

Using Behavioral Insights to Increase Water Revenue in the Recife Metropolitan Region

A behavioral diagnostic on barriers to bill payment and legal connections to improve water availability and resource management in Brazil

Water scarcity is becoming a high priority policy concern worldwide. Although Brazil is home to 12 percent of the world's total freshwater resources, water availability remains a challenge. Freshwater is mostly concentrated in the North region of the country, which is less populated than other regions. On top of this, population growth, urbanization, pollution and climate change have put increasing demands on already water-stressed regions. To make the situation even more challenging, high levels of non-revenue water, including both physical losses and water supplied that does not generate sales revenue, are particularly common. While some losses may be due to structural or operational inefficiencies such as leaky pipes, clients also play a key role by defaulting on their water payments or installing bypasses to consume water free of charge.

The World Bank's Water Global Practice and the Mind, Behavior, and Development Unit (eMBeD) conducted a behavioral diagnostic in the Recife Metropolitan Region (RMR) in the State of Pernambuco, where non-revenue water levels are high. The aim was to uncover why citizens fail to pay their bills on time or choose to establish illegal connections, as well as to identify

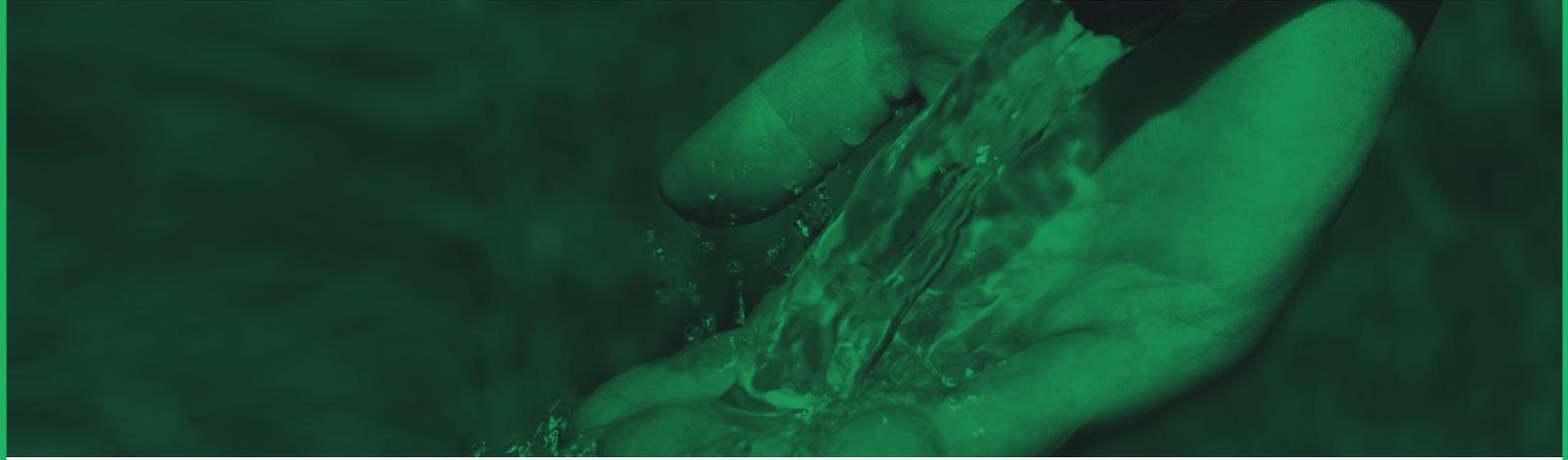
opportunities for behavior change in order to reduce non-revenue water. Since only slightly more than half of residential clients pay their water bills by the due date and illegal connections are common, COMPESA's, the Pernambuco State Water Supply and Sanitation Company, ability to properly operate and maintain its infrastructure is hampered. This diagnostic was completed in partnership with COMPESA, with financing from the United Kingdom Prosperity Fund.

