

## EcoSan Retrofit Pilot

in partnership with **Water and Sanitation for the Urban Poor (WSUP)** Zambia and under the auspices of the **Lusaka Water and Sewerage Company (LWSC)**

### Pilot Inspiration:

#### SafiChoo Toilet Design Iteration + EcoSan Retrofitting

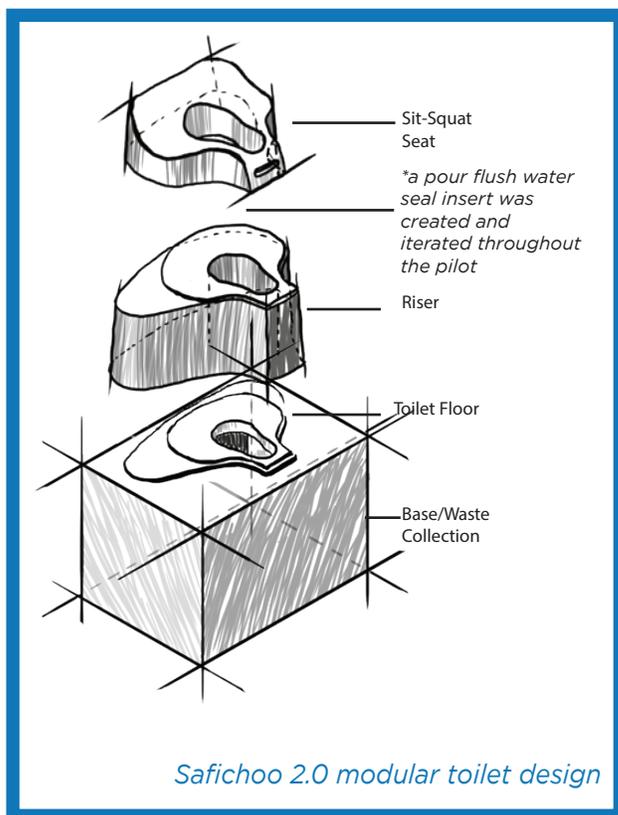
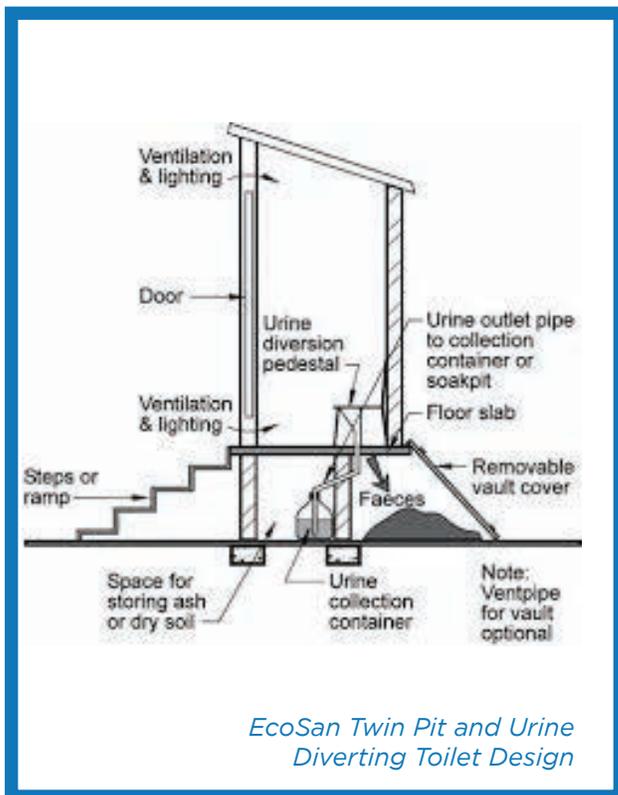
After a year of product iterating, manufacturing and fundraising, Wish for WASH entered 2016 prepared to conduct a design and feasibility beta pilot of the SafiChoo toilet in Lusaka, Zambia. The purpose of this pilot that was conducted in the Chipata compound was to determine functionality of a new back-end collection model for the EcoSan system and acceptance of the SafiChoo toilet design, with rapid iterations to be made at both ends as necessary.

According to our implementing partners, WSUP and LWSC, in 2010 approximately 240 EcoSan toilets were installed in various peri-urban communities in Lusaka in a joint project between LWSC and CARE International: **50 were built in the Chipata compound, 140 in the Kanyama compound, and 50 in the Chaisa compound.** Over 400 other EcoSan toilets have since been installed in other parts of Lusaka as a part of various other NGO sanitation initiatives in the city. For the LWSC and CARE collaborative project, the cost of installation was 4,000K per toilet and each home owner who received an EcoSan was required to pay a contribution fee of 250 Zambian Kwacha and the EcoSans were installed across Lusaka including in the Chipata Compound.

A series of studies have shown that the toilets have not been used to their full potential and many users and sanitation service providers (i.e. fecal sludge removers) have not been satisfied with their EcoSan experience. Firstly, the EcoSan design requires the user to squat in such a way where their urine is aimed in one hole and their feces in another, which was proven to be not only physically challenging, but also culturally inappropriate for users to have to instruct visitors on how to use their toilet. Secondly, the design allows users to harvest their own composted waste after it has dried; the waste is pathogen-free in this composted state and could be used as a fertilizer for any household crops. Because few users are based in agriculture, there is no need for them to utilize the composted waste. Lastly, once the waste is composted, it becomes difficult for the sanitation service providers to remove due to its dry, compacted state, and users must choose to either spend time and energy burying the composted waste, or simply digging a simple pit latrine to use instead. The problems listed above all relate to user experience problems of the current EcoSan toilet model on both the front end (the toilet) and the back end (the waste removal). Wish for WASH, WSUP and LWSC conducted this pilot as a test to see how to best improve the aforementioned EcoSan user experience pain points that have caused many of them to go unused or to be abandoned.

