BUSINESS PLAN

Acara Challenge 2011

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BACKGROUND

Approximately 3,500 people reside in DEK in an area roughly the size of ten tennis courts. DEK lacks municipal water and sewer services but has a limited potable water source provided by the Delhi Jal Board. In addition, there is no functioning wastewater, sewer or storm sewer infrastructure in the community.

Members of the Sewasan development team who live in Delhi conducted field observations and interviews with residents of DEK with the goal of discovering what residents felt were the most pressing problems in their community. The visits and interviews, which will be described in more detail later in this plan, revealed that DEK residents are concerned about two issues: water and sanitation.

Most residents of DEK do not have access to satisfactory sanitation facilities. Men openly defecate in an open area inside the community. Women and children are more directly affected by the lack of sanitation facilities. They must wait until nightfall to relieve themselves by crossing a busy highway to urinate and defecate in a forest about 1000 meters from the community. They are not able to relieve themselves in this forest during the day because it is guarded until nightfall and it is not culturally acceptable for them to defecate inside the community.

DEK was not always without sanitation. There are currently 25 non-functional toilet stalls in DEK in a centrally-located public area that were installed by the government and fell into disrepair about 10 years ago. Through additional fieldwork and interviews, we determined that the sewer lines that once connected DEK’s toilets to the municipal sewer system were severed when the nearby gas station was constructed and cannot be reconnected. Several of the people interviewed also believed the toilets fell into disrepair because no one in the community had direct ownership of them, meaning no one took responsibility for their proper maintenance. The final problem with the original (and now defunct) system is that it required a large amount of water to move solid waste along the nearly horizontal waste lines.

“There is no toilet for me to use. I have to wait until night and cross a busy highway to use the jungle.”
Lakshmi, age 16
LARGER PROBLEM

DEK is not alone. At present, 655 million people in India do not have access to toilets. India has the highest incidence of people without access to toilets worldwide. In fact, more people have access to mobile phones than have access to toilets in India.1 Overall, in urban areas in India, only 58% of people have access to proper sanitation.2 In urban slums, the number is much lower.

Lack of adequate sanitation is especially problematic in crowded urban environments. A majority of the residents of urban slums suffer at least occasionally from health-related ailments that are a direct result of insufficient sanitation facilities. Every week an estimated 42,000 people die worldwide from diseases related to low quality drinking water and lack of sanitation. Over 90 percent of deaths occur with children under the age of five.3 When residents of urban slums do not have access to sanitation facilities, they often turn to open defecation out of necessity, continuing this deadly cycle.

Open defecation creates several problems: It allows fecal bacteria to enter and contaminate the water supply when it rains or otherwise percolates into the soil; additionally, it creates a pathogen source that can contaminate food either through incidental contact or when food is washed with contaminated water.

Many sanitation solutions that have been proposed or implemented rely on copious amounts of water to flush toilets. This exacerbates an increasingly serious water supply issue. As our survey of DEK residents confirmed, Delhi’s potable water supply is already stretched to a problematic degree. Ideally, sanitation solutions in Delhi and other areas of the world where clean water is scarce should avoid water-intensive methods of handling waste.

The good news is that appropriate sanitation solutions can positively affect communities at a relatively low cost. According to a report from the UN, the world could expect a return of between $4 USD and $34 USD for every dollar spent on sanitation through improved productivity and reduced poverty and health

Source: http://3.bp.blogspot.com/_D_FJU15AaxA/S8p5mOjOCpI/AAAAAAAACBU/l7u51_RMkBk/s1600/after.bmp
costs. People who are in better health are able to earn higher incomes and improve the circumstances of their families and communities.

Part of the reason the social return on sanitation investment is so high is that health and productivity improve dramatically after proper sanitation solutions and hand washing are implemented in communities. According to a study conducted for the World Bank, the presence of improved sanitation facilities in urban communities can reduce the incidence of diarrheal disease by over 45 percent.

