

***In the community of Belén, Costa Rica, a simple behavior-changing initiative has proven highly effective in getting residents to consume less water. Inexpensive to implement, it provides a model that can be easily replicated across the developing world.***

### Summary

Two-thirds of the world's population will be living in water-stressed areas by 2025, according to a recent United Nations study. In this era of accelerating climate change, it's not surprising to learn that a vital resource we once took for granted could soon be in short supply. But what may not be fully appreciated is how acute the threat has become, in particular across rapidly urbanizing areas of the developing world.

This global challenge set the context for a unique collaboration between ideas42 and the World Bank aimed at exploring behavioral approaches to encourage water conservation. The community we selected for our test program was Belén, Costa Rica, a suburban municipality (2011 pop. 21,600) just west of the national capital, San José.

### Why we chose Belén

Belén is representative of many communities in developing countries whose growing populations have put an unexpected strain on local infrastructure and resources. Its tropical environment also highlights one of the many ironies of the freshwater crisis – that even people living in a country renowned for its lush rainforests might nevertheless find their taps running dry. In fact, some regions of Costa Rica already experience periodic water shortages. And if current trends continue, Belén will be faced with a chronic scarcity of supply by 2030.

Belén's municipal water utility had tried general awareness campaigns. Management had also deployed a traditional economic tool to discourage overconsumption, raising rates by 70% – but with little effect. Residents adjusted to the new pricing, perhaps because for most people the monthly charge was an abstraction, far removed from the daily realities of running baths and watering lawns. When the bill arrived they might grumble a little, but they paid it and moved on.

We concluded that a behaviorally focused intervention might prove more effective in prompting people to pay closer attention their water consumption – and, even better, commit to reducing it. But first we had to identify what specific behaviors needed to change.

#### Highlights

- ▶ Water conservation is a world-wide issue, even in tropical environments where water doesn't seem scarce
- ▶ Belén is a city selected for a test program between ideas42 and the World Bank to explore behavioral approaches to curb water consumption
- ▶ Previous non-behavioral based approaches by Belén government had little success at reducing consumption

### Listening to the community

In March 2014 we consulted with a diverse group of Belén residents through a series of focus groups. These conversations yielded several key insights:

- Community members were generally aware of the need for water conservation and agreed it was an important issue. However, few saw it as a responsibility that they needed to take on personally. Many viewed their current level of household water consumption as a “necessary evil” and did not feel it could be reduced.

- Most people didn't know how much water they were consuming. Even those who recalled the total on their last monthly bill didn't link that figure to day-to-day usage.
- Residents had no clear benchmarks for gauging water consumption. Several said they found quantities expressed in cubic meters hard to visualize, and most lacked an intuitive sense of whether a particular amount was small or large.
- While participants could cite regular activities that depended on water – from showering to cleaning dishes to watering lawns – few could identify any specific steps they might take to reduce their household use.
- Lastly, people were keenly aware of their neighbors' water consumption, such as how frequently they washed their cars or hosed down their patios.

### Highlights

- Even if individuals are aware of the need for conservation, not many see it as a personal issue
- Most individuals aren't aware of their level of consumption
- Most individuals have a hard time visualizing and understanding their amount of consumption

## A strategy takes shape

From our focus group findings we saw that simply raising awareness of the need for conservation was not going to be enough to change behavior; people generally understood the issue. The challenge was to show how small changes in everyday actions could have significant impact. Therefore any interventions we designed would have to:

- provide personalized feedback on residents' monthly household water use, along with comparative benchmarks; and
- help people form concrete intentions to reduce their monthly consumption, offering tips to get them started.

The solution seemed to lie in applying what behavioral scientists call *descriptive social norms*, which compare an individual's behavior to that of a larger group. This provides a clear yardstick while leveraging our tendency to assess our own actions relative to the people around us. We like to hear we're achieving goals or fulfilling expectations better than our neighbors – and we don't enjoy finding out we're doing worse.

