

A better understanding of why many residents from Recife, Brazil, fail to connect to the wastewater system can spur interventions to effectively improve access to sanitation.

**About half of Brazil's wastewater goes untreated, a situation that creates significant health and environmental problems. To achieve the benefits of formal sanitation systems, households must connect to the wastewater network. But once systems are completed, households often fail to connect, even when already charged for the service. Given infrastructure and investment constraints, promoting connection uptake may be best achieved by first understanding difficulties on business processes faced by consumers and their capabilities and motivation to connect.**

## The Project

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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 only 28% of the population has access to the wastewater collection network and treatment systems are provided by the state's water and sewerage utility. The goal was to determine why many households fail to connect to the wastewater system, despite paying for the service,

and to identify potential behavioral interventions to increase connections.

Using behavioral sciences, the diagnostic identified psychological and social barriers constraining behavior, as well as structural barriers linked to cost and access. The behavioral insights provided are based on an extensive desk review and analysis of primary qualitative data. The research also proposed behavioral interventions that can address some of the identified constraints.

To explore why households fail to connect to established wastewater service, the World Bank team fully mapped the connection process to identify barriers and touchpoints. In addition, the team studied the content and language used in the utility's official documentation and client communications, such as bills and connection notifications. Data from the company helped to identify the distribution of clients with access to wastewater and their connection status.

The World Bank team then held key informant interviews with the utility's managers and operational staff, as well as with staff from a partner company to better understand the services provided, their limitations, and the clients' decision-making regarding wastewater connections. To gain knowledge of consumer behavior at critical moments of the wastewater connection process, the team also interviewed social workers responsible for community mobilization and meter reading, who interact with clients. Semi-structured interviews, go-along interviews, and focus groups were held with a total of 68 connected and unconnected customers in three neighborhoods with varying percentage of clients with access to the wastewater system and time the system had been made available.

# The Results

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The diagnostic identified three general behavioral profiles of clients, based on their connection status and willingness to connect. The profiles offer a framework for organizing the behavioral barriers identified.

**1. CONNECTED.** These clients are driven to connect to the wastewater system for a variety of reasons, including the desire to take advantage of a service they are paying for; problems with their previous sewage solution (such as leakage or backup); improved quality of life; environmental benefits to their neighborhood; fulfilling their legal obligation; and the desire to gain the provider's support.

**2. WILLING TO CONNECT, BUT UNCONNECTED.** On top of the barriers to connecting to the system experienced by those already connected, clients who wish to connect but haven't done so face two additional types of barriers: the cost of connection and hassle factors.

**a. Cost barriers.** Low-income clients might lack the money required to connect or might be told too late about the connection to save for it. They could also have biased perceptions of the cost, either by overestimating it or avoiding information about it (ostrich effect). A scarcity mindset and mental accounting could also affect families' ability to save for the connection. Finally, connection could be more difficult to implement in some homes due to specific construction characteristics that make connection more expensive.

**b. Hassle factors.** Factors that increase perceptions that connecting is burdensome include information overload triggered by the connection letter and wastewater bill (as well as legal jargon and lack of clarity); lack of communication regarding the cost and timing of connection; difficulty reaching the utility company with questions; and difficulty in finding workers to do the connection and finding time to supervise them.

**3. UNWILLING TO CONNECT.** There are three main reasons clients are unwilling to connect: negative perceptions of the utility company, fear that connecting will have negative consequences, or unawareness of the advantages of connecting. As an extra layer of complexity, these clients also face the same barriers described above for those willing to connect.

**a. Negative perceptions of the utility company.** As a result of seeing connection work done on their sidewalks without their authorization, clients might experience a lack of agency and reactance that lead them to resist connection. In addition, some clients view the company as lacking empathy for charging for wastewater service before they have a chance to connect, particularly in light of the cost of doing so. This perception of injustice leads clients to believe it would be unfair to pay the sewerage fee. Some clients believe it is the utility's responsibility to make the connection and justify their inaction on that (moral licensing). The "horn effect" can generate an overall negative opinion of the utility company as clients might assume they will receive a low-quality service. Finally, negative experiences with the company could lead to negative reciprocity—a desire to resist doing what the company requests.

**b. Fear of negative consequences.** Ignoring the fact they are already paying for wastewater service, clients might form a false belief that the amount will rise after connection. The availability bias might also lead clients to recall negative stories they have heard about others who connected and induce fear of having the the same experience.

**c. Overlooking the advantages of connection.** Clients might prefer to maintain their existing solution (status-quo bias). Short-termism and mental accounting could lead them to underappreciate the long-term maintenance costs of that solution relative to the cost of connection. Finally, they could perceive that not connecting is the norm in their neighborhood.

# Policy Implications

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This study identified a series of barriers that hinder people from connecting to the wastewater system. A number of interventions based on positive experiences documented in the academic literature could lessen the impact of these barriers and encourage both willing and unwilling clients to connect. To assess which interventions will be most effective in the considered context, it would be useful to first determine which client profile is most common (willing or unwilling to connect) in a certain area and which behavioral barriers are most prevalent. Then, tailored solutions can be applied to address the specific barriers identified. The solutions presented below can also complement each other, thus addressing multiple barriers.

**a. Making it easier for those who want to connect.** To incentivize connections among the group who is willing to connect, the utility company should communicate information on costs more clearly, drawing on mental accounting principles and other behavioral insights. For example, the connection cost could be compared to other expenses, or clients could be told the average cost

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of connection for their neighbors. The utility company could also take over the responsibility to connect and bill clients for the work in installments or offer microcredit to cover the costs. Tools to encourage savings and planning—such as safe boxes, implementation intention forms, and reminders—could also help, just as other savings tools, such as prompting the decision to save at the grocery store. Finally, the utility company could organize plumbing workshops in the community to give clients the ability to make the connection themselves at a lower cost.

**b. Motivating the unwilling to connect.** The utility company could give clients more time to connect before charging for the service, potentially improving the unfavorable perception they have about the company. The clarity and timing of communications could be improved, and leveraging emotions such as disgust to encourage connection could also help. Finally, the utility could design and roll out interventions to promote the value of connection, such as meetings with local leaders, “pledge to connect” sessions, social-signaling devices, campaigns in schools, and lotteries.

## About eMBeD

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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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