

Summary

Water is an abundant resource in Costa Rica. With plenty of water and reasonable infrastructure, there is good piped coverage and energy generated through hydroelectricity. Yet this abundance is accompanied by neglect in water governance and conflicts between users when supply is interrupted. NCA provides the data needed to design policies that improve long-term resource management.

Background

This brief is written by Ina Porras of the International Institute of Environment and Development (IIED) and Luis Rivera from WAVES Costa Rica. It is based on work done by the World Bank's Wealth Accounting and Valuation of Ecosystem Services (WAVES) program in Costa Rica.

Crystal clear: water accounts inform policies for better resource management

Despite its economic importance, water governance in Costa Rica is outdated, with little information on supply and demand, benefits and costs. Subsidized water fees and little control over residual waters result in inefficient use of resources and degradation of the ecosystem base. NCA can help the design and evaluation of policies —the new Water National Plan, for example — through transparent and consistent data.

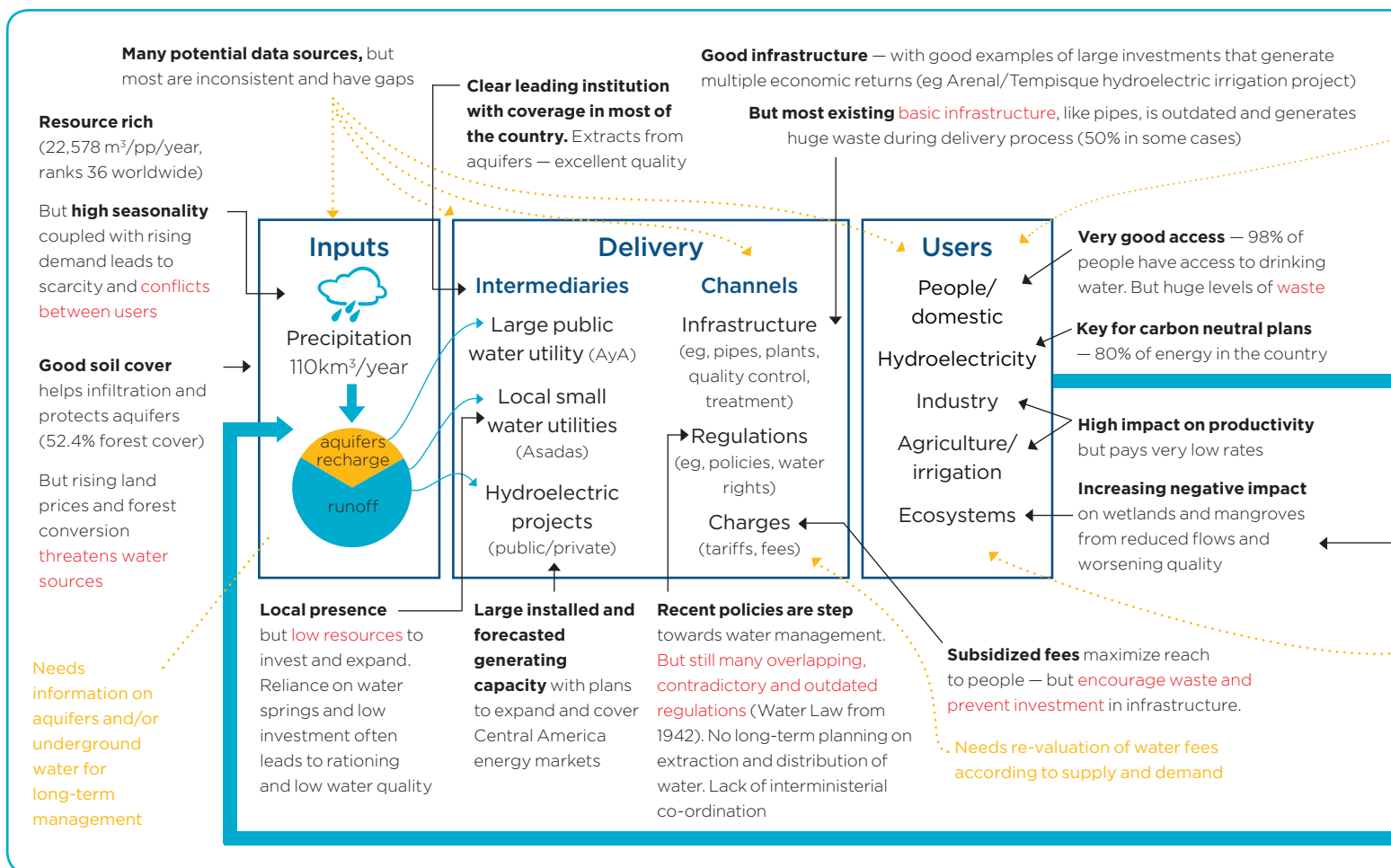
The main messages that emerge are:

