

# Mobile-enabled innovation in the water sector: Case studies of our grantees

## CASE STUDY

### CityTaps: Enabling prepaid water services for the urban poor

#### About CityTaps

- **Location:** Niger
- **Use of mobile channels:** Mobile money, M2M connectivity (LoRa)
- **Mobile operator partner:** Orange Niger
- **Website:** <https://citytaps.org>

Disconnection from the water supply due to non-payment is a common issue for urban residents of Niamey, Niger.<sup>13</sup> For Niger's national water utility, it is a challenge to serve the poor with affordable and clean running water while also reducing the physical and commercial losses it needs to remain financially sustainable. CityTaps has developed a water utility subscriber management solution that includes a smart prepaid water meter known as CTmeter, which relies on mobile money to help households make micro-prepayments for their water at any time. It also provides a software management system and subscriber management dashboard to monitor usage and meter performance remotely, together known as CTSuite.

#### About our grant

In September 2015, the GSMA M4D Utilities Innovation Fund awarded CityTaps a grant to launch its smart prepaid water meters in Niamey, Niger, in partnership with the local water utility, Société d'Exploitation des Eaux du Niger (SEEN) and Orange Niger for mobile money payments. In May 2017, CityTaps received another GSMA grant to continue scaling this service. By May 2019, GSMA funds had supported the installation of 1,161 smart meters with a target of over 150 more meters to be installed by December 2019.

Building on the project funded by the GSMA M4D Utilities Innovation Fund, CityTaps plans to reach 200,000 people by the end of 2019 and more than two million by the end of 2022. The company has also been selected to participate in the OrangeFab France program, which will provide support to integrate and deploy its solution in other Orange-footprint countries, such as Senegal and Côte d'Ivoire. In October 2018, CityTaps raised one million Euros and has received an order for 10,000 meters from SEEN to scale its service.<sup>14</sup>



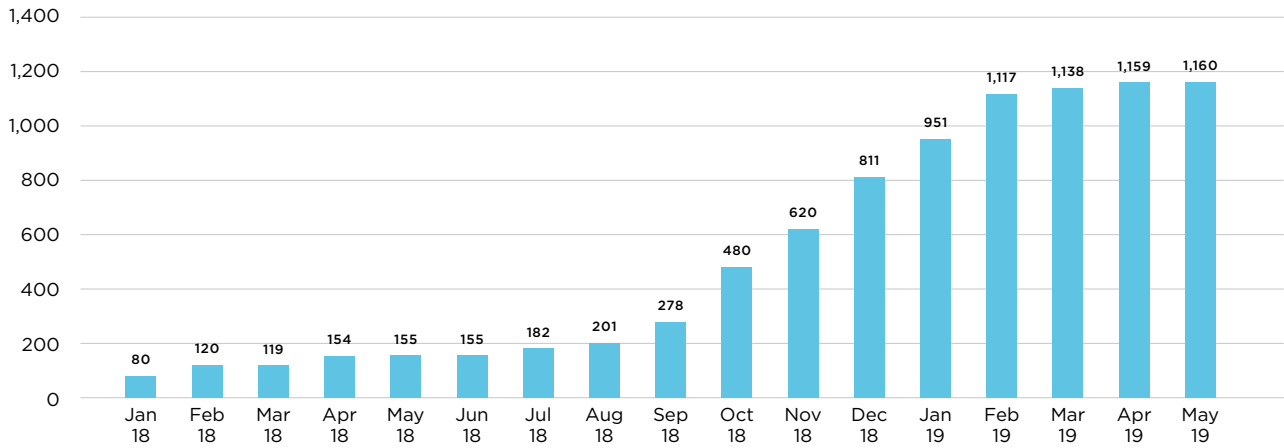
13. Our baseline surveys before the start of this project indicated that nearly 40 per cent of respondents had their water cut in the past year, with 80 per cent citing non-bill payment as the reason.

14. Christoph Haushofer (6 December 2018), "Niger: CityTaps raises € 1 million and signs with Veolia Africa for prepaid water", Afrik 21.

