

AGRICULTURE AND WATER POLICIES: MAIN CHARACTERISTICS AND EVOLUTION FROM 2009 TO 2019¹

COSTA RICA

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 Secretariat² and additional official sources.

A. Agriculture and Water Characteristics

- Costa Rica's agriculture mainly produces coffee, sugarcane, fruit, livestock, rice and palm oil. The share of livestock in the total agricultural production amounted to 26% in 2018 (Costa Rica National Institute of Statistics and Censuses 2019; OECD, 2020c).
- Agriculture accounted for 69% of total water abstractions in 2018 (OECD, 2018). The share of irrigated land in the total agricultural area has also increased, from 0.8% in 2000 to 4% in 2018 (OECD, 2020c). Sources for irrigation predominantly come from surface water bodies (FAO, 2015).
- The nitrogen balance went from 41 kg/ha down to 30 kg/ha between 2000 and 2018, and the phosphorus balance dropped from 12 kg/ha to 10 kg/ha over the same period (OECD, 2020a).

Table 1. Main challenges related to water in agriculture

Water use ++	Water pollution ++	Water-related risks ++/+++
The share of agriculture in water abstractions has risen significantly between 2000 and 2018. Illegal groundwater abstractions constitute a problem, but it is not exclusive to the agricultural sector	Key pollutants from the agricultural sector are pesticides and their metabolites and organic material, fertilisers (excess of nitrogen and phosphorus), faecal coliforms, excess of Ca, Na, Mg, and salts	Costa Rica suffered from drought events during the period 2014-2016, as well as heightened floods

Note: +: Minor issue; ++: Problematic issue; +++: Major issue. Source: FAO (2015), OECD (2019, 2020c).

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 2019³

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

Table 2. Key agriculture and water policies and policy changes

Key Policies	<p>The 1942 Water Law created the Societies of Agricultural Users (SUA) which operate and maintain most of the irrigation systems in Costa Rica. The SUA's function is the collective use of public waters, the construction of works for irrigation, driving force, watering holes and any other use of the waters.</p> <p>The National Groundwater, Irrigation and Drainage Service (SENARA) is responsible for the Integrated Water Resources Management Program (PROGIRH) financed by a loan from the Central American Bank for Economic Integration (CABEI). Its implementation is included in the country's National Development Plan (PND) 2011-2014. The impact of this program includes the three substantive areas of institutional management: hydrogeological research, irrigation and drainage, and flood protection.</p>
Main Evolution from 2009 to 2019	<ul style="list-style-type: none">▶ In 2010, PROGIRH was established with the objective of reversing trends in excessive consumption, pollution and increasing threats arising from deficit and excess.▶ Derived from PROGIRH, the 2017-2028 National Irrigation and Drainage Policy has been established, with the objective of promoting the country's agricultural and aquaculture development, by strengthening a productive sector based on integrated water resource management.▶ The State Policy for the Costa Rican Agrifood Sector and Rural Development 2010-2021 implemented actions that are related to water resources and identified climate change and agro-environmental management as one of four strategic areas for the development of the agricultural sector. For example, the construction of infrastructure of irrigation, drainage and flood control and the improvement of the existing infrastructure, are promoted.▶ The "Policy for the Agricultural Sector and the Rural Territorial Development from 2015-2018", establishes an adaptation and mitigation of agriculture to climate change and set up strategic actions for the strengthening of irrigation and drainage programs.
Consistency between Agriculture and Water Policies	<p>The National Directorate of Agricultural Extension at the Ministry of Agriculture and Livestock developed a "good agricultural practices" manual including general guidelines that should be applied in agricultural production, to minimise risks of environmental degradation and physical, chemical and biological contamination of agricultural production systems.</p>

