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

UNITED STATES

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

- The United States' agriculture produces a wide range of commodities; key industries include grains (maize and wheat), oilseeds (soybeans), cotton, cattle, dairy, poultry, and fruits and vegetables. The share of livestock in the total agricultural production value remained stable between 2000 and 2018 at about 44% (OECD, 2020c).
- Agriculture accounted for 46% of total water abstractions in 2015 (Dieter et al., 2018). Irrigated lands occupy 5% of the total agricultural area, a share that remained stable between 2000 and 2018 (OECD, 2020c). Groundwater withdrawals for irrigation increased by 16% between 2010 and 2015 (Dieter et al., 2018).
- Nitrogen balance decreased between 2000 and 2018 from 34 to 27 kg/ha, and the phosphorus balance went down from 3 kg/ha to -1 kg/ha during the same period. Both nutrient balances in 2018 are slightly lower than the OECD average (OECD, 2020a). At the same time, nutrient use in agriculture continues to induce water pollution (USEPA, 2020).

Table 1. Main challenges related to water in agriculture

Water use	Water pollution	Water-related risks
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Agricultural water abstractions represent 46% of total water abstractions. Agriculture is increasing its use of groundwater	Key pollutants from the agricultural sector are sediment from eroded soils, nutrients from chemical fertilisers and manure applications, mainly nitrogen and phosphorus, and pesticides	Major droughts and floods have impacted production across major U.S. agricultural regions over the past several decades

Note: +: Minor issue; ++: Problematic issue; +++: Major issue. Source: Dieter et al. (2018), OECD (2019, 2020c), USEPA (2020).

[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

Table 2. Key agriculture and water policies and policy changes

Key Policies	Water resource management is primarily managed at the State level, except for some large-scale irrigation projects supplied by federally-financed water projects. Federal agencies provide technical and financial assistance to improve water use efficiency. The Clean Water Act (first enacted in 1948 but expanded and reorganised in 1972) established the basic structure for regulating discharges of pollutants into US waters and regulating quality standards for surface waters.
Main Evolution from 2009 to 2019	► In 2016, the National Drought Resilience Partnership (NDRP) was established as a collaboration between several U.S. Departments and Agencies to focus on building long-term drought resilience by helping communities prepare for future droughts and reducing the impact of drought events on livelihoods and the economy. ► In 2018, the Farm Bill was signed into law and includes several provisions related to agricultural water policy. The Farm Bill explicitly allows irrigation districts, irrigation associations, drainage districts, and others to participate in the Environmental Quality Incentives Program (EQIP) for water conservation or irrigation efficiency practices.
Consistency between Agriculture and Water Policies	No changes in agricultural governance were made to increase coherence with water objectives.

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 specific planning targets at either the Federal or State level	**Metering, monitoring and reporting** ► Water abstractions are tracked at the State level. Most abstractions are monitored, but the use of metering is growing ► The 2018 Irrigation and Water Management Survey provides comprehensive information on irrigation activities and water use across American farms and ranches
Quantity targets accounting for climate change No	**Scarcity pricing** ► Most water pricing is done at the local or project level ► There is a growing use of water trading in the U.S., such as programs in Arizona, California, and Colorado
Water entitlements ► Surface water: Water rights systems are under state laws. Water allocations are managed either by riparian rights or appropriative rights systems or both depending on the state ► Groundwater: Groundwater rights are also under state laws. Most groundwater is withdrawn under a permit system	**Enforcement measures** Most enforcement occurs at the State level
Proportion of cost recovery for surface water ► 100% for Operation & Maintenance ► Unspecified % for Capital Costs	**Other policy instruments used to encourage water use efficiency** Subsidies, water supply cost recovery, farm advice and research. Policy instruments to encourage improvements in water use efficiency are embedded in a range of environmental conservation programmes

