring, as well as more episodes of heavy rain. In some larger rivers, studies show that water discharge has increased since 1990.
Key Policies	Support payments, research on robust and adaptable plant varieties, information and advisory activities, and mapping (showing risks for drought and need for irrigation etc.), Soil survey and soil mapping, soil erosion maps. No relief payment is provided if the loss is less than 30 % of normal crop production at the farm.	Flood risk plans have been developed, and the government invested in flood prevention infrastructure mainly for urban areas and for agricultural lands. Some of the environmental measures to reduce erosion and runoff will also have a positive effect on flood risk. Research, information and advisory activities. No relief payment is provided if the loss is less than 30 % of normal crop production at the farm.
Main Changes from 2009 to 2019	Increased awareness of water quality issues amongst managers in public administration (local, regional, national) within all water-related sectors, a wide range of stakeholders and the public in general.	-
Factoring of Climate Change in Policies	3/5: Water availability for agriculture under climate change has not been examined as a separate issue, but climate change could bring an increase in irrigation in some parts of the country. As of today, little research is done in this field. Climate change is however high on the agenda, and many measures to reduce greenhouse gas emissions will also benefit the aquatic environment.	

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