**BUSINESS DESCRIPTION**

In all these dire statistics, Sewasan sees a solid business opportunity with the potential for reasonable financial returns and a substantial social value proposition. Sewasan’s business is constructing and maintaining toilet facilities in urban slums where demand for such services is high. Sewasan manages the development of the facilities and their use in the community to ensure cleanliness, functionality, steady revenues, improved public health, and environmentally responsible handling of waste. Sewasan plans to develop its first location in DEK. When Sewasan locates in a community, that community is treated as a financially-autonomous subsidiary of the larger organization.

Sewasan-DEK directly employs residents of the community to perform all maintenance on the facilities and to perform required administrative duties. After investors are repaid, 100% of local subsidiary’s profits return to the community in which it is based. Sewasan-DEK cooperative members (customers who buy into the cooperative) and Sewasan board members will decide how to reinvest the profits.

Sewasan also provides the community in which it is based a substantial and ongoing educational program about the public health benefits of proper sanitation. The educational component will enable a high social return on investment, because residents who participate in the toilet program not just for the convenience, but also for the compelling public health reasons, will be more likely to motivate others to use the program as well.
Construction Plan
Before Sewasan-DEK can welcome its first customers, it will have to prepare the infrastructure. In stage one of the construction plan, Sewasan will rehabilitate an existing bank of toilets. Repairs will include replacing broken doors, patching roofs, sealing holes in the concrete squatting slab, and painting. We are currently negotiating with the Delhi Sanitation Bureau to obtain formal permission to rehabilitate and continue to operate the existing toilets once they are repaired.

In order to make room for a new toilet fixture in the floor of the existing structure, we will cut a larger hole out of the concrete slab. In the future, when Sewasan branches into neighboring communities that also have remaining infrastructure from the failed government toilet program we will determine whether it is worthwhile to rehabilitate existing toilet structures or whether it makes more sense to build new banks of toilet from the ground up.

Next, Sewasan will install an innovative three-hole squatting toilet fixture in the concrete slab. This fixture allows a user to urinate in one hole, defecate in a larger center hole, and wash in the third hole at the back of the toilet. In India, most people do not use toilet paper for cleaning themselves. Instead, they carry water into the toilet and use it for washing. The back third of the fixture is used for collecting this wash water and draining it out of the toilet.

An underground plumbing system of two-inch diameter PVC pipe will be constructed to connect the toilets to a concrete cistern. Washing water and urine holes will drain to the plumbing system through a vinyl hose, and through the plumbing, ultimately reach the cistern. Feces will not enter the plumbing system, but will be collected in a modular bin below the toilet. This bin will be emptied daily into a second, underground concrete cistern.

After stage one is successful, Sewasan will add 15 prefabricated toilet structures to the existing 25, for a total of 40. This second stage will allow us to serve approximately 75 percent of the community with an internationally-accepted ratio of toilets to individual users.
Customer Experience
The toilet banks will be open for approximately 16 hours a day for the convenience of customers. All toilets will be cleaned regularly to provide a pleasant restroom experience for customers. To minimize smell inside the toilet, users will place one scoop of wood chips (or ash or sawdust) into the feces bins after each use. This supplement will act as a carbon source that will facilitate decomposition of the feces and eliminate much of its odor. Separating the urine and the feces will greatly reduce odors; additional deodorizing technologies will also be employed.

In order to ensure that the toilets facilities are used properly, instructions will be posted on the outside and inside of the toilets that will explain proper use. Hand sanitizing facilities (utilizing an alcohol-based gel) will be available immediately outside the bank of toilets. Sewasan will provide education through regular, ongoing classroom sessions about how proper sanitation directly affects the health of the community.

Maintenance Plan
The wash water and urine will flow into one cistern, and the fecal matter will be dumped into a second, underground cistern. A modular, 15 liter container will be manually moved from under each latrine and dumped through an access panel into the cistern for fecal matter.

The two 40,000 liter cisterns installed onsite will allow us to have reasonable intervals between cleanings. The cisterns were selected based on desired service intervals and the maximum truck size that can service this urban slum. Based on the estimated 1,000 customers for stage one, the cisterns will need to be pumped ten times per year. Once Sewasan ramps up to serving 2,625 customers in stage two, the cisterns will need to be pumped 27 times per year. The vacuum trucks will be able to drive within ten meters of the cisterns to remove the waste.