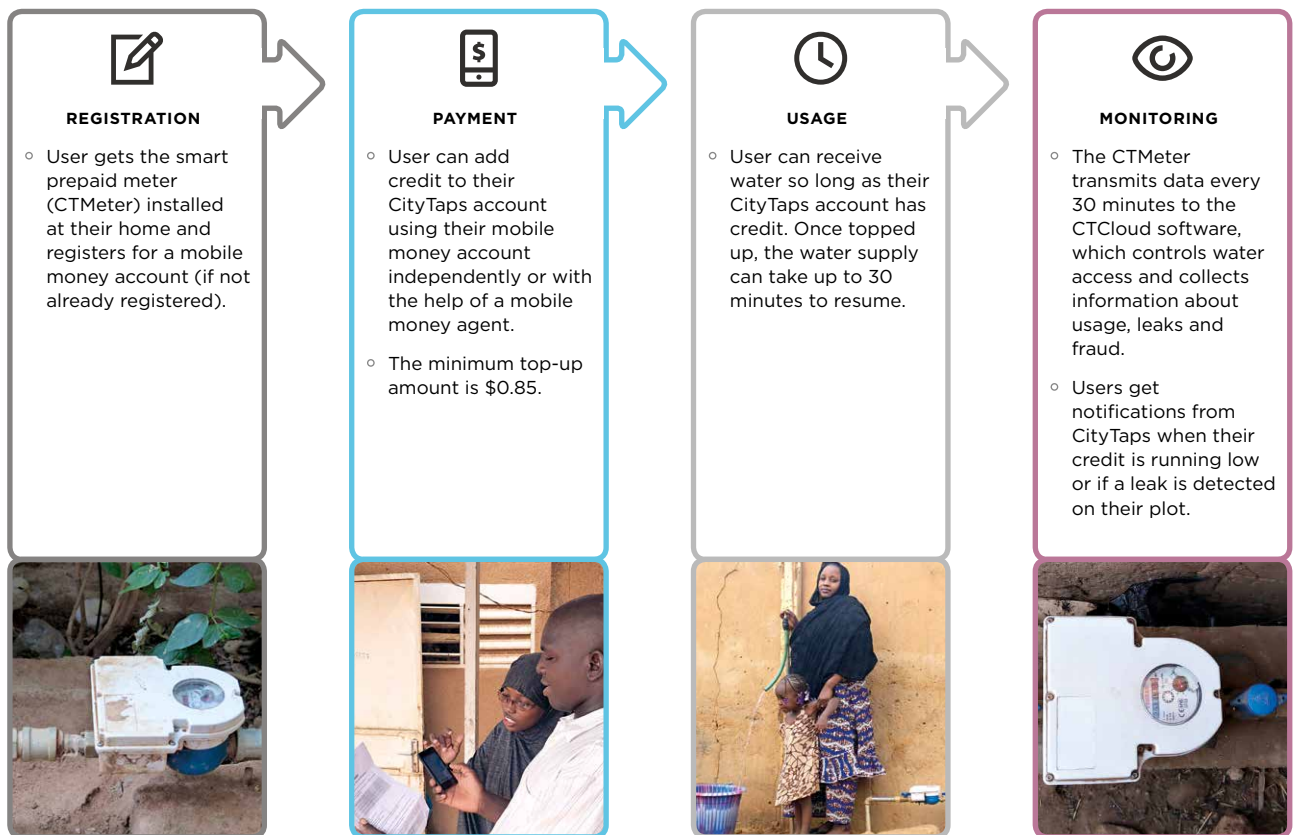
Figure 6

Source: International Water Association

## Number of CityTaps meters installed through GSMA grants



### How does it work?





## Results and impact

To evaluate the lessons of the grant, we measured the project indicators before the onset of the grant through a baseline survey of 201 households. This was followed up with an end-line quantitative survey of the same households<sup>15</sup> that are now using CityTaps services. The following is a summary of what we learned.

### 1. Benefits for end users

Through our grant, CityTaps connected three types of users: former SEEN customers who had their post-paid meters transitioned to pre-paid meters; former SEEN customers who had their water supply disconnected in the past; and new customers who had been using alternative sources of water. CityTaps solved the problems of each of these customer groups by providing the following service features.

