Cape Town: Sanitation project
Current challenges / Possible solutions
Executive Summary

This narrative is the result of 3 months of “on line” (off the field) research about sanitation issues which might exist at the bottom of the pyramid (Slums in India, Favelas in Brazil, townships in South Africa, technical solutions for sanitation services), followed by a one-week on the ground experience during which we interviewed several stakeholders to better understand the current situation of sanitation services in Cape Town townships.

Our “on line” research focused mostly on identifying the nature of the issue which was analyzed using different angles:

- Sanitation services scope: beyond the sole defecation, hygiene, drinkable water access, sewages and grey/dark water treatment,
- Sanitation and health concerns,
- Sanitation and human dignity concerns,
- Sanitation: economy and technology,

Which provided us with a sense of the complexity of the sanitation services provisioning and delivery.

However, this remote envisioning of the sanitation services issue was far from being complete as we quickly discovered from the field exposure in Cape Town.

Maybe, unlike any other place in the world, Cape Town crystallizes several other complexity layers inherited from recent history of the Apartheid:

- Politics (Democratic Alliance in charge of the town and Province, African National Congress “in charge” of townships),
- Governance structure and lack of integration between nationwide institutions down to ward council and street committees within townships,
- Constitutional promised land rhetoric and absence of any incentive for private initiative,

All these dimensions being interdependent with the others, creating a full mesh dependency network which is quite “confusing” and possibly inhibiting for anyone who would try to solve the issue.

However, despite this multilayered complexity, we tried to identify some principles, some transformational initiatives which could help to structure the reflection about the sanitation issue, by exceeding a narrow-minded envisioning of the issue and proposing a framework embracing housing, urbanism, city planning concepts as well as a programmatic approach based on experimentation to change the game in the sanitation services for Cape Town and South Africa.
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INTRODUCTION

Context

Within the class of Entrepreneurship Opportunities in Emerging Economies of Pr Angus Kingon, we selected the « Sanitation in informal housing » subject, as we felt this subject was complex, had deep impact of the daily life on people within townships, and that technical solutions did exist which could be applied in that specific context.

We have been asked to review the products which were available worldwide, do research about other area experiences such as « slums » in India or « favelas » in Brazil, determine which may be appropriate in the particular context of townships of the Cape Town area, and eventually propose an inclusive business model for the supply and distribution of these products.

But what is sanitation about ? What is the actual issue of sanitation within the Cape Town townships ?

General Household Survey 2010 (Stats SA), defines a “functioning basic sanitation facility” as a “flush toilet connected to a public sewerage system or septic tank or a pit latrine with ventilation pipe”. According to the survey, in 2010, 70% of households in South Africa have access to basic sanitation...However, more than 3 million households were using an unventilated pit latrine, a bucket system or had no toilet at all [2].

Although officially South Africa has achieved the Millenium Development Goals for sanitation, local government faces problems in the implementation and protests analyzed by the University of Western Cape show complaints about the lack of access to clean water and adequate sanitation [2].

Especially, Khayelitsha (30km from Cape Town) population is about 800'000 people, 46 informal settlements have rather low access to water supply and sewerage despite the Constitution of the Republic of South Africa, in the Bill of Rights which states that “everyone has the right to have access to adequate housing”... what requires “appropriate services such as the provision of water and the removal of sewage...” [3].

So despite a strong commitment of the government, huge investments, ambitious plans (the target for universal access to basic sanitation of 2010 was postponed to 2015 which is still very ambitious given the current state), there is still a huge access issue to basic sanitation services within Cape Town informal settlements.

Is there a technical issue ?

Our online research has shown evidences of multiple workable solutions (from a technical perspective).

“ [...] the difficulty is not in providing flush toilets in slums. That bit is rather easy actually. The difficulty is in connecting those toilets to the water, sewer and treatment plant infrastructure that make them work. A conventional flush loo with no sewer is of little use to anyone... And to retrofit sewer systems into informal settlements is nearly impossible without displacing thousands of people […]” [4].
A systems approach to sanitation might start with function – *dignity, safety and health*. Then it might consider resource cycles: the water cycle, treatment demands, nutrient availability (and potential use), durability and privacy. It might demand a solution that is cyclical, as there is no ‘away’ for waste to be sent, and no resource to carry it there (being disconnected from conventional water infrastructure too). It might also consider input from all the stakeholders – professionals, entrepreneurs, citizens, health departments and civil society 

Last quote suggested that beyond the sole technical solution, a supportive ecosystem might be put in place, and that urbanism, and city planning was also at stake, possibly involving « Off Grid » solutions.