Pay System
Those who choose to join the co-op as lifetime members qualify for plans that allow monthly unlimited usage. The lifetime member rate will be a one-time fee of 50 INR (1 USD = 44

source: http://vagabundodlt.files.wordpress.com/2010/04/factoryman.jpg

Waterless, three hole toilet (above); Sawdust for waterless toilet (below)
INR) for families, or 15 INR for individuals. Once families or individuals become members of the co-op, they will be eligible for unlimited-use monthly price plans of 100 INR for unlimited use for a family of four (or more) or 25 INR for unlimited use for an individual.

Many customers will opt for the pay-per-use option to use the toilets. The fee for a one-time use will be 3 INR. We anticipate that single-use passes will likely be popular among the poorest members of DEK, as they may find it more difficult to pay for an unlimited family pass.

As will be explained in some detail below, the fee structure was carefully set based on income of residents of DEK and based on the residents’ willingness to pay. Those choosing to purchase monthly subscriptions will pay for the memberships through our community administrator, who will collect money, take pictures of everyone in the family or determine another method of positive ID, and issue family ID cards.

Naturally, Sewasan’s guidelines specify that a staff member must look after the bank of toilets during open hours, to ensure cleanliness and functionality, and to check users’ passes. As described earlier, people who wish to use the toilet and do not have a pass will need to pay for a single use. Those with unlimited-use passes will be offered prorated refunds for substantial service interruptions.

**Oversight**

Representatives from Sewasan’s board will meet with the community administrator weekly while the program is becoming established. The purpose of these meetings is to monitor customer satisfaction, encourage proper management of employees and facilities, and to ensure that there is complete financial transparency. After six months of successful operations, the board will meet to determine if it is feasible to expand to stage two. Weekly meetings will continue 6-9 months from the start of stage 1. The board will be extremely attentive to any indications of financial fraud going forward.
Our India-based team members made many trips to DEK to conduct both formal and informal fieldwork related to members of the community and problems they faced. For our formal surveys of the community, we interviewed a sampling of 20 households in DEK (which represents over 100 total individuals, as average family size is 5.3) and asked them a series of questions. Importantly, we also spent a good deal of time in conversation with the de facto political leader of DEK, known in local terms as the mukhiva. We then compiled the data to come to some conclusions about the market in DEK and similar slums for various products and services. More detailed survey data is available in Appendix A.

At the beginning, our market research was focused on identifying what residents of DEK considered their biggest problems. As mentioned earlier, the two that were cited most often were water and sanitation. Of these two, sanitation was viewed as the most pressing problem.

As a result of this survey data, we decided to research both sanitation and water supply solutions. In the end, we determined that the sanitation solutions we could commercialize were more likely to be profitable and scalable than the water supply solutions available. We are confident, based on the survey data we collected, that there is strong demand for the toilet service we plan to offer.

Based on the survey data we collected, we know that residents are willing to pay an average of 101 INR per family for access to clean sanitation facilities, with the range of responses running from 45 to 200 INR (median: 100 INR).6

The data on household income that we collected in our survey corresponds well with publicly-available data we have identified from multiple other sources on the income levels of slum-dwellers in Delhi.7 We felt it was important to confirm that the data we collected was representative both in our community and in slums throughout Delhi.

Moreover, with regard to the pricing, DEK’s leader or mukhiya expressed great enthusiasm for the business plan as a whole and felt that a price around 100 INR was very realistic. Our team members in India believe that residents of DEK will, in large part, follow the lead of the mukhiva. Clearly, this makes the mukhiva one of Sewasan’s most important stakeholders.

We also asked a few questions that would allow us to gauge enthusiasm in the community for various technical options related to sanitation. We learned that there was widespread disapproval of an innovative product called a PeePoo bag that allows individuals to capture a single instance of defecation and dispose of it properly. We also learned that there was little enthusiasm among residents of DEK for any toilet solutions that were not based on the traditional methods of squatting and washing with water. On the other hand, we discovered that there was widespread acceptance of the type of toilet facility that is now the core element of our business.

