

Some Mexico City residents see future in rain harvesting

September 22 2016, by Nick Wagner



In this Aug. 19, 2016 photo, Edgar Serralde ducks below a wooden plank as he navigates through a Xochimilco canal, in Mexico City. Serralde, a rain harvester, uses the rain water he catches instead of relying on the water trucks that rumble through so many of Mexico City's working class neighborhoods. (AP Photo/Nick Wagner)

Edgar Serralde Galicia lives in a part of Mexico City known for water: Xochimilco, where picturesque canals have irrigated produce grown on man-made islands and served as transportation routes since the days of the Aztecs.

But like roughly a million residents of the capital, Serralde isn't connected to the city's water system. While most rely on the water trucks that rumble through the city's less-affluent neighborhoods, he tried his hand at collecting rainwater and storing it in rusty barrels. When it did not rain, his family had to go to his parents' house to wash.

"When there's no water, I feel useless because I feel that I can't move my family forward," said Serralde, a lettuce farmer who lives with his wife and their two children. "The truth is we suffered a lot because we are a humble family."

All that changed when he installed a more-advanced rainwater harvesting system that can store six times more water than his barrels. He says such rain-harvesting systems could be a life-changing solution in a rain-heavy megalopolis that is plagued by [water shortages](#).

Serralde began his attempt at collecting water when he had his one-bedroom house built with a slanted roof, hoping to take advantage of the average of 47 inches of rain that falls on Xochimilco each year, a Venice-like district of canals that draws tourists who are rowed in boats called trajineras.



In this Aug. 19, 2016 photo, Edgar Serralde rows his canoe through a Xochimilco canal to his lettuce field, in Mexico City. Serralde, 37, a fourth-generation farmer, decided to take advantage of the capital city's 47 inches of annual rainfall, capturing the rainwater that collects on his rooftop. (AP Photo/Nick Wagner)

Then with the help of a Mexican nonprofit group, Isla Urbana, Serralde was able to capitalize on the odd construction of his roof to collect and store far more rainwater than he ever imagined. His new system collects, filters and stores water in a 5,000-liter cistern. For those without a pre-slanted roof, Isla Urbana says the rain collector can be installed either on part or all of a roof. The water passes through two filters, has the sediment removed and emerges safe to drink.

Serralde paid less than 20 percent of the system's total cost, with the nonprofit covering the majority through government funds and private donations. Without the assistance, he likely would not have been able to

come up with the \$900 needed to install the system.

Isla Urbana put in its first system in 2009, and since then has installed over 2,600 in Mexico. In one year, over 15,000 gallons of rainwater can be captured by one system alone when installed on a roof measuring 80 square meters (861 square feet).

Jennifer White, director of community relations at Isla Urbana, sees firsthand how lives are affected by the scarcity of water. She recalled a woman who received a rain-harvesting system and was close to tears telling how happy she was to be able to wash her sheets and curtains on top of bathing daily.



In this Aug. 19, 2016 photo, Edgar Serralde navigates his canoe from the main Xochimilco canal to a secondary passageway, in Mexico City. Serralde lives in Xochimilco, a part of Mexico City known for water, where picturesque canals irrigate the produce grown on man-made islands and serve as transportation routes for those who live and work there as they have since the days of the

Aztecs. (AP Photo/Nick Wagner)

"That's definitely what makes me keep going," White said. "It's so rewarding to see the families and how their lives have changed with the systems."

Serralde uses the collected water to wash himself after what is often a 12-hour workday growing lettuce in Xochimilco's chinampas, or man-made islands. He earns about 16 cents per head of lettuce he sells during the four harvests, resulting in an income of just over \$6,500 before he pays any hired hands or fills the tilling machine with gasoline.

Every time rain falls and his reservoir fills, he says he is reminded of his past.

"The necessity makes you really work your imagination," Serralde said, recalling his past efforts to provide his family with water.



In this Aug. 19, 2016 photo, Edgar Serralde, 37-year-old lettuce farmer, fumigates his plants in the Mexico City borough Xochimilco. Serralde says his lettuce is organic, using non-toxic chemicals and Xochimilco's canal system to irrigate his crops. (AP Photo/Nick Wagner)

Mexico City relies on the Cutzamala system for 30 percent of its water needs, but since it was built in the late 1970s leaks have sprung. The 75-mile pipeline loses about 40 percent of its water before a drop reaches the city. The remaining 70 percent of the city's water comes from aquifers, but professor Luis Zambrano says they are being depleted.

"We are over-exploiting the aquifer 100 percent," said Zambrano, who specializes in ecology of aquatic communities at Mexico's Metropolitan Autonomous University. "So in some moment we will not get any more—some people say that will be in 40 years . we will have a huge problem."

Those who install a rainwater harvesting system will be able to reap nature's benefits for five to eight months during the rainy season, if not longer.

White says she regularly hears complaints from residents not connected to Mexico City's [water network](#) about how people in affluent neighborhoods regularly wash their cars and water their gardens.

Pointing to people who have installed rain collectors, White said: "They understand that the water that is in this city is all the water that there is for all the people that are living here, over 20 million people. They've grown up their whole lives with this consciousness about how [water](#) is gold, and they're not just going to throw it away so easily or flush it down the toilet."



