

As refugee camps swell, project aims to bring toilets into individual homes

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Credit: Ahmed akacha from Pexels

One of the most humiliating realities for Middle Eastern refugees involves a basic human need: going to the bathroom. At camps like Zaatari in Jordan, people walk miles and wait in endless lines to use

unsanitary facilities, raising the possibility of disease.

The indignity is particularly crushing for girls and young women, who risk being attacked using communal toilets late at night. Others simply try not to go, and risk contracting [urinary tract infections](#).

In response, some refugees have resorted to simply digging pits in the ground and trying to drain the sewage through trenches. It's a grave sanitary hazard that affects more than 2 billion people worldwide.

Now, an MIT spinout, change:WATER Labs, plans to bring dignified sanitation to this population by developing a compact, evaporative toilet for homes without power or plumbing. Because sewage is mostly water, it's possible to rapidly vaporize it, eliminating up to 95 percent of daily sewage volumes.

The change:Water Labs team includes: Diana Yousef, a research associate with MIT's D-Lab; Huda Elasaad, a visiting scholar with MIT's D-Lab; Conor Smith MBA '18; and Yongji Wang and Yunteng Cao, PhD students in the MIT Department of Civil and Environmental Engineering.

The toilet has a polymer material that functions as a sponge, soaking up liquid water, released as water vapor into the air; it also contains residual waste, preventing pollution. Residue would be collected once or twice per month.

Co-founder Yousef, a biochemist, says her team will build their first prototype in the next several months, using a pilot partner in the Middle East who has offered one of its refugee shelters as a test site. She says the project could be transformative for refugees, especially young girls.

The team is gearing up to participate in the Hult Prize regional social

entrepreneurship competition in March. This year's theme is "Reawakening Human Potential," and the winner receives \$1 million toward their project. Change:Water Labs won the MIT qualifier round of the competition in December.

Smith credits his experience at MIT with helping to develop his innovative mentality.

"When I came to MIT, I knew that the entrepreneurship programs were well-known and strong, but the resources at Sloan and the greater MIT community have been even better and more plentiful than I expected. In many ways, it has inspired my own endeavors and provided the connections to entrepreneurs with whom I've been able to bounce ideas around, seek advice, and collaborate," Smith says.

To the change:Water Labs team, refugee camps are hopefully just the beginning.

"Safe sanitation for all is a motto and mission of the organization," Smith says. "Initially, we're focusing on [refugee camps](#) like Zaatari, where lack of affordable toilets have turned these camps into massive cesspools. And beyond the camps, there is incredible potential to apply this solution to the more than a billion non-sewered households around the world."

More information: For more information, see www.change-water.com/

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