Finally, as a way of measuring community buy-in to the project and as a way of determining potential for hiring employees from the community to work for Sewasan, we asked DEK residents whether they would consider working for Sewasan on a temporary or permanent basis; eighty-five percent of residents said they would.
FINANCIAL

Initial Costs
To set up the business and fully-rehabilitate the existing toilet facilities in Delit Ekta Kendra (DEK), Sewasan will need an initial capital investment of 13,500 USD. This will cover the costs of renovation and the purchase of the new materials that will be required. The project will have a ramp up period that will last from 3 to 9 months. In the first stage, the 25 existing toilets will be rehabilitated, and in the second stage another 15 toilets will be added to cover projected demand for the operation at full scale. The second stage will require an additional investment of 7,500 USD. See the Appendix B for a full break down of start up costs.

Capital Investment

<table>
<thead>
<tr>
<th>Stage</th>
<th>Total</th>
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<tbody>
<tr>
<td>Stage One</td>
<td>13,500</td>
</tr>
<tr>
<td>Stage Two</td>
<td>7,500</td>
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<tr>
<td>Total</td>
<td>21,000</td>
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Revenues, Expenses, Investor Payback
We estimate that we will have 1000 customers for the first stage of the program. We estimate that our customers will be a combination of one-time pass users, individual-unlimited pass users, and family-unlimited pass users. For our initial financial modeling, we assume that 50% of Sewasan’s customers will select the pay-per-use option, 25% will purchase the individual-unlimited pass, and 25% will gain access through a family-unlimited pass. With this breakdown of participation, Sewasan’s toilet facility in DEK will generate monthly revenues of 41,000 INR in stage one and 108,000 INR in stage two.

Expenses for the program in stage one include labor costs for four full-time employees (FTEs); in stage two, the program will include five FTEs. In stage two, four of these employees are toilet monitors and cleaners and one is the community administrator. There will be additional costs incurred for cleaning materials, waste hauling, and administrative expenses. Details about these labor and material costs can be found in Appendix B.

RISKS

When implementing a project of this scale, there are risks and assumptions involved with the design of Sewasan’s toilet facilities and business model. We have recognized the following risks and have identified and adopted measures to mitigate them.

Cultural Rejection
In the community, it could take time for residents to adopt the new toilet facility. We have reduced this risk by offering a system to accommodate the community’s cultural norms. We determined that in India traditional Western-style toilets are not common; because of this we have implemented a squatting toilet that separates solids, urine, and wash water. We also acknowledge that in urban slums of India, toilet paper is not used for washing, so we added an additional separator to the toilet design, to account for the handling of the wash water.

Payment Model Dissatisfaction
Another risk is that residents of DEK will not accept the basic premise of the pay toilet model. This could manifest itself in the form of attempted freeloading or in the form of insufficient membership signups. We believe we have determined from our survey data, and from comparable pay models in Delhi, that residents are prepared to pay for this service. To address the issue of freeloading, we plan to have controlled access
to the toilet facilities when they are open. We are addressing the risk of insufficient membership signups by gaining the support of the mukhiva, by including an educational component, and by setting the fees at the level that our survey data indicated are appropriate.

**Failed Operations Partnerships**
Our business plan relies on Sanergy, an environmentally-sophisticated waste disposal company, to handle the waste generated by residents in DEK using the toilet facilities. The India-based members of our team are working on a contractual agreement with Sanergy to provide the waste-hauling services. The risk is that a satisfactory arrangement will not be reached with Sanergy, or that Sanergy will fail in some way to perform its duties once under contract. To mitigate this risk, we have identified other waste disposal companies that can provide similar services in DEK.

**Competition**
Currently, there is no functioning toilet facility in DEK. Therefore, the only nearby competition to Sewasan is the use of the jungle by women and behind the petrol station by men. Customers may choose open defecation, because it is free and what they are used to, rather than paying for Sewasan’s services. But our survey data clearly indicates that the majority of DEK’s residents are dissatisfied with their current sanitation situation and desire a toilet facility similar to what Sewasan offers. Furthermore, DEK’s mukhiya supports the project and will highly encourage all of DEK residents to purchase monthly subscriptions for Sewasan's services. Sewasan’s educational component will also work to address the risk of non-adoption.

