RESEARCH INSIGHTS

Do Water Expenditures Exacerbate Inequality in Latin America and the Caribbean?

N.° 149 | May 2025

Authors: María Pérez Urdiales and Carolina Tojal Ramos Dos Santos.

- **Water expenditures are more equally distributed than income, generating an unequalizing effect due to disproportionately higher costs for low-income households.**
- **The distribution of total water expenditures, including bottled and trucked water, is closer to income distribution than tap water alone in Brazil, Costa Rica, and Uruguay, but not in Colombia.**
- **This seemingly more equitable outcome may mask inequalities in access to water quality. Wealthier households tend to consume more bottled water due to concerns about tap water quality, an option that lower-income households may not be able to afford.**

CONTEXT

Latin America and the Caribbean have made impressive economic, social, and environmental progress, but significant disparities remain. While advancements have been made in the water and sanitation sector, lower-income households still face challenges such as limited access, poor service quality, and a disproportionately high share of income spent on water. These issues may further exacerbate inequalities in the region. This paper thus aims to examine the role of water expenditures in contributing to inequality in Latin America and the Caribbean. Understanding this relationship is crucial for developing more equitable water policies and enhancing the well-being of lower-income households in the region.

PROJECT

In this project we use survey data from the Americas Barometer of the Latin American Opinion Project (LAPOP) for Brazil, Colombia, Costa Rica and Uruguay. We begin with a descriptive analysis, examining the distribution of water access, income, and water expenditures across countries. Subsequently, we compare the concentration curves of water expenditures with the Lorenz curves for income distribution in each country. We consider tap water expenditures or total water expenditures, which also include other sources like bottled water and delivery trucks.

RESULTS

In these countries a large share of the population has access to piped water. Most of the population use tap water for drinking purposes, but a significant portion still relies on bottled water. We show that lower-income households allocate a larger share of their income to water expenditures compared to higher-income households.

The water expenditure concentration curves in all four countries lie closer to the equality line than the income Lorenz curve. In the figure 1, we show the graphs for Colombia and Brazil. This pattern indicates that water expenditures are more evenly distributed across households than income, which aggravates inequality. In Colombia, the first income quintile holds 5% of aggregate income but accounts for 8% of cumulative tap water expenditures, while in Uruguay the first income quintile holds only 5% of the income but accounts for 19% of cumulative tap water expenditures. In Costa Rica, the first quintile holds 3% of the income and accounts for 20% of tap water expenditures. In contrast, Brazil shows the largest disparities: the first income quintile holds around 5% of aggregate income but bears about 34% of cumulative tap water costs. Overall, these results suggest that water expenditures are more equally distributed than income

Key Concept

LORENZ CURVE

This curve illustrates income inequality by plotting the cumulative percentage of income against the cumulative percentage of the population.

We additionally find that total water expenditures, including tap water, bottled water, and water delivered by trunks, are distributed more similarly to income than tap water alone for Brazil, Costa Rica, and Uruguay. In contrast, we find the opposite for Colombia. This seemingly more equitable outcome may hide underlying inequalities in coping strategies for water quality issues. Wealthier households tend to consume more bottled water, and this source is used due to concerns about tap water quality, an option that lower-income households may not be able to afford.

POLICY IMPLICATIONS

Policymakers must address the regressive nature of water expenditures by refining subsidy systems and water tariff structures. Existing water subsidies often fail to effectively target low-income households, leaving them with a disproportionate financial burden. A key recommendation is to improve the targeting of subsidies to ensure that they benefit those who need them the most, thereby reducing the financial strain on low-income groups. Adjustments to water tariff structures, such as reducing fixed fees or implementing progressive block tariffs that consider the number of people in the household, such as budget-based rates, could help make water costs more equitable across income levels.

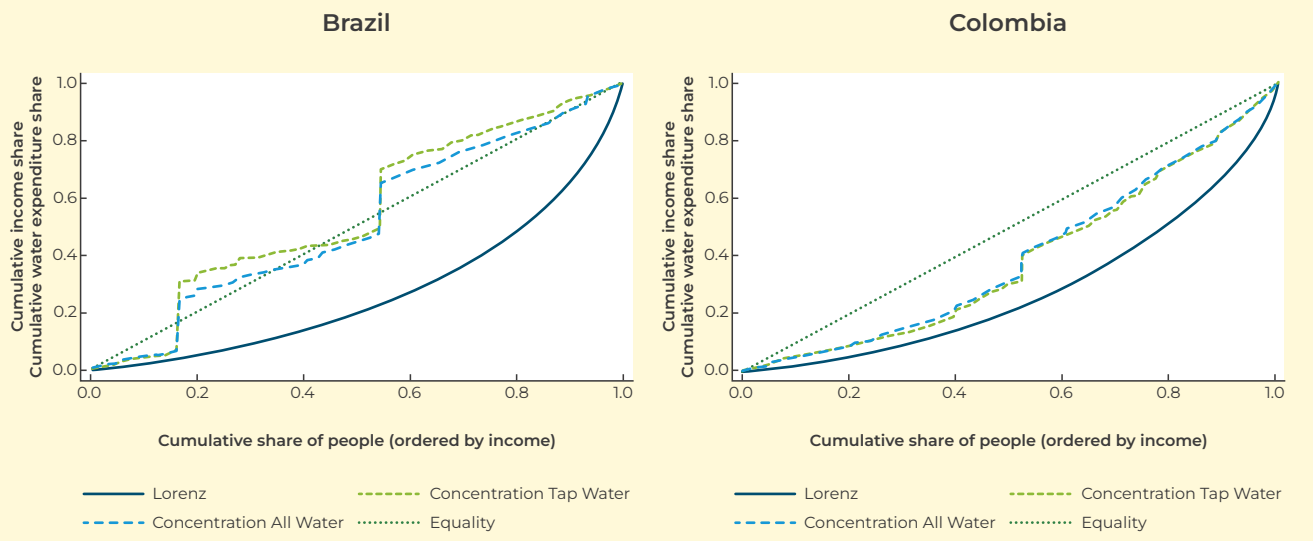
Key Concept

EXPENDITURE CONCENTRATION CURVE

This reflects the cumulative share of spending across households ranked by income.