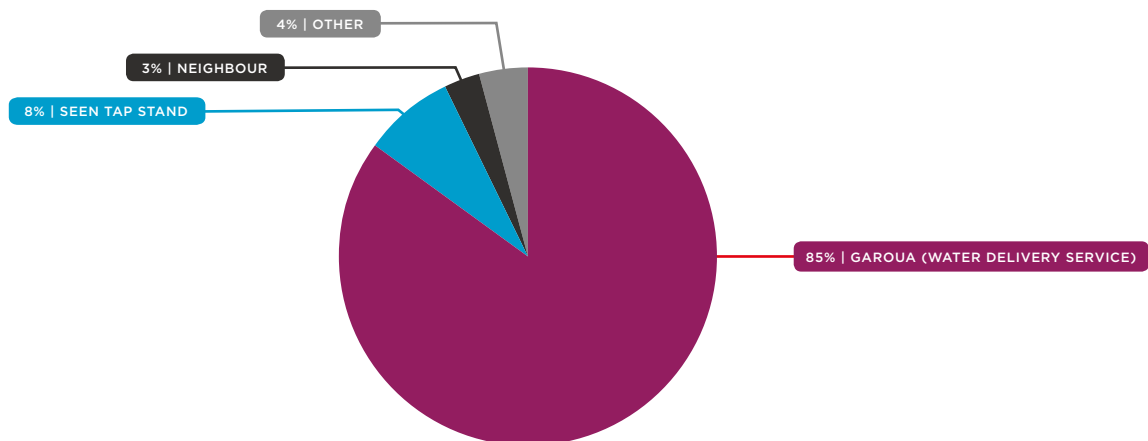
- a. **Cheaper water:** For those not connected to piped water services in their homes, the most common alternative water source is 'garouas' — pushcart vendors who deliver water from SEEN tap stands to homes in 20–25 litre containers.<sup>16</sup> The additional cost of delivering to homes makes the water 15 times more expensive than that sold at the SEEN tap stands (2,000 vs. 127 FCFA per m<sup>3</sup>).<sup>17</sup> In fact, in Niger, those with a household connection pay less per litre of water than those who get water in the community. In other words, water is cheaper for the wealthy than for the poor.<sup>18</sup>

CityTaps is solving this problem by helping to bring clean water directly to homes at a social-tiered tariff offered by SEEN while allowing users to pay per use instead of receiving a large bill at the end of the month. Mobile money payments have further reduced the extra costs incurred by consumers, such as commuting to pay bills in person and paying commissions. Monthly water bills have gone down by \$2.81 USD per household since CityTaps services were introduced.

Figure 7

Source: CityTaps Project Update, Winter 2018-19

## Alternative sources of water for those without piped water access in Niamey



15. The survey was conducted with 193 households; 201 SEEN subscribers were interviewed during the baseline survey and the remaining seven during the City Taps mini-baseline survey conducted by the CityTaps team.

16. Sara Beth Keough and Scott M. Youngstedt (February 2018), [Pure water' in Niamey, Niger: the backstory of sachet water in a landscape of waste](#)

17. CityTaps (November 2018), Niamey, Niger Project Update-Winter 2018/19

18. *Ibid*



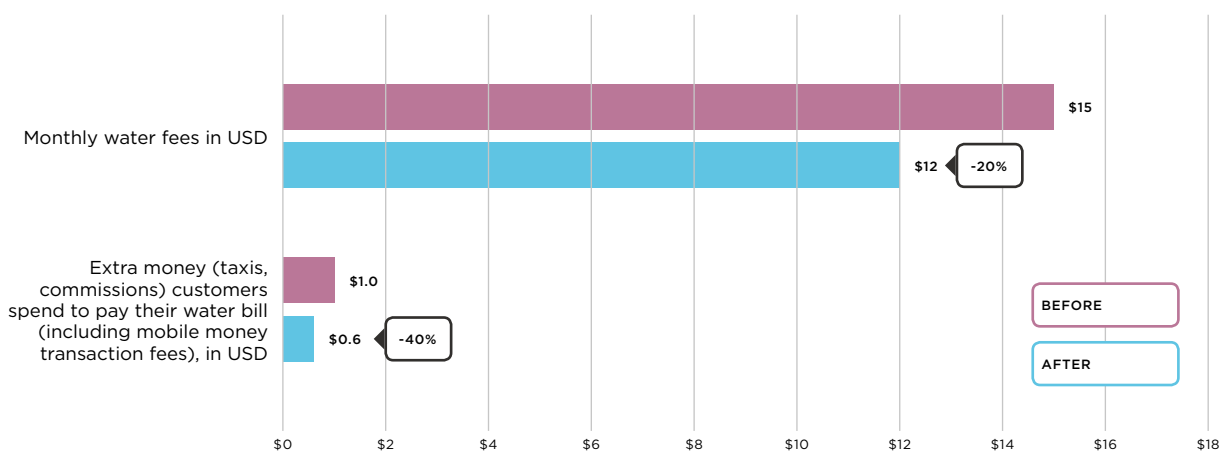
*Previously we used to buy water from garouas. One day they brought me a bill pf 40,000 FCA (\$70) and that made me sick! Before this (CityTaps) system, I did not control my bills, but now I don't spend a lot of money.*

**Female CityTaps user, Niamey**



Figure 8

## Costs of paying water bills before and after CityTaps



**b. Uninterrupted water supply:** CityTaps has helped to bring piped water to new subscribers who have never lived with running water at home, to reconnect subscribers who have accumulated debt and have been disconnected, and to provide flexibility to existing clients who appreciate the

convenience and transparency of pay-as-you-go (PAYG) meters. Our survey showed that the number of households that experienced water disconnections decreased from 40.1 per cent before the use of CityTaps, to 18.7 per cent at the end of the grant, a reduction of 21.4 per cent.