Note: Underline indicates changes since 2009

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

B.3. Policies to Control Agricultural Water Quality

Table 4. Key instruments to improve water quality

National water quality data collection tools	Main policy instruments
The U.S. Environmental Protection Agency (EPA) and the U.S. Geological Survey (USGS) have responsibility for collecting water quality data, although this is not specific to the agriculture sector	► *Regulatory*: the U.S EPA has responsibility for setting total maximum daily loads (TMDLs) for waterbodies under the Clean Water Act ► *Economic*: funding for best management practices (BMPs) on working agricultural lands ► Technical assistance is often provided in conjunction with financial assistance, such as with (US Department of Agriculture - USDA) helping farmers and ranchers identify which management practices can meet on-farm and off-farm environmental goals
Spatial tools (e.g. topological, geometric, or geographic data analysis) to target policies in specific areas	**Enforcement measures**
Spatial modelling tools are used in determining contributions from agriculture and other sectors. These tools can be used in setting sector-specific TMDL for agriculture and in determining where priority areas may be	When considered a nonpoint source, agriculture remains unregulated in the United States for its nutrient and sediment contributions. The main tools for reducing agricultural water quality impacts is via voluntary means (e.g. economic incentives), although the National Pollutant Discharge Elimination System (NPDES) program regulates pollutant discharges from agricultural point sources, including concentrated animal feeding operations (CAFOs)

Note: Underline indicates changes since 2009

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

Table 5. Water risks and responses

	Droughts	Floods
Reported Trends	There is a continued trend of increasing incidence of drought in the U.S.	Trend analysis shows no clear evidence of an increase or decrease in flood events, although increased urbanization has led to increased flood peaks downstream. A number of studies point to an increase in the frequency of heavy precipitation events in some regions.
Key Policies	There is no comprehensive national drought policy, although numerous federal programs address differing aspects of drought. Support for irrigation infrastructure addresses water scarcity problems (e.g. efficient, on-farm irrigation application and improved off-farm water conveyance technologies).	There are no direct policies that affect flood risk reduction in agriculture, but flood risk reduction is achieved as a secondary consequence of other agri-environmental programmes measures, such as wetland conservation.
Main Changes from 2009 to 2019	2016 National Drought Resilience Partnership (NDRP). There is considerable policy interest in managed aquifer recharge, as groundwater reserves can help offset drought-induced water supply shortfalls.	-
Factoring of Climate Change in Policies	Not estimated: Explicit factoring of climate change into water use policy considerations is new, but long-term strategies are being developed to update institutions and agricultural policies to adapt to climate change.	

Bibliography

Dieter, C.A., et al. (2018), "Estimated use of water in the United States in 2015: U.S. Geological Survey Circular 1441", USGS, Washington DC, https://doi.org/10.3133/cir1441. [Supersedes USGS Open-File Report 2017–1131]

FAO [Food and Agriculture Organisation of the United Nations] (2020), FAO Aquastat. Retrieved from: http://www.fao.org/aquastat/en/ (accessed 8 July 2020).

OECD (2013), *Water and Climate Change Adaptation: Policies to Navigate Uncharted Waters*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264200449-en.

OECD (2017), *Water Risk Hotspots for Agriculture*, OECD Studies on Water, OECD Publishing, Paris, https://doi.org/10.1787/9789264279551-en.

OECD (2019), OECD Survey on Monitoring Progress in Agricultural Water Management.

OECD (2020a), "Nutrient balance" (indicator), https://doi.org/10.1787/82add6a9-en (accessed 21 July 2020).

OECD (2020b), "Freshwater abstractions", https://stats.oecd.org (accessed 6 August 2020).

OECD (2020c), *Agricultural Policy Monitoring and Evaluation 2020*, OECD Publishing, Paris, https://doi.org/10.1787/928181a8-en.

U.S. EPA [Environmental Protection Agency] (2020a), "Nutrient pollution", U.S. EPA, Washington DC. Retrieved from: https://www.epa.gov/nutrientpollution (accessed 8 July 2020).

U.S. EPA (2020b), "Summary of the Clean Water Act", U.S. EPA, Washington DC. Retrieved from: https://www.epa.gov/laws-regulations/summary-clean-water-act (accessed 8 July 2020).