**Is there an economic issue ?**

Our discussions with Reprocity (Cape Town consulting firm assisting us in our research) have shown that the township was not a « monolithic » reality but a broad spectrum of situations, ranging from the informal settlement shack (bottom of the pyramid) to the Reconstruction and Development Program (RDP) house which is formal and hosts middle class people within specific areas of the townships (see the lovely small houses on the picture, some with shacks in the backyard). A trial conducted in Lesotho with Ventilated Improved Pit (VIP) latrines, showed that it could be built for ~$400 US, and that 90% of people could finance it without subsidies. [5]  

So economic issue might be overcome with appropriate solutions. However, our group chose to focus on the “bottom of the pyramid”, i.e. the informal settlements with very limited connection to the “fluid” grid (water supply, sewage connection…) for which the economic model is critical for wide adoption and sustainability.

Were the vandalism evidences found during our online research were the symptom of a grey economy for “parts” reselling (which relates to the economic issue) ? Or the symptom of a dissatisfaction of the population ? And if so, for which reasons ? Were there some ethnographic/cultural issues related to this behavior ?
Is there an ethnographic issue?

Obviously, as sanitation issue was definitely tied to human dignity, we expected to have a lot of ethnographic/cultural « issues » when dealing with sanitation access.

Among different thing, we identified security concerns especially for women based on our research on slums in India [7]. We were also questioning ourselves about the « sanitation ritual »: water/paper? Sitting/squatting? Intimacy and privacy?

And above all... how could we approach these dimensions while visiting the townships with the appropriate distance and respect to inhabitants? How could we develop the required intimacy with these people in one week time, so we can really understand their daily issues, pain points, feelings, and dreams?

Is there a service delivery issue?

To comply with the constitution and to fulfill the promise made by the African National Congress (ANC) to the people of South Africa, public services invest a lot to generalize access to drinkable water (public tap) and to sanitation. However, the “Poo War” demonstrates growing dissatisfaction of informal settlements people with regards to the sanitation services provided by the municipality [8]. We identified the need to interview the municipality, some sanitation services providers but also the Social Justice Coalition (SJC) [9] to better understand what was at stake, and whether there were options for improvement in sanitation services delivery.

On the municipality side, service delivery goes through private service providers/contractors, whether it is for deploying Mshengu chemical toilets (the blue ones) or to build block of flush toilets with connection to the « fluid grid » i.e. drinkable water and sewages.

Eventually this relates to budget forecasts and program management. Given the informal nature of the settlements at the Bottom Of the Pyramid, it is by essence very hard to plan for their needs.

We asked our Navigator M. Tobela Thembani why the site we were visiting in Khayelitsha (meaning “new home” in Xhosa) was named « France ». He told us it was because it was created during the Soccer World Cup in 1998 when France won the cup (and not the Soccer World Cup in 2010 when the French Team was on strike in their bus in South Africa). This means that a huge number of people built their shacks within a few weeks (sometimes it even takes a few days) in an empty sandy place, with neither coordination with public services nor planning to provide them basic services such as (sanitations and public water taps).

And then, the municipality has to comply with the housing constitutional laws, while budgets are already defined mostly for formal settlements. Khayelitsha average population density is ~10’000 inhabitants/km² (with no storey buildings) and it is 43 km² wide [14]. Khayelitsha is one of the largest township in South Africa (~500’000 to ~800’000 inhabitants).

What about city planning then?

The authorities created Khayelitsha in response to the immense pressures for some kind of home from migrants moving to the Cape and from those forced out of Crossroads (near the international airport of Cape Town). Initially planned as four towns of 30,000 people with 4150 serviced plots (water and toilet) and 13,000 rented small block-built houses by 1990 the population had mushroomed to 450,000. Unemployment was 80% and 86% of the population lived in serviced or unserviced informal dwellings. Pressures on Khayelitsha only grew after the 1994 election of an ANC government as influx controls were abolished. Khayelitsha had a population of 406,000 in 2005, of whom 40% were under 19 years of age [14]. Hopefully, dark days of the Apartheid are off and people can move freely (influx controls are abolished), but then the rich Western Cape region attracts lots of migrant from the Eastern Cape rural areas and from other provinces in South Africa.
1.