*Since the new meter has been installed we have control over what we consume. We can do projections for a month or two months, if we have the money or we can do for a week or two weeks.*

**Male CityTaps user, Niamey**



Figure 9

## CityTaps has made water payments easy and affordable for new subscribers



### c. Less time spent collecting and paying for water:

Ninety per cent of prior SEEN subscribers who were paying monthly bills described having to wait in line at the SEEN office. CityTaps eliminated the need for this by making payments available through mobile phones using mobile money. This is particularly important for women, who tend to fetch water more than men and who have reported saving time.

### 2. Benefits for water utilities

CityTaps services are not only building a new subscriber base for SEEN, but also ensuring that they are paying for water before consuming it. Ensuring timely payments for water services is critical for SEEN to reduce operational losses incurred due to non-revenue water. But equally, CityTaps services have helped build trust among users. Our surveys at the end of the grant showed that 85 per cent of respondents who have a new meter would definitely recommend SEEN services to others.



*Citytaps is an innovative solution for us and we have been working with them for two and a half years. The prepaid solution is welcomed by SEEN. With the prepaid contract system, SEEN collects before customer consumes.*

**Mounkaila Dandakoye, Customer services Director, SEEN**





### 3. Working with mobile operators

CityTaps has partnered with Orange Niger to enable mobile money payments for its services and has been part of [Orange Fab France program](#), which will provide support to integrate and deploy its solution in other Orange-footprint countries, such as Senegal and Côte d'Ivoire.

The GSMA grants with CityTaps have consistently shown a positive impact on Orange mobile money adoption as a result of the CityTaps project. In our initial pilot with CityTaps it was found that 18

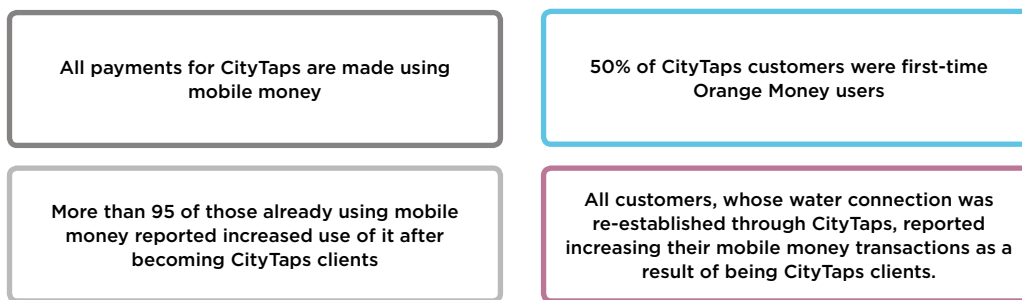
prepaid water connections made 223 mobile money transactions in approximately six months of operations (an average of two payments per month for each connection) compared to a possible 108 transactions that would have been made through traditional, monthly post-payments. The mobile payment values for pre-paid water ranged widely, from \$1.47 to \$20.34 with a median transaction value of \$4.06.<sup>19</sup>

The end of grant survey after our current grant has shown that users have expressed high levels of customer satisfaction, showing increased trust in Orange Money, and reported no problems with the service.

Figure 10

Source: Endline quantitative survey (sample size 193)

## CityTaps services have driven mobile money adoption among its customers



Another notable achievement of this partnership was an agreement to lower mobile money transaction fees for end users of CityTaps. Previously, the smallest tariff bracket offered by CityTaps was between CFA 1,001 and CFA 2,000, and transaction fees for this bracket were about CFA 100 or \$0.20 per transaction. Since CityTaps users were in the low-income bracket and paid for water in very small amounts, the mobile money transaction fee accounted for a significant proportion of their payments.

To address this, CityTaps and Orange agreed to introduce a new tariff band for transactions between CFA 500 and CFA 1,000 with a significantly lower transaction charge of CFA 50. Customers are now able to make smaller but more frequent payments, without a disproportionately high transaction fee. On average, CityTaps customers make between two and three top-ups per month with an average value of approximately \$6 per subscriber.



*Orange Niger has been at the heart of the support this young start-up that operates in Niger (CityTaps). The double impact allows CityTaps and Orange Niger to efficiently support the growth of the local digital ecosystem.*



**Alkerou Hassane, Director, Orange Money service**



19. GSMA Mobile for Development Utilities (February 2018), "Bringing water to every urban home with the power of mobile – an update on our grantee, CityTaps"