### Pilot Implementation:

Over the course of 3 months in early 2016, the Wish for WASH team in tandem with WSUP and LWSC developed a comprehensive construction plan, shipped the SafiChoo toilet in country and gained community buy-in by selecting a household/users for toilet testing with the help of community leaders. In March, construction began with WSUP's Fecal Sludge Management Team emptying the chosen EcoSan, contract builders extending the EcoSan's compost vault cover, as well as removing one of the VIP urine diverting twin pits and converting it into a shower. The remaining VIP urine-diverting pit was removed and the SafiChoo toilet was installed in its place. Construction was concluded in 2 weeks time; however, elements of the design (including the seat, the toilet modularity, and the pour flush piping) were iterated and improved through Wish for WASH's human centered design and lean manufacturing approach to this pilot. Wish for WASH worked with a local monitoring and evaluating assistant to collect user feedback about smell, comfort, ease of cleaning, and overall impressions of the toilet experience over the course of a 10+ week period.



The new SafiChoo toilet has been converted to a pour flush toilet with significant smell reduction and has been used in both the sitting and squatting positions by over 10 people each week; these are both user experience improvements for the toilet users. The new EcoSan retrofit back-end allows the fecal waste to remain liquefied and easier to access with a vacuum truck, which has improved the user experience of the sanitation service provider. Both of these improvements were the intended goals of the pilot project.

## Pilot Impressions and Conclusions:

Overall, there was a positive public perception regarding the SafiChoo toilet seat design. Many potential users commented on the durability and cleanliness of the toilet. The comfortability of the design was also mentioned; one man in Chipata Compound remarked how “even a European could use it [the SafiChoo Toilet]!” Members of Chipata Compound associate the SafiChoo toilet with modern sanitation, and many feel that adopting the technology would improve their current sanitation experience. It should be noted that there may be bias because of Wish for WASH’s involvement, and people may desire the SafiChoo toilet simply because they believe it is what we want to hear or because there may be potential financial benefits -- i.e. that SafiChoo toilets may be given away for free. Individuals who were unfamiliar with the SafiChoo toilet expressed how they would like a toilet that would be comfortable, durable, permanent, and clean; these individuals would likely view the SafiChoo toilet as an improvement that would meet these design parameters. It should be noted that when asked to rank different toilet options, a modern, European flush toilet was consistently ranked first, followed by the raised SafiChoo toilet, and then the ground level SafiChoo toilet. Several individuals expressed their interest in obtaining a SafiChoo/EcoSan system, which suggests that the allure of the SafiChoo seat is enough of a draw to overcome the grievances for the EcoSan design.

There appears to be widespread dissent with the current sanitation system throughout Chipata Compound. Users find their current toilets, or lack thereof, to be uncomfortable, dirty, smelly, fragile, and unsustainable. When asked to identify the most important features of “the perfect toilet,” community members ranked them as follows: 1. Low Cost\*, 2. Easy to Keep Clean, 3. Not Smelly, 4. Don’t Come in Contact With Waste, 5. Safe for Children & Elderly, 6. Comfortable, 7. Low Cost\*, and 8. Easy to Install. (\*Low Cost is included twice because the focus group changed their answer from position 7 to position 1 at the very end of the discussion, stating that it is most important to make decisions with knowledge of price). These characteristics pertain mainly to the front-end of a sanitation system, which is where the SafiChoo toilet plays a role. While interviewing several members of Chipata Compound, it was discovered that landlords and landowners would be willing to pay a monthly fee in order to receive the combination of a SafiChoo/EcoSan system with a monthly vacuum service. When individuals were asked how much they would be willing to pay, responses began at the lowest 50K/month and averaged around 100K/month. This finding demonstrates that many dissatisfied users are willing to pay more to have a clean, safe, and comfortable toilet experience. It should be noted that such a monthly “bundle” would consist of the front-end SafiChoo toilet combined with the back-end EcoSan retrofit and WSUP fecal sludge management service. However, due to the personal preferences of different community members, there may be significant value in preparing multiple sanitation options with varying front-end and back-end services. For example, families currently using simple pit latrines may wish to install a SafiChoo toilet to alleviate some front-end discomforts, but may not yet be ready to afford the back-end service.

## Pilot Next Steps:

Wish for WASH hopes to receive approval to continue working with WSUP and under the auspices of LWSC to begin scaling a packaged toilet and waste management service to other community members within the Chipata, Kanyama, and Chaisa compounds beginning in mid-2018. Wish for WASH will plan to secure funding to retrofit these 240 EcoSan toilets utilizing a similar approach as this year’s collaborative pilot contingent on project approval from WSUP and LWSC. Wish for WASH plans to also secure funds in order to have a larger SafiChoo toilet manufacturing run and to enable the SafiChoo toilet to enter the market at a subsidized price that is comparable with existing toilets on the market in an effort to examine the new product’s market value in tandem with its potential health impact.



*Safichoo 2.0 modular toilet field testing in sit and squat postures*



*Wish for WASH team collecting user feedback*