In this Aug. 23, 2016 photo, a hired hand lifts a bucket of canal water up to his boss, Edgar Serralde, during a harvest day in Mexico City's borough Xochimilco. Serralde puts in 12-hour workdays growing lettuce in the chinampas, or man-

made islands. He earns about \$0.16 per head of lettuce he sells during the four harvests, resulting in an income of just over \$6,500 before he pays any hired hands or fills the tilling machine with gasoline. (AP Photo/Nick Wagner)



In this Aug. 23, 2016 photo, a worker hired by Edgar Serralde tosses handfuls of canal water onto harvested lettuce plants to preserve freshness as the plants travel to the market, in Mexico City. Serralde lives in the Xochimilco borough, known for its picturesque canals used to irrigate the produce grown on the man-made islands, and that also serve as transportation routes for those who live and work there as they have since the days of the Aztecs. (AP Photo/Nick Wagner)



In this Aug. 19, 2016 photo, lettuce farmer Edgar Serralde sets out lunch for his workers and their son, in Mexico City's borough Xochimilco. Serralde can afford to pay each worker 180 pesos, or about \$10, for a day's worth of manual labor. That's double what they earned in their home state of Oaxaca. (AP Photo/Nick Wagner)



In this Aug. 21, 2016 photo, underneath a clothes-line filled with the day's wash, Edgar Serralde washes a dish at his parent's home, in Mexico City. When the rain doesn't come, rain harvester Serralde uses his parent's home to bathe himself and his children, wash clothes, and clean dirty dishes. 'When there's no water, I feel useless because I think for a moment that I cannot move my family forward,' said Serralde. (AP Photo/Nick Wagner)



In this Aug. 23, 2016 photo, rain harvester and fourth generation farmer Edgar Serralde uses his bike to bring his children home from his parent's house in Mexico City's borough Xochimilco. After they finish their school day in the early afternoon, the children spend time with their grandparents before either their father returns from the fields, or their mother picks them up after she finishes work at Walmart. (AP Photo/Nick Wagner)



This Aug. 22, 2016 photo shows Edgar Serralde's kitchen, with a small table supporting a counter top water dispenser and drinking glasses, in Mexico City's borough Xochimilco. Like roughly one million Mexico City residents, Serralde isn't on the city's water system. Instead of relying on water trucks Serralde built his one-bedroom house with an intentionally slanted roof, creating a makeshift rain harvesting system. (AP Photo/Nick Wagner)



In this Aug. 22, 2016 photo, Edgar Serralde's wife Nayely Camacho bathes son Christofer, in their home in Mexico City's borough Xochimilco. Camacho will heat up about 5 gallons of water for the bath, collected in barrels taken from the family's rainwater harvesting system. When it does not rain, the family goes to the home of Serralde's parents, for their water needs. (AP Photo/Nick Wagner)



In this Aug. 22, 2016 photo, Christofer Serralde laughs as his mom Nayely Camacho tickles him behind his ears during his bath, in their home in Mexico City's borough Xochimilco. Like roughly one million Mexico City residents, the family is not on the city's water system. While many rely on the water trucks, Camacho's husband Edgar Serralde created a makeshift rain harvesting system, capturing the water collected on his rooftop, and storing it in barrels. (AP Photo/Nick Wagner)



In this Aug. 22, 2016 photo, making sure to be positioned over a plant, rain harvester Edgar Serralde slowly pours water from a small container for his daughter Arantza to wash her hands, outside their home in Mexico City's borough Xochimilco. 'They've grown up their whole lives with this consciousness about how water is gold, and they're not just going to throw it away so easily or flush it down the toilet.' says Mexican nonprofit Isla Urbana's Jennifer White of residents who have had rain harvesting system installed. (AP Photo/Nick Wagner)



In this Sept. 3, 2016 photo, Edgar Serralde uses a ladder to climb on to his rooftop on the day a large water cistern, left, was delivered to his home in Mexico City's borough Xochimilco. With the help of Isla Urbana the 37-year-old lettuce farmer upgraded his rain harvesting system. He says the system could be a life-changing solution in a rain-heavy megalopolis plagued by water shortages. (AP Photo/Christian Palma)



In this Sept. 3, 2016 photo, Edgar Serralde works on his rooftop on the day a large water cistern was delivered to his home in Mexico City's borough Xochimilco. With the help of the Mexican nonprofit Isla Urbana, Serralde is capitalizing on his original impulse to capture rainwater to a degree he had not imagined. The new rain-harvesting system filters the rainwater and stores it in a 5,000-liter cistern. (AP Photo/Christian Palma)



In this Sept. 3, 2016 photo, Edgar Serralde looks down from his rooftop, in Mexico City's borough Xochimilco. Serralde built his one-bedroom house with an intentionally slanted roof, hoping to take advantage of the capital city's rains. 'At times they would tell me that I was crazy, because collecting rainwater wasn't very common.' (AP Photo/Christian Palma)



In this Sept. 3, 2016 photo, Edgar Serralde is reflected in a puddle of water collecting on his rooftop on the day a large water cistern, left, was delivered to his home in Mexico City's borough Xochimilco. Serralde built his one-bedroom house with an intentionally slanted roof, hoping to take advantage of the average of 47 inches of rain that falls, capturing it in barrels. Now, with the help of the Mexican nonprofit Isla Urbana, Serrated has upgraded his system, capturing more than six-times the water. (AP Photo/Christian Palma)

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