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

<p>Quantified national future targets for the use of water resources in the agriculture sector</p> <p>Yes</p>	<p>Metering, monitoring and reporting</p> <ul style="list-style-type: none"> ▶ Metering: Yes ▶ Monitoring: Yes ▶ Reporting: Yes
<p>Quantity targets accounting for climate change</p> <p>Yes:</p> <ul style="list-style-type: none"> ▶ The Climate Smart Agriculture Strategy for the SICA Region 2018-2030 aims to promote a more competitive, inclusive and sustainable agriculture adapted to the effects of climate change and climate variability ▶ <u>The Sectorial Plan 2019-2022 on Agriculture, Fisheries and Rural Sector develops an axis on Climate Actions and risk management, whose objective is the incorporation of the climatic variable and the reduction of risks in the production of goods and services by strengthening of the capacities in the institutions and producers</u> 	<p>Enforcement mechanisms</p> <ul style="list-style-type: none"> ▶ <u>Since 2016, the Water Directorate of MINAE⁴ fostered the consolidation of their regional offices called Hydrological Units, which has allowed the strengthening of control and surveillance programs at the local level.</u> ▶ <u>For certain basins and aquifers, there is a monthly program of water control overall the concessions, which aims to supervise that concessionaires are extracting the assigned flow, and also to monitor illegal water intakes. The reports are made and stored in each concession file.</u>
<p>Water entitlements</p> <ul style="list-style-type: none"> ▶ All water (surface water and Groundwater) is of public domain and its use requires a permit (concessions) from the Government, processed by MINAE. Concession are granted form a maximum of 10 years to have capacity to adjust over time to changing conditions. ▶ Farmers can have their own water concessions for self-supply in irrigation, but a group of farmers can form an association, called in legislation “Water Users Societies”. The concession is given to the association and they can provide water for irrigation to different farmers 	<p>Scarcity pricing</p> <p>No</p> <ul style="list-style-type: none"> ▶ Fee on water use by Water Directorate: concessionaires must pay the water use fee, created by Executive Decree 32868 of 2006 Water Use Fee The fee is differentiated, depending on the type of water use and the authorized abstraction flow. This charge corresponds to the principle of "beneficiary pays", whose amounts contemplate the use value and the environmental service of protecting water resources, for which different uses are differentiated and the added value of groundwater is considered. It also takes into account the administrative costs of management, hydrological and meteorological monitoring, planning, control, research, as well as the costs to preserve, maintain and restore watershed ecosystems.
<p>Proportion of cost recovery</p> <ul style="list-style-type: none"> ▶ Operation and maintenance (O&M) costs are 100% covered by producer organisations, individuals (for both small irrigation and drainage systems). In the case of the Arenal-Tempisque Irrigation District (DRAT) users, 100% of the O&M cost is recovered through the fee charged. ▶ Public investments are not recovered. For drainage works, the policy is “no recovery of the investment” 	<p>Other policy instruments used to encourage water use efficiency</p> <ul style="list-style-type: none"> ▶ <u>National Development and Public Investment Plan 2019-2022, Agro-environmental Agenda, Water Agenda for Costa Rica (2013)</u> ▶ The water use canon (Executive Decree 32868)(al canon de aprovechamiento de aguas (Decreto Ejecutivo 32868)) constitutes an economic instrument of environmental management, where the user must pay for the use of water resources, including agricultural use ▶ Subsidies: Infrastructure for irrigation by SENARA: Arenal Tempisque Irrigation District (DRAT) and Small Irrigation Areas Program (PPAR) ▶ Farm advice and research: DNEA (National Directorate of Agricultural Extension) and SENARA advise farmers on water efficiency management

Note: Underline indicates changes since 2009

⁴ MINAE is the Ministry of Environment and Energy of Costa Rica.