Service Plots for temporary relocation area at Delft 34kms north east of Cape Town [14]

South African poverty has a strong rural bias: the main income sources of the rural homeland population are wages (often earned in urban area) 52%, social transfers (18%) and remittances (14%). « The force of migration is probably the most neglected dynamic in South Africa’s social policy. Few factors have done more to change the context of opportunity for the poor, yet little is known about how people move from place to place » [15]. This migration dynamic (+48’000 per annum [19]) is yet to be understood and taken into account for proper city planning.

What are the possible health issues (of the lack of access to sanitation services) ?

Clearly, given these water and sanitation conditions, health risks are everywhere. ‘Water supply, sanitation and health are closely related,’ states the World Bank website. ‘Poor hygiene, inadequate quantities and quality of drinking water, and lack of sanitation facilities cause millions of the world’s poorest people to die from preventable diseases each year. Women and children are the main victims.’

Lack of access to basic sanitation services force people to release themselves in their close environment (see appendix 4). Issue is that human excreta also contain pathogens causing infectious diseases (cholera, hepatitis, typhoid, schistosomiasis, diarrhea) through fecal/oral contamination. Helminthes (worm parasites) cause gastrointestinal infections that make up part of the excreta-related global health burden [17]. One third of the world population has intestinal worms. The loss of blood from human hookworm leads to iron-deficiency anemia and protein malnutrition. The discharge of untreated sewage into water resources provides a vector for pathogens capable of sickenning humans and animals. This is somehow limited in the context of Cape Town as drinkable water found at public tap come a long way (mostly mountain lakes) to the water treatment plant.

So what is the genuine issue with sanitation ?

Following our online research period, it appeared that the sanitation issue was far more complex than initially estimated. As stated above, we chose to focus on sanitation service access issue for informal settlement people at the bottom of the pyramid within the townships.

A lot of very smart people including scientists, engineers, rich philanthropists tried to address the issue mostly from a technical perspective. As the issue is still around, it reinforced our intuition about the fact that the sanitation issue was beyond the sole technical dimension.

A lot of Non-Governmental Organizations (NGO) also tried to address the issue, and while they have been successful at local scale, it seems there are still scalability issues when moving from the pilot phase to the generalization phase. What is missing for scalability ?

Eventually the South Africa government, provinces, municipalities and districts spend quite a lot of money to comply with their unique constitution, but the issue is still very significant. Is there any broader issue behind such as demographic dynamic ? Political/institutional efficiency ?

Our online research raised more questions that it answered, and it was time for us to confront the reality from the ground, to better understand the dynamic of these complex problem, to map its dependencies to identify some major principles/patterns to mark out possible ways to address it more efficiently in the future, and feed the innovation funnel for next cohorts of the IE Brown Executive MBA.
Methodology

On-line research to scope the issue

As first, our on-line research focused on technical solution which could be appropriate for the context of the Bottom of the Pyramid (BoP) within informal settlements in Cape Town.

But soon, we enlarged our research to concepts such as « human dignity », « security », « constitutional rights », ultimately leading to concepts such as « city planning », « off-grid solutions », « sustainability ».

We were critically aware that all preparatory research and calls with Reciprocity (M. Pierre Coetzer) in Cape Town would not be enough to familiarize and give us a complete view of the problem. We also needed the perspective of the people involved, especially, the residents at the township. There was a set of ethnographic invisible – their understanding, their pains, their expectations... that we would need to explore and learn about South African culture, recent history, politics, etc. We were both anxious and excited about all that was to come and the upcoming learning opportunities. We also wanted to confront our vision of the sanitation service access issue for the BoP to the vision of different stakeholders.

In order to maximize our learning experience in Cape Town, we identified Key Informants (in the ethnographic meaning) which could provide us with critical insights to better understand the problem. Thank to our wonderful partner in Cape Town, Reciprocity (M. Pierre Coetzer did a fantastic job), we were able to efficiently schedule appropriate meetings withing a very short time.

Stakeholders’ selection for interviews

To build a broader view of the complex interconnections between race and inequality with the problems of sanitation and housing, we tried to be attentive to different perspectives. We focused most of our interviews in Khayelitsha Township – France area, where we first met a group of pretty young people, all in their early twenties, most of them formally unemployed, living in an informal settlement or recently moved to a RDP house. We also talked to householders and kids in another settlement trying to capture some of their impressions as well. Additionally, we talked to a street committee representative (a local facilitator recognized and chosen by his community within the informal settlements).

