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SANERGY

A BE FEARLESS CASE STUDY

PRINCIPLES IN ACTION

MAKE BIG BETS AND MAKE HISTORY:

Set audacious, not incremental, goals.

EXPERIMENT EARLY AND OFTEN:

Don't be afraid to go first.

REACH BEYOND YOUR BUBBLE:

It's comfortable to go it alone. But innovation happens at intersections.

By seeing opportunity where others saw waste, Sanergy found a way to generate value from each part of the sanitation system and made a big bet that it could develop a new model for addressing a global health challenge and in doing so, transform the lives of millions of people in Africa's slums.

SYNOPSIS/SUMMARY

In 2009, a team of MIT Sloan business students accepted a challenge to solve a problem affecting billions of people—the sanitation crisis in the developing world. By considering every step of the value chain, from providing toilets to safe removal of waste, the team created an integrated and self-sustaining system to provide access to safe, hygienic sanitation in the slums of Nairobi, Kenya. Sanergy's unique model has garnered both local buy-in and worldwide recognition.

The following case study details Sanergy's innovative approach to addressing the sanitation crisis and its big bet that, with enough time and focus, it could give every individual in its service area access to clean, safe sanitation solutions. In doing so, Sanergy offers a new approach for scaling—aim first for density by fully solving a deep-seated problem in one area and draw on the lessons from that experience to then explore scaling more broadly.



THE BACKGROUND

In August of 2009, two undergraduate classmates from Yale University, David Auerbach and Lindsay Stradley, were excited to reconnect at the new student orientation for the MIT Sloan MBA program. There, the two met and immediately hit it off with Ani Vallabhaneni. The three came from different backgrounds but were motivated to utilize business tools to tackle critical social challenges. Auerbach had taught English in rural China, Stradley was teaching in New Orleans when Hurricane Katrina hit and then helped to reopen a charter school and Vallabhaneni used a computer engineering background to improve health outcomes for low-income patients in the Philippines.

The group confirmed through research that 4.1 billion people worldwide lack access to hygienic sanitation and that inadequate sanitation is the second largest cause of disease in the world.

In their first semester, all three took a Development Ventures course and were presented with the Poverty Challenge. The Challenge asks teams to solve a problem that affects no fewer than one billion people. With their developing friendship and aligned mindsets, the three naturally came together to form a team. As they discussed which social challenge to tackle and reflected on their experiences, one particular theme kept emerging. Whether in rural China, hurricane-stricken New Orleans or a low-income neighborhood in the Philippines, Auerbach, Stradley and Vallabhaneni had all witnessed how challenging and dangerous life could be without a good sanitation system.

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inadequate sanitation is the second largest cause of disease in the world. Poor sanitation has individual, economic and environmental consequences: diarrheal disease kills nearly 760,000 children each year, developing countries lose approximately two percent of GDP each year due to lost worker productivity from sanitation-related diseases, and pit latrines are regularly emptied into waterways or fields, severely damaging the surrounding ecology.

Despite the large-scale nature of this problem, the group knew it could be solved, as many parts of the world have adequate or excellent sanitation infrastructure.

THE “AHA MOMENT”

In many developing countries, the handful of formal systems in place for human waste treatment require residents to walk a distance to dispose of the waste and the process for treating the waste is often ineffective and unsanitary. This inefficient system often forces residents to rely on unsanitary options such as “flying toilets” (defecating into plastic bags that are tossed onto the street) and pit latrines.

Auerbach, Stradley and Vallabhaneni ultimately found a successful model of sanitation in their own backyard—not the United States’ underground sewage system (infeasible for densely built-up urban slums) but its solid waste treatment and collection system; garbage collection, in other words. With this model, each household has its own trash container, the container is placed outside on a specified schedule, a network of trucks collect the waste, and then the waste is carried to a central location to be safely treated. The three classmates realized this “decentralized capture, centralized treatment” model would be a bold but workable solution to the sanitation crisis in the developing world.

Implementing any new sanitation system requires a large investment of capital, which prompted the group to wonder whether there was a solution that might generate income

as well as solve the health and quality-of-life problems associated with sanitation in developing countries. Stradley explained, “There is potentially high value here. Especially in a world with depleting resources, we had to flip this issue on its head so that waste could become a source of revenue.”