B.3. Policies to Control Agricultural Water Quality

Table 4. Key instruments to improve water quality

<p>National water quality data collection tools</p> <ul style="list-style-type: none"> ▶ Sampling and laboratory analysis by SENARA ▶ PPAR: Water quality analysis associated with irrigation ▶ DRAT: Semi-annual water monitoring is carried out in different parts of the District ▶ The Regulation for the Evaluation and Classification of the Quality of Surface Water Bodies (2007). Based on this regulation, MINAE developed the National Plan to Monitor Quality on Water Bodies through the Water Directorate. The Water Directorate is responsible for the Plan's execution and financing. <u>Monitoring began in 2015</u> 	<p>Main policy instruments</p> <ul style="list-style-type: none"> ▶ <u>Regulatory: Prohibition of the use of bromacil in agriculture (Executive Decree 40423-MAG-MINAE) in 2017, to protect surface water and groundwater near plantations; the Regulation for the Management and Final Disposal of Sludge and Biosolids (from wastewater) (Executive Decree 42110), the Regulation of the Environmental Canon for Discharges (Executive Decree No. 42128). Both for point source pollution control. The Regulation for the Evaluation and Classification of the quality of surface water bodies (Executive Decree No. 33903) classifies water bodies according to their quality and establishes potential uses of water bodies (e.g. agricultural irrigation, animal feed)⁵</u> ▶ <u>Economic: Environmental Payment Services, the Environmental Canon for Discharges (Executive Decree 42128) requires environmental fee for point source discharges based on polluter pay principle.</u> ▶ <u>Information: Good Agricultural Practices Manuals</u>
<p>Spatial tools (e.g. topological, geometric, or geographic data analysis) to target policies in specific areas</p> <p>No spatial tools</p>	<p>Enforcement measures</p> <p><i>Unspecified</i></p>

Note: Underline indicates changes since 2009

⁵ Costa Rica also has other regulatory measures including the Regulation of Discharge and Reuse of Wastewater (2007) and Regulation of Approval of Wastewater Treatment Systems (2016) but these apply to the control of point source water pollution, and not for diffuse sources (e.g. agricultural activity).

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

Table 5. Water risks and responses

	Droughts	Floods
Reported Trends	The most recent drought events are related to the effects of the phenomenon called El Niño-Southern Oscillation (ENOS) during the period 2014-2016. The National Meteorological Institute (IMN) indicates that this phenomenon tends to be more <i>frequent</i> but not more severe.	Between 2009 and 2019, the <i>frequency</i> of events has been reduced, but their <i>intensity</i> was heightened when they occurred. The damages and losses recorded due to heavy rains have exceeded the averages. In 2016, for the first time in history, a hurricane crossed the northern border of Costa Rica. In 2017, the storm Nate caused the largest losses so far documented. Both events caused deaths and destruction on a large scale in the agricultural sector.
Key Policies	Support Payments (Economic support for adaptation projects, Supplies and equipment) are used, as well as Technical advice and Research on technological options. National Meteorological Institute (IMN) publishes daily and weekly weather information and provides assistance, co-operation and extension to different institutions through lectures, training and agro-meteorological studies.	
	The National Policy of Risk Management, National Adaptation Policy and Rural Development Policy defines actions for the agricultural sector, and promote that sectoral, institutional and territorial planning take into account the adaptation and risk reduction as a cross-cutting criterion. Government support to farmers is only related to humanitarian assistance and resources for recovery, focused on smallholders and producers. Minor events are supported by the Government with resources from the institutions' budget. If the event is severe, states of emergency are decreed and supported with resources that the Government itself transfers to the National Emergency Fund. Besides, insurance and other financial alternatives for the sector are offered.	
Main Changes from 2009 to 2019	The "Policy for the Agricultural Sector and the Rural Territorial Development" 2015-2018 established a pillar that set up strategic actions for the strengthening of irrigation and drainage programs to reduce excess water and expand areas for production.	
Factoring of Climate Change in Policies	2/5: In 2009, the National Climate Change Strategy was issued, which prioritises adaptation and mitigation. However, the 2017-2028 National Irrigation and Drainage Policy, prepared by (SENARA), has not yet been implemented.	

Bibliography

- Costa Rica National Institute of Statistics and Censuses (2019), Statistical Yearbook: Agricultural 09 Costa Rica: Area sown of the main agricultural activities (in hectares) 2017-2019, <https://www.inec.go.cr/anuario-estadistico/anuario-estadistico-agropecuario> (accessed 22, December 2020).
- FAO [Food and Agriculture Organisation of the United Nations] (2015), *Aquastat Perfil de Pais: Costa Rica*, FAO, Rome. Retrieved from: <http://www.fao.org/3/ca0416es/CA0416ES.pdf> (accessed 23 July 2020).
- FAO [Food and Agriculture Organisation of the United Nations] (2020), FAO Aquastat. Retrieved from: <http://www.fao.org/aquastat/en/> (accessed 23 July 2020).
- OECD (2018), Questionnaire on the State of the Environment 2018– Inland Water. From the Working Party on Environmental Information.
- 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>.