

CAPE TOWN SANITATION

A PROPOSAL BY
NON-WATER SANITATION
INTERNATIONAL AND
NON-WATER SANITATION
SOUTH AFRICA

PROJECT
AN URBAN WATERLESS
SANITATION SOLUTION
FOR CAPE TOWN IN TIMES
OF DROUGHT AND WATER
SCARCITY

NON WATER
SANITATION

SUSTAINABLE SANITATION PLAN
FOR A CITY PLAGUED BY WATER
SCARCITY

THE CHALLENGE

Cape Town is predicted to run out of water by April 21st 2018, forcing the government to harsh water restrictions.

BACKGROUND:

- A sharp population growth (births, migration) has led to an increase in water usage.
- Failure to come up with a plan for alternative water sources
- Harsh climatic conditions – one of the worst droughts in the region
- A large chunk of the population is not adhering to the government assigned water limits. The government suggested a conservation target of 500 million litres whereas the Capetonians consume about 608 million litres per day.



RESULT:

- Municipality dams are at 26.2% of their capacity. The actual figure for usable water is even lower since the last 10% of damn water is not fit for human consumption. The taps will be shut off at 13.5% of the dam capacity.
- Citizens are limited to 25 litres of water per person per day. This water will be distributed from 200 distributions points around the city with a population of over 4 million people. How this will work in practice is as yet unclear.



SANITATION IN CAPE TOWN WATER CRISIS

Households are practising capturing recycled graywater to flush toilets, that too only using that when it is solid