The Project

The exploration of the context in which clients default or establish illegal connections began with a literature review of the application of behavioral insights to similar challenges. This included water and hygiene interventions, decision-making under scarcity (as the targeted clients were low-to-mid income), and exploring existing interventions to incentivize compliant behaviors.

The World Bank team then held key informant interviews with managers from COMPESA and CELPE, the state electric utility. The latter provided a comparison of collection and fraud prevention processes. Interviews with social and field workers enriched the understanding of consumer behavior at critical moments of the water access and payment processes. Semi-structured interviews and focus groups were held with a sample of COMPESA clients with different water-related behaviors. Namely, some interviewees paid their bills on time, while others defaulted or had established illegal connections. Finally, field visits provided observations of consumer interactions with COMPESA, including negotiating past debts and requesting services, among other behaviors.

The diagnostic process was designed to detect the psychological and social factors that influence clients' water payment and connection behavior. It informed context-specific measures for minimizing losses and increasing payment compliance, which aim at increasing COMPESA's financial sustainability and, in turn, its ability to further invest in quality water service delivery.



The Results



Clients that stay on top of their bills do so, in part, because they care about their reputational risks. Compliant individuals highly value their “names’ good standing,” ensuring access to credit and preserving their self and public image. There is an objective dimension for that concern, as a negative note on credit bureaus as a result of not paying their bills, may impact access to credit. Research has shown that to motivate these clients to make compliance a habit, COMPESA could explicitly recognize their positive behaviors. On the other hand, to convince clients that sometimes default on their payments, COMPESA could demonstrate through social motivation how clients can become part of the norm by being compliant.



Defaulters usually lack enough resources to remain in good standing, but may be motivated to become compliant by simplified processes and monetary and non-monetary incentives. The majority of defaulters aspire to make on-time payments. Some ideas from the literature reveal that for those who struggle financially, discounts for advance payments, prompting clients to actively choose a preferred pay date more aligned with their pay date, or a more convenient payment method could increase compliance. Plus, reminders can increase the salience of their duty to pay. This could be achieved by sending behaviorally informed reminders to trigger on-time payment.



Those who connect illegally have no incentive to make a legal connection, as being illegal is their status quo and they do not perceive negative consequences. For individuals whose status quo is dishonest behavior, proactive change can be challenging. Even though people seem to be aware of the consequences, they do not commonly perceive COMPESA’s enforcement mechanisms as credible. One suggestion is to use communication campaigns to demonstrate credible actions taken against clients who default on their bills, so COMPESA can increase credibility in their systems and processes.



Policy Implications

In a context where water availability is scarce and service delivery needs improvement, minimizing water and revenue losses is a key policy priority. As far as we are aware, COMPESA pioneered the use of behavioral insights in the water and sanitation sector in Brazil to reduce non-revenue water by first understanding their clients and the barriers they face to perform the desired compliant behaviors, and then by subsequently testing potential solutions.

As this behavioral diagnostic is part of a larger project leveraging behavioral science to improve water and

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sanitation behaviors in the RMR, it puts forward ideas that the World Bank and COMPESA may pursue in partnership in the coming months. This includes the design, testing, and implementation of pilot interventions designed to increase on-time water payments, reduce water losses from unauthorized consumption, increase connections to the sewerage network, and help establish a more efficient relationship between COMPESA and the communities it serves. All these efforts are meant to complement larger infrastructure investments that aim to ensure water availability to the residents of the RMR.

About eMBeD

The Mind, Behavior, and Development Unit (eMBeD), the World Bank's behavioral science team in the Poverty and Equity Global Practice, works closely with project teams, governments, and other partners to diagnose, design, and evaluate behaviorally informed interventions. By collaborating with a worldwide network of scientists and practitioners, the eMBeD team provides answers to important economic and social questions, and contributes to the global effort to eliminate poverty and enhance equity.

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