- Costa Rica is water-rich. Average supply is 110km³/year — over 25,000 cubic meters per person. Piped water reaches 98.4 per cent of people. Hydroelectricity provides almost 80 per cent of energy.
- Investment typically targets large water projects, but everyday delivery and drainage infrastructure is breaking down causing conflict between users.
- Consistent and clear information on water demand would allow better design, management and evaluation of rules, rights and fees.
- Better information can help ensure that investments go where there is higher impact on the people and the economy.

Why talk about water?

Water underpins life and fuels economies. The United Nations (UN) has urged states and international organisations to provide safe, clean, accessible and affordable drinking water and sanitation for all. Water, as a goal or as part of a cross cutting agenda also features strongly in the Sustainable Development Goals.

Achieving water for all requires information to design policies and measure impacts, from the local to the international. The Costa Rican water accounts follow a UN-approved integrated system to build trust, consistency and comparison across time and across countries. They form part of the traditional national accounts linked to GDP, and show the interaction of economic activity with the environment.



Water governance in Costa Rica

Figure 1 shows the key systems in place that directly or indirectly affect the use and management of water resources and its delivery to different users. Seen as a value chain, the figure shows water as an input on the left, delivered through different intermediaries and channels to users. The figure focuses on the key opportunities and bottlenecks affecting water governance across these sectors.

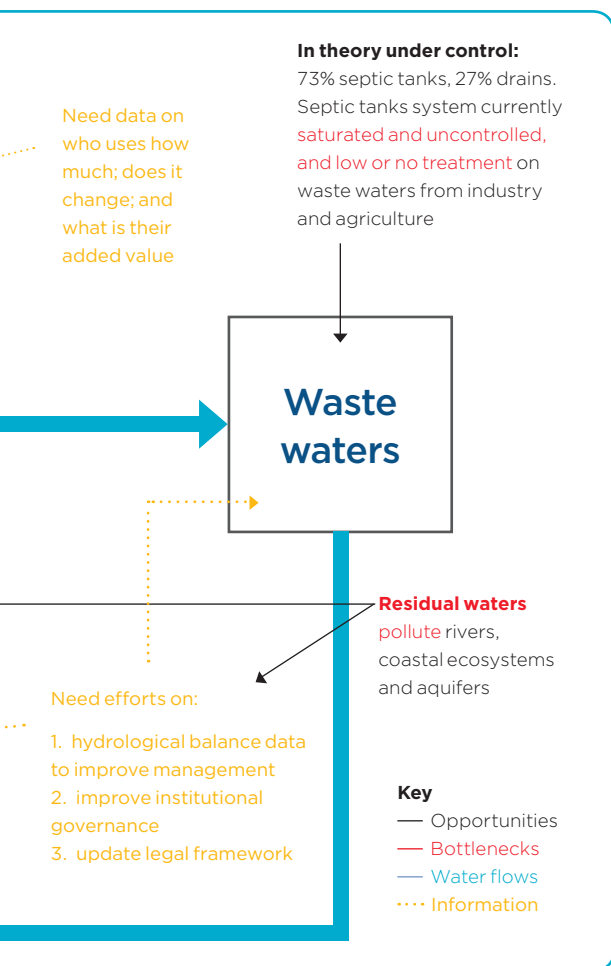
Due to its geographic position, every year Costa Rica gets 110km³ of water falling ‘free-of-charge’ from the sky. A paternalistic approach by the government in the 1950-80s saw the expansion of basic infrastructure, regulatory framework and institutions to manage water resources: AyA as the leading institute, ASADAS at community level for drinking water, and ICE to oversee energy. Today,

water is used by homes (98.4 per cent have piped connections), to produce energy (over 90 per cent of energy is from renewable sources – mostly hydroelectric – with an aim at 100 per cent renewable), for crops (8.6 per cent of GDP in 2013 was from agriculture) and industry.

Yet it is this abundance that has masked emerging problems – most of which can be traced back to the outdated state of the existing governance systems:

- Many political decisions are made with no information about their impact on water. Expansion of urbanization and industrial free zones (zonas francas) around the metropolitan areas drives conversion of forest areas. Increasing land prices and poor regulation of effluents limit the ability to protect these water catchments. This has negative

Figure 1. Opportunities and bottlenecks for water governance in Costa Rica. Source: Ina Porras, 2015



prevents a viable cost-recovery model from developing to invest in better infrastructure.