THE BE FEARLESS RESPONSE
FLIPPING THE SANITATION CRISIS ON ITS HEAD

Through many late-night meetings and conversations, the three started to pull together the pieces of a holistic sanitation model. As Auerbach describes, “If we could get community investment by residents and fully incentivize them to offer access to clean toilets, help us generate demand, and ensure waste collection—and if we could demonstrate that there was value from waste down the road—there was huge potential to scale and reach millions, even a billion, people.”

Put simply, Auerbach, Stradley and Vallabhaneni saw human waste as a potentially profitable asset. When treated properly, this waste could be a source of organic fertiliz-

er, protein feeds for livestock and renewable energy, all of which were in high demand in many developing countries. Locally produced organic fertilizer would be significantly cheaper than, and a great complement to, the synthetic version, which is often imported at high costs that are passed on to farmers. Farmers were dissatisfied with the current selection of animal feeds available, and they were looking for alternatives. Similarly, many developing countries faced energy shortages and were seeking consistent supplies of energy. All of these valuable waste by-products created a potential market opportunity for Sanergy.

What emerged was the Sanergy model, which reached beyond the immediate waste-capture need to leverage the sanitation value chain to benefit communities in which the facilities were placed. The first step was to design and manufacture high-quality, low-cost sanitation facilities that could be placed in public areas. Next, individual residents would purchase and operate the facilities—charging members of the community a small fee for their use, becoming franchise partners. These local entrepreneurs, who would become known as Fresh Life Operators, would play a critical role in generating local demand. Sanergy would then collect waste on a regular basis and bring it to treatment centers to convert the



THE SANERGY MODEL





waste into organic fertilizer. The profits from the fertilizer sales would help sustain the whole system.

REACHING BEYOND TYPICAL FUNDING MODELS

In considering how to fund this solution, Auerbach, Stradley and Vallabhaneni had to look outside typical models. There was a definite capital market and a path to building a sustainable business for the infrastructure-heavy aspects of the value chain, such as trucks for waste removal and buildings for treatment centers. However, that same market was unlikely to fund the R&D and deep community engagement necessary for designing the toilets and encouraging adoption. Those elements seemed more suited to a philanthropic model, but that philanthropic model was, by the same token, unsuited to supporting the heavy infrastructure necessary for waste transport and treatment.

As a result, Auerbach, Stradley and Vallabhaneni decided to establish Sanergy as a hybrid for-profit/nonprofit model. In thinking beyond the usual models, the team had built a financial model to back up their sanitation solution—each part of the value chain would be considered independently and addressed based on its unique features, while, at the same time, considering it as part of a larger whole.

GETTING BUY-IN AND BUYERS

At the conclusion of the Development Ventures course, the three had developed a robust business model and were keen to see if it would work in practice. With support from MIT, the three traveled to Nairobi to gather data and refine their idea. They selected Nairobi as a potential pilot location for three key reasons. First, early research showed that people in Nairobi were willing to pay to use public toilet facilities, unlike in other developing countries. Second, Nairobi had an established startup community and strong entrepreneurial spirit. And third, there was a particularly high demand for organic fertilizer in Kenya.

Interviews from that initial trip gave Auerbach, Stradley

and Vallabhaneni the confidence that their idea was viable, so during summer break that year the team went back to Nairobi for further testing. The team knew that in order to produce a truly successful innovation they would have to embrace an experimental and “fail fast” culture. From the beginning, they understood that their idea would have to go through many iterations to get it right. The team worked with engineers to develop prototype toilets to test in two Nairobi slums, Mukuru and Kibera.

Though people were very interested in the prototype, residents were also apprehensive of yet another proposed solution that was supported by outsiders. Mukuru and Kibera were swamped with development projects, many of which quickly went defunct. What would prevent Sanergy from just becoming another one of those? It was essential for the Sanergy team to get buy-in from the community, so they sought to build partnerships with established community organizations that could help them introduce their idea, get to know the residents, solicit feedback on the design and test out their assumptions regarding residents’ needs and motivations. Ultimately, the team found the most receptive community partners in Mukuru and began to introduce and test their concept there. This process of community engagement helped ease residents’ initial hesitation and also provided Sanergy with valuable feedback. For example, the floor of the initial prototype was only partially covered in ceramic tile; now, based on resident feedback, the floor is completely covered, which customers associate with hygiene and a sense of permanence.