To complete the perspectives of the township residents, we interviewed NGO’s representatives, some of them also inhabitants of informal settlements. ‘On the other side of the table’, we talked to representatives of the City of Cape Town’s Reticulation Department (the unit in charge of water and sewage grids) and to contractors, currently providing their toilet systems at Khayelitsha, or were interested in doing so. Eventually, to complete our list of interviewees, we talked to academia, in the person of the UCT representative for the African Centre for Cities, Pr. Edgar Pieterse.

Except from the chemical toilets provider that came to see us at our site at UCT Business School, we were the ones visiting. We met them in the streets of their informal settlements, we visited their houses, the offices of the NGOs, of the African Centre in University of Cape Town and of the Reticulation Unit.

List can be found on appendix 1.

Interview Methodology

We wanted people to feel comfortable but there were challenges towards this objective. For starters, we are a group of foreign, all caucasian, Exec MBA students, clearly from a different social class, walking over their communities, entering their houses and even more difficult, talking about their toilets and sanitation habits which was making us felt quite awkward. How could we make ourselves less strange or more familiar to them?
Methodology

We progressively opted for a semi-structured interview. Hopefully due to the very good preparation done by M. Pierre Coetzer and M. Tobela Thembani our so precious « Navigator » (both from Reciprocity) who was very instrumental for developing relationships quickly and putting us into a position to pose hard questions, we asked a short series of questions such as:

■ How would you state the problem of sanitation?
■ What is your evaluation of the current solutions (temporary different solutions of toilets in informal settlements, RDP housings…)?
■ What is your perception on the level of satisfaction from informal settlement residents? What are the main issues?
■ What other solutions have been tried, which failed or are newly being considered? (dry toilets, housing improvement programs etc)
■ What are the challenges in the relationships with communities/city representatives/NGOs? How do you engage with them?
■ How do you think it would be possible to create more ownership of sanitation solutions from the side of the households?
■ What is the process followed while implementing solutions? How do you decide which area to work, which families to contemplate? How do you communicate with other parties?
■ What are the plans regarding the implementation of new backbones of grid and regards the operations of sanitation services? (Specific to Cape City representatives)
■ What is your view on a possible program to formalize existing settlements into structured plots with their respective property deeds? (as an alternative to the RDP program)
■ How could a program involving basic infrastructure, vouchers for materials and training could help improve upgrade the actual shacks? What would we need to make it viable?

These questions were followed (as much as we could, and we did improve during our stay in Cape Town), by our careful and active listening to answers made. Often the answer moment was less structured as basically our opened question triggered something broader.

In order to develop a ‘clearer picture’ in our minds, using what we have seen and listened to, we took notes and pictures individually. At the end of every field trip, we shared our findings in the group. Comparing to the experience of making participant observation individually, this sharing of information was very important, because it gave us the opportunity to find common notes, common perceptions and highlight underlying patterns, which in turn helped a lot in terms of improving our understanding of the effects of such conditions informal settlement people daily life.

Our participative observation of the different sub-groups of Capetonians helped us realize the complexity of the topic and that each sub-group had a completely different set of perspectives on race, poverty, sanitation and housing.

This analysis was done along three main dimensions:

1) The beliefs, expectations and attitudes of the township residents towards sanitation and housing;
2) The perspectives of city representatives and service providers;
3) The state of alignment and relationships between the subgroups and the interdependencies between their expectations and current perception of the sanitation access issue.

Eventually, the complexity of the issue alienated our will to find a « one fits all solution », but rather we wanted to map this complexity, and identify patterns and principles to mark out possible « transformation programs » to address this issue.
Way Point #1

Problem to address:

The informal settlement people (Bottom of the Pyramid) within Cape Town townships lack access to basic sanitation services despite the fact it is a constitutional right, and despite the fact the Government and public services investments to comply with the constitution and to provide sanitation services.

Objectives:

Initially, as stated in the syllabus of the «Entrepreneurship Opportunities in Emerging Economies», the objective was to identify a technical solution which could fit the situation/constraints of Cape Town townships and be the foundation for an inclusive business development within the townships.

Discovering the complexity of this multi-dimensional «issue», we stepped back and tried to better understand and capture its every dimensions, tried to «map them» within a dependency network to eventually identify patterns and general principles to act upon it in a more efficient way. Our ambition is to provide a framework to better understand the complexity and scale of the issue, to mark out some program ideas for the following cohorts of the IE Brown Exec MBA, and to provide foundations for local private initiatives possibly catalyzed by Reciprocity.