- The high seasonality of rainfall leads to constant flood/drought situations especially where delivery systems cannot cope. Water scarcity during droughts leads to rationing and water conflict, especially where high-demand activities (eg tourism or agroindustry) compete with groups with less political traction (eg households).

What do the water accounts tell us?

The water accounts help to provide the information required to manage resources and design better policies at national level, monitoring etc, their impacts across the economy. Following the

input-delivery-users sequence, Fig 1 also gives an idea of the type of information required to maximise the opportunities and address the gaps.

There is already a lot of information on water resources, although much of it is scattered and inconsistent across sources and time. The water accounts will help to coordinate and make compatible the information required to manage the resources more efficiently. The accounts will provide descriptive indicators to follow the quantitative and monetary interactions of water across sectors, and a database for long-term, strategic planning. For example, the accounts keep track of the stocks and flows of water, including data on how much is extracted, used and recycled. The accounts also help to understand the effects on productivity and effluent discharges by sector — a key determinant of ability to pay to adjust tariffs and monitor behavior.

Many political decisions are made with no information about their impact on water

impacts on water flows and their quality in the area and for downstream users.

- Investment tends to go to large infrastructure, like dams and irrigation canals. These projects have shown their capacity to increase productivity. But basic infrastructure is characterized by an aging pipe system — continuously patched and mended — servicing an ever increasing population.
- Allocation of water rights, fees and regulations still date back to the 1942 Water Law. Concessions are made with little or no information on water availability — present or future.
- At less than US\$1/m³, subsidized water fees encourage water waste (more than 270lt/person/day). Many agro-industrial processes — growing pineapples, for example — are also exonerated or receive subsidies on the inputs and public services, especially water. This

What have we learned so far?

The process of creating a water accounts systems in Costa Rica is still at early stages. Much of the effort has gone to creating the local capacities to handle long-term data management and institutional agreements on data provision. Initial data show that:

- There were 5,639 water concession permits in 2014: 56 per cent superficial extraction, 41 per cent wells, two per cent hydroelectricity. Even this information should be treated carefully: according to Astorga,⁴ a recent study showed that as many as 96 per cent of wells in coastal areas do not have a valid concession.
- In terms of volumes of water, hydroelectric projects (HEP) use more than 95 per cent of water (but this is non-consumptive use, meaning that the water can be used downstream), and the existing HEP capacity only allows use of 25 per cent of full potential. Understanding this potential and impact on other sectors is key to achieving the country's carbon neutral objective by 2020.

Excluding HEP use, irrigation takes 72 per cent of flows, followed by agroindustry (11 per cent). Domestic use is less than 0.3 per cent of water. The input-output matrix shows that social and personal services, manufacture and agriculture use the most water. The agriculture and the mining sector are the most water polluting activities. For example, suspended solids — like sediments — from agriculture amount to 124,449 tons/year. Yet many of the efforts for tariff adjustments still target domestic households rather than the agro-industry.

How can water accounts inform policy?

The transparent and robust approach proposed by the water accounts will help other stakeholders and institutions push for changes and improvements, for example:

- The urgently needed up-to-date legal framework for water governance and information for policies, such as the Integrated Water Governance National Plan (PNGIRH).
- Better information and coordination for water allocation across sectors (agriculture, industry, domestic) understanding the contribution of these sectors to the country's economy and ecosystems.
- Better policies across ministries and departments (environment, energy, trade) on requirements, prices and use.
- Water fees that include cost-recovery and environmental provision, and allow water utilities to invest in better infrastructure.
- Better information for monitoring policies and to enforce compliance with the law, for example, ensuring that money collected by utilities is invested in the activities they should be doing, such as dealing with effluents and improving water quality.

Notes

1. Cerdas Sánchez, J.C. 2011. Análisis del marco legal para la administración del agua de consumo humano por parte de las asociaciones administradoras de sistemas de acueductos y alcantarillados comunales. Thesis for the degree of licenciatura at the Faculty of Law, University of Costa Rica.
2. The National Institute of Aqueducts and Sewerage (AyA) was created by Law N° 2726 in 1961; ASADAS are community associations that are legally allowed to act as a water utility where AyA does not provide the service. The Costa Rican Electricity Institute (ICE) was created by Law N° 449 in 1949 to oversee the energy sector.
3. Reported consumption during May 2015 for domestic households with average four members. Consultation done by authors.
4. Astorga Espeleta, Y. 2013. Gestión del recurso hídrico y uso del agua. Informe Final. Decimosexto informe Estado de la Nación en Desarrollo Humano Sostenible.

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