**Government Competition**
Another unlikely, but possible, competitive risk is that the government may choose to install new, free toilet facilities near or in DEK. As mentioned before, the toilet system currently in DEK was installed by the government and is in disrepair; the facility has been abandoned by the Indian government for the last ten years, so there is little evidence to suggest that if the government were to install a new toilet system it would be properly maintained and operated. If the government did manage to maintain it, Sewasan would happily move on to other underserved communities of which there are no shortage in Delhi.

### Sewasan’s Future

Sewasan will be successful in DEK because the solution: 1) aligns well with community needs, 2) has the support of the mukhiya, and 3) is based of realistic financial assumptions about expenses and revenues. As soon as Sewasan-DEK is up and running and financially healthy, the Sewasan board will look to identify other communities that may be interested in Sewasan’s community-directed cooperative model for sanitation.

If Sewasan is awarded the 2011 Acara Challenge grant of USD 5000, we would use a portion of the grant to send two of our teammates to the Summer Institute in Bangalore, India. We would take full advantage of the kind of face-to-face interactions that would be possible at the Institute with representatives from Quicksand, India Institute of Management, Covenant Center of Development (CCD), Samuha, InKlude Labs, and other international NGOs working on relief projects and social ventures. We would also take the opportunity to fine-tune our assumptions and make sure our basic approach to the problem of sanitation in DEK is the right one.

Following the Summer Institute, we would plan to travel to Delhi to complete more fieldwork in our pilot community, Dalit Ekta Kendra. Specifically, we would like to administer a few more surveys in the community related to the design of the toilets, payment system, and the price structure to confirm that the system is designed to best serve the community. We would also meet again with the mukhiya to ascertain whether there would be any other issues related to our business plan that he would like to have addressed. We would take time on the ground in Delhi to work out the details for a preliminary deal with a private contractor to empty the Sewasan cisterns. Finally, we would like to confirm through face-to-face meetings that our construction cost estimates align with amounts charged by construction companies in Delhi that would be available to do the contracting work that will be required to implement Sewasan’s pilot project. In short, we would do our best to make sure that our business plan is the right one for the community in which we would implement the pilot.
## APPENDIX A SURVEY DATA