After that first summer, Sanergy had developed a well-functioning prototype and started to generate demand from the community. To make Sanergy a reality though, the team would need to acquire significant start-up capital. As Auerbach, Stradley and Vallabhaneni returned to Boston to finish their MBA degrees, they decided to devote the next year to generating the necessary investment. They committed to one another that if they could raise \$400,000 in one year, they would move to Nairobi to try to make Sanergy a reality.

Throughout that next year they won a number of business

competitions, including Echoing Green's Social Enterprise Fellowship and the MIT 100K Business Plan Award, building their credibility and start-up capital. Once they graduated, bolstered by financial support, the confidence that their service was wanted and needed, as well as the support of one another, the three leaders moved to Nairobi to fully launch Sanergy.

STARTING WITH FAILURE, ENDING WITH CRITICAL MASS

With the model and toilets established, the next step was to build a user base so the team set out to have dozens of conversations with slum residents. People seemed genuinely excited by the potential services, and many people expressed interest in becoming a toilet franchisee. Sanergy decided to host an open house demo day where they would officially sign up their first franchise partners. Based on their initial outreach, the team expected 20-50 to attend...but nobody showed up.

The unexpected turn was discouraging, but the three of them quickly began strategizing how to move forward. As Auerbach remembers, "We collectively knew that what we were trying to solve was incredibly complex. If it was

AS AUERBACH NOTES,

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easy, someone else would have already solved it." After further analysis and drawing on the knowledge and experience of others in the Nairobi startup community, the team realized that their sales process would have to be more individualized and hands-on. They hired a local sales team who could better connect with the residents and could invest the time in a lengthy sales process.

The team worked to further build the user base by shaping the Sanergy brand and engaging people in a positive way around the sanitation issue. People were already familiar with the consequences of poor sanitation, so selling them on the idea that quality toilets led to reduced incidences of diarrhea was not enough to motivate a purchase by someone with limited resources. Rather, they found that focusing their marketing on a hopeful and happy life was much more compelling. What emerged was the "Fresh Life" brand, with a positive focus on a brighter future. The team produced Fresh Life hip-hop songs that were played on the radio, and they also partnered with local "edutainment" groups that hosted fun and exciting block parties to promote the use of Fresh Life Toilets.

Parallel to their branding efforts, the team worked out how to operationally support their franchisees, the Fresh Life Operators. Sanergy began providing training, access to financing, and ongoing operational and marketing support to the operators, who would then generate their own profits and be incentivized to maintain the quality of the facilities.

As the public facilities took off and started to spread around Mukuru, demand was increasing. People wanted access to Fresh Life Toilets not only in commercial centers, but in residential areas and community institutions like schools, as well. Staying true to its value of listening to community feedback and customizing its products, and recognizing an opportunity to expand its coverage, Sanergy created new programs to expand into residential plots and community institutions.





MAKING BIG BETS: AIMING FOR 100 PERCENT COVERAGE

The team had determined at the outset that to truly have a lasting impact, they had to make the big bet of aiming for 100 percent coverage in their market. In other words, provide 100 percent of Nairobi slum residents with total hygienic sanitation—clean toilets, regular waste collection and the effective treatment of waste. The team decided to go “deep” into these communities before expanding elsewhere because it offered them an opportunity to truly solve a problem, rather than implementing only a partial solution. This hyper-focus allowed for greater opportunity and potential for:

1. Health impacts. If only a few individuals or a small fraction of the community engaged in quality sanitation behaviors, the spread of disease would continue. The team wanted to reach a tipping point where there are enough individuals participating to result in wide-reaching health benefits, which requires garnering community-wide buy-in.
2. Refinement of the model and innovation. The team is constantly learning from their experiences and making changes to improve their impact. As Stradley noted, “Along the way, we didn’t know what we didn’t know, so we now understand there is always more to learn...the more we spread geographically, the harder it is to really get it right and be able to continually tweak things.”
3. Deep and lasting relationships with the community. These relationships are essential for the buy-in that will ensure the longevity of the Sanergy model, as well as for providing the feedback that helps refine the model.
4. Operational scalability. The denser the network grows, the better the model works, and the more affordable it all becomes.

As Sanergy’s reputation and successes grew, the organization attracted a number of potential funders who wanted

Sanergy to scale their program to other developing countries around the world. Though it was tempting to accept extra funding and expand globally, the leadership team and the organization’s Board of Directors knew they had to commit to a more singular focus. As Stradley described, “Doing this type of work and making incremental impact on sanitation isn’t really worth it. Go big or go home – this doesn’t mean you have to go big geographically, but go big in terms of impact.”