Similar approaches have been tried in developed countries. For example, when the U.S. utility OPower showed customers how their electricity use compared to that of their neighbors, it prompted a 2%–3% drop in consumption – remarkable in an industry where such gains, when they happen at all, tend to be very small. With Belén water customers, however, there were a few questions to resolve before we could test such a strategy.

## Simple, economical solutions

To design an approach using descriptive social norms we first had to determine the reference group for water consumption. What would residents find more meaningful, comparisons to their immediate neighbors or to all of Belén? Lacking a definitive answer, we decided to test both.

We also knew that an effective intervention would ideally contain specific information on each household's consumption history, with statistics and perhaps graphics generated from the water utility's database. But the billing system in Belén could not support this kind of personalization, and the cost of custom programming would be prohibitive. What's more, for our solution to be scalable and easily replicated in other developing regions, it could not depend on an IT capability only found in more developed countries. So we had to find a way of delivering a targeted message without high-tech customization.

The solution was to create two stickers: one with a happy face congratulating a household whose water consumption was below the median; the other with a sad face, indicating that usage was higher. Color-coded for quick recognition by utility staff, these stickers could be affixed by hand to customers' bills based on their latest usage rate. To complete the testing strategy, we produced two sets of stickers: one flagging household performance relative to the neighborhood, the other comparing it to the median for the entire town.

The other intervention we created took the form of a postcard that would be sent to every household. The card showed average monthly consumption in the community and invited recipients to record their own water use against that benchmark, then set an improvement goal for the month ahead. They were also asked to review a list of a half-dozen conservation measures and check off those that they would try to follow – for instance, using less water in the garden, or turning off the tap while brushing their teeth.

## Highlights

- Effective interventions contain specific information for each user to understand their relative consumption to the population at large
- Effective interventions should be scalable and cost-effective, especially for less developed countries

## Immediate positive impact

Our three interventions – the neighborhood comparison, the municipal comparison and the goal-setting postcard – were implemented in the July 2014 billing cycle. A total base of more than 5,600 households was randomized into three test groups plus a control group. We then compared water usage over the next two months against average consumption rates for the previous year's rainy season, which in Costa Rica extends from May through November. Results for two of the three interventions were striking:

- A drop in water consumption ranging from 3.7% to 5.6% in households that received bills with the neighborhood comparison sticker.
- A reduction ranging from 3.4% to 5.6% among recipients of the goal-setting postcard.

These one-time interventions continued to generate statistically significant reductions in water use for up to four months after they were implemented. On the other hand, for households sent bills with the citywide comparison sticker, while we did see a decrease in usage, it was too slight to be considered statistically significant. (However, there were discernible positive impacts within some subgroups that merit further investigation.) So it seemed that Belén residents were more inclined to compare their behavior with that of immediate neighbors, as opposed to the overall community. This inference may extend to Costa Rican culture generally, or indeed to communities across many cultures – but corroborating it will require further study.

## A model for future success

What the Belén results tell us is that when it comes to reducing water consumption, simply raising awareness is not enough. People need to see their consumption rates in relation to established benchmarks. And it seems they're particularly influenced by comparisons to nearby households, presumably feeling an implicit social pressure to keep up with the neighbors – or perhaps outdo them. Armed with these insights, utilities and conservation agencies should encourage community members to set specific household reduction goals, and at the same time should provide practical water-saving suggestions they can commit to follow.

Another key takeaway from Belén is that effective conservation interventions don't have to rely on high-tech solutions. The sophisticated analytics and programming that are taken for granted in developed economies

remain beyond the reach of most municipal governments and utilities in developing economies. But in this case all it took was a bit of creative thinking and about \$400 worth of stickers to spark meaningful behavior change.

The Belén project was the first rigorous test in the developing world of a conservation initiative using descriptive social norms. We're confident that others will follow, building on our positive results – and exploring inventive, cost-efficient ways to achieve even greater success.