| Name            | Age | Occupation     | # family members | # earning members | Total income/month | Savings | Amount of water available/day | Amount of water consumed/day | Amount willing to pay for water/mo | Toilet facilities available presently | Amount willing to pay for clean toilets/mo | Acceptance of waterless toilets | Willingness to work for the community |
|-----------------|-----|----------------|------------------|-------------------|--------------------|---------|------------------------------|-------------------------------|-----------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
| Shreen          | 21  | housewife      | 4                | 1                 | 5000               | none                | 80 Litres                   | 80                            | 50                               | none                                   | 50 Ws                                   | yes Ws                                  | yes Ws                                  |
| Asha            | 30  | House wife     | 8                | 3                 | 15000              | 1500                | 250 Litre                   | 200                           | 100                              | none                                   | 100 yes                                 | no                                       | no                                       |
| Sharan Singh    | 18  | Student        | 5                | 2                 | 12000              | 1000                | 200 litre                   | 150                           | 150                              | bathroom                               | 150 yes                                 | no                                       | no                                       |
| Sudarshan       | 44  | Wage Labour    | 4                | 2                 | 9000               | none                | 100 litres                  | 100                           | 100                              | none                                   | 100 yes                                 | yes Ws                                  | yes Ws                                  |
| Pawan           | 50  | none           | 6                | 3                 | 20000              | 2000                | 350 litres                  | 200                           | 100                              | none                                   | 100 no                                  | no                                       | no                                       |
| Savita          | 24  | House Wife     | 5                | 2                 | 8000               | 1000                | 200 litres                  | 100                           | 150                              | only shared bathroom                 | 150 yes                                 | no                                       | no                                       |
| Suresh          | 30  | Carpenter      | 4                | 1                 | 5000               | less                | 60 litres                   | 50                            | 80                               | room for bath and pee, jungle for other purposes | 100 yes                                 | yes Ws                                  | yes Ws                                  |
| Shakila         | 35  | House wife     | 5                | 1                 | 6000               | none                | 40 litres                   | 30                            | 60                               | room for bath and pee, jungle for other purposes | 100 yes                                 | yes Ws                                  | yes Ws                                  |
| Surinder        | 17  | Student        | 5                | 1                 | 15000              | no                  | 150 litres                  | 75                            | 75                               | Jungle + Room For Bathing             | 100 no                                  | yes Ws                                  | no                                       |
| Prema           | 21  | House wife     | 3                | 1                 | 6000               | no                  | 30 litres                   | 30                            | 50                               | jungle + Bathroom                   | 45 yes                                  | yes Ws                                  | yes Ws                                  |
| Shambu Kumar    | 22  | Tea stall owner | 5                | 2                 | 9500               | no                  | 50 litres                   | 45                            | 0                                | jungle + bathroom                    | 80 yes                                  | yes Ws                                  | yes Ws                                  |
| Deepak          | 15  | Student        | 7                | 2                 | 6500               | no                  | 250 litres                  | 250                           | 30-50                             | Have a toilet + bathroom             | 100 yes                                  | yes Ws                                  | yes Ws                                  |
| Munni Devi      | 35  | Labourer       | 5                | 2                 | 3500               | no                  | 240 litres                  | 240                           | 100-200                            | Have a toilet                         | 150 yes                                  | yes Ws                                  | yes Ws                                  |
| Babulal         | 64  | Retired        | 6                | 1                 | 3000               | no                  | 260 litres (Not Able to fill from Tanker & goes 5 kms daily + Rs.10/day to get water) | 250                           | 300                              | Jungle                                | 100 yes                                  | yes Ws                                  | yes Ws                                  |
| Soni            | 35  | Labourer       | 5                | 2                 | 9000               | no                  | 45 litres                   | 30                            | 200-300                           | Jungle + Bathroom                    | 100 yes                                  | yes Ws                                  | yes Ws                                  |
| Saroi           | 54  | Labourer (irregular) | 6          | 4                 | 8000               | none                | 55 litres                   | 50                            | 50-80                             | a small room for bath and pee, jungle for other purpose | 75 yes                                  | yes Ws                                  | yes Ws                                  |
| Ramesh Painter  | 56  | Painter        | 1                | 1                 | 7500               | none                | 14 liters                   | 14                            | 40 Rs                             | open area                             | 150 yes                                  | yes Ws                                  | yes Ws                                  |
| Munna Bajrangi  | 54  | Electrician    | 4                | 2                 | 4000               | none                | 35 litres                   | 35                            | 50-60 Rs                          | a small room for bath and pee, jungle for other purpose | 100 yes                                  | yes Ws                                  | yes Ws                                  |
| Asish           | 46  | Car mechanic   | 5                | 2                 | 10800              | none                | 40 litres                   | 35                            | 50 Rs                             | a small room for bath and pee, jungle for other purpose | 100 yes                                  | yes Ws                                  | yes Ws                                  |
| Punak Isal      | 52  | Labourer       | 7                | 4                 | 6000               | 20 Rs/day            | 60 litres                   | 55                            | 50 Rs                             | a small room for bath and pee, jungle for other purpose | 100 yes                                  | yes Ws                                  | yes Ws                                  |
| Jaafer Khaan    | 67  | no             | 8                | 4                 | 18000              | 45 Rs/day           | 100 litres                  | 95                            | 50-70 Rs                          | a small room for bath and pee, jungle for other purpose | 100 yes                                  | Not clear                               | no                                       |
| Savita          | 25  | House wife     | 11               | 2                 | 12000              | none                | 55 litres                   | 40                            | 50-60                             | jungle                                | 75 yes                                  | yes Ws                                  | yes Ws                                  |
| Ranjit          | 29  | labourer       | 6                | 2                 | 10000              | none                | 50 litres                   | 50                            | 50                               | room for bathing nd other purposes   | 200 yes                                  | no                                       | no                                       |
| Gulbari         | 35  | Labourer       | 5(3+2)           | 1                 | 9000               | 200                 | 40 litres                   | 40                            | 200                              | room for bath and forest             | 50 no                                    | no                                       | no                                       |
| Asha            | 45  | domestic help  | 7(2 +5)          | 2                 | 2600               | 0                   | 30 litres                   | 15                            | 50                               | same as other                        | 50 yes                                  | yes Ws                                  | yes Ws                                  |