For the Sanergy team, “going big in terms of impact” means getting to 100 percent coverage in Nairobi slums. With the Mukuru operation running smoothly and successfully, the Sanergy team began looking at other nearby slums with similar needs. After a thorough survey process, Mathare

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emerged as an area where the need for hygienic sanitation was largely unmet and where there were interested community and government partners, so Sanergy began operations there in March 2015. Sanergy is now focused on getting to 100 percent coverage in Mukuru and Mathare. When they do this, they will have genuinely solved a critical problem for the more than one million people living in those areas. They will then be able to take a proven model, along with the lessons they have learned along the way, to other areas around the world affected by the sanitation crisis.



THE RESULTS

Sanergy has become widely popular in Mukuru and now Mathare. Each Fresh Life Toilet provides customers with a dignified, hygienic and enjoyable experience, and Fresh Life Operators are successfully running their own businesses. Sanergy has continued to refine the toilet design based on resident feedback, most recently redesigning the squat plate to be more comfortable for female users and installing hooks and mirrors for customers to use. Since Sanergy started operating, more than 7,878 metric tons of waste have been safely removed from the community and treated in accordance with World Health Organization industry and Kenyan government standards. Overall, Sanergy has created more than 750 jobs. More than 60 percent of its team members live in the communities served by Sanergy, an area with an approximately 40 percent unemployment rate.

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As the organization strives to reach its 100 percent coverage goal, by early 2015, Sanergy had installed more than 750 Fresh Life Toilets with 33,000 daily uses in Mukuru and Mathare. This represents an increase from zero to five percent coverage in those areas. Furthermore, 40 percent of people living within a 25-meter radius of each toilet utilize the services, indicating that adding more toilets will further increase the coverage rate. The team is now simultaneously focusing on how to scale in the region as well as how to increase utilization by the other 60 percent of the population in the vicinity of each toilet. In addition to these measures of Sanergy's success, the organization is currently piloting ways to measure indicators of improved

health and behavior change as a result of access to Fresh Life Toilets.

In recognition of their accomplishments, Sanergy has been presented with more than two dozen distinct awards from around the world, including the Genesis Generation Challenge Prize, the FT/IFC Transformational Business Award (Award in Urban Transformation), Nestle Creating Shared Value Prize, Swedish International Development Cooperation Agency (SIDA) Innovator of the Year and the Africa Leadership Network Award.

Ultimately, Sanergy has improved the lives of residents in Nairobi. Fresh Life Operator Jackson Kioko used to own a store in Mukuru where he experienced flying toilets firsthand. Every morning, his store would be surrounded by bags containing feces, the stench and flies driving away his customers. Today, the presence of Fresh Life Toilets has put this to an end. Jackson explains, "I have had a great experience working with the team at Sanergy and learned a lot as well. The most important lesson has been that a toilet facility can be such a life-changing amenity within any community." Kioko's wife, Mary, added that, due to running the Fresh Life Toilets, "We are able to ensure that our three children and our parents back in the village are well provided for."

Sanergy's model has also empowered women and girls in the slums of Nairobi. Around 34 percent of Fresh Life Operators are women, who have used the toilets and their profits to improve their families and communities. Before becoming a Fresh Life Operator, Agnes Kwamboka made and sold an illicit brew in Mukuru. Most of the money she made went to paying bribes to law enforcement, leaving her family impoverished and leading her children to steal in order to get by. Becoming a Fresh Life Operator has helped turn Kwamboka's life around. Previously illiterate, Kwamboka was inspired to learn to read and write in order to keep accurate Fresh Life records and run her business well. "I am happy – my life has changed," she reports. "I keep all my profits, I'm able to provide for my family, and I'm paying off my debts. I have inner peace."



Guiding Discussion Questions

In what ways does your organization create prototypes or experiments to help shape future programs?



How does your organization solicit community feedback and ensure that the feedback is being incorporated?



Who or what is included in your organization's value chain? How might your organization rethink how the value chain interacts to maximize value and impact?



How does your organization think about expanding your impact? What might it look like for you to aim for "100 percent coverage?"



For nonprofits: Are you currently leveraging any "unlikely" sources of funding, and what opportunities might exist to do so more intentionally?



For funders: What opportunities might pair your philanthropic dollars with market capital in order for your grantees to have greater impact?



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