Moreover, policymakers should consider the full range of water sources when designing equity-focused water policies. As bottled and trucked water often represent more costly alternatives to tap water, their increasing consumption by wealthier households must be taken into account. Ensuring reliable and affordable access to tap water is essential, but it is equally important to address water quality issues that push households to seek more expensive alternatives. **Strengthening water infrastructure, particularly in underserved areas, and improving water quality will contribute to reducing the inequalities exacerbated by water expenditures.**

FIGURE 1. Concentration Curves by Country



IDB RESEARCH ON WATER AND SANITATION

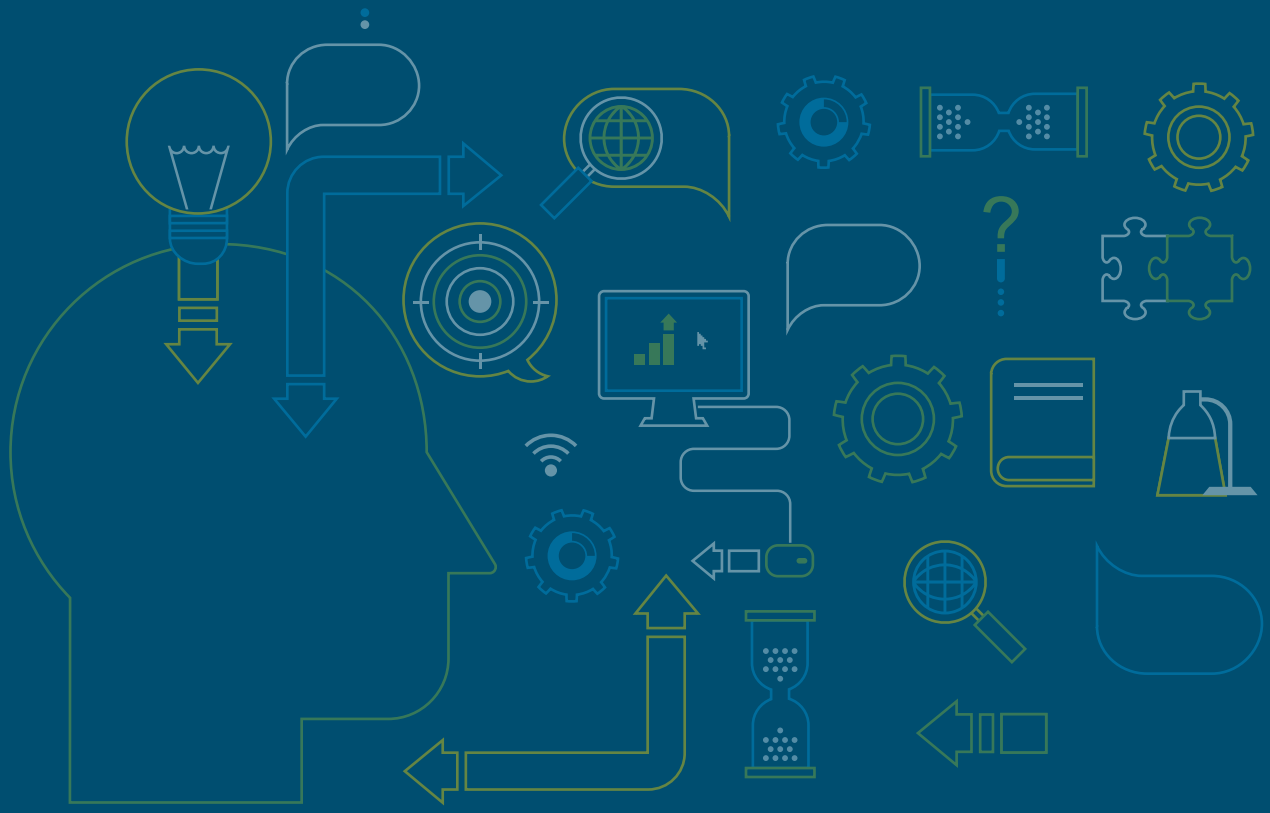
This project relates to projects undertaken by Water and Sanitation Division, especially the monograph How Much do Households Pay for Water Supply and Sanitation Services in Latin America? A Descriptive Analysis of Tariffs and Subsidies in the Region, which surveys the tariff structures and subsidies implemented in different countries.

FULL STUDY

Pérez Urdiales, María, and Carolina Tojal Ramos Dos Santos. 2024. "Water Expenditure, Service Quality and Inequality in Latin America and the Caribbean." IDB Working Paper no. 1657. Washington, DC: Inter-American Development Bank. https://doi.org/10.18235/0013248.

Department of Research and Chief Economist

The Department of Research and Chief Economist generates new ideas to enrich the knowledge base that supports the policy agenda of the Inter-American Development Bank (IDB) and its member countries for achieving sustainable and equitable development in the region. To maximize the impact of its research, the Research Department carries out activities that serve as inputs to other IDB departments, governments, the academic community and public opinion in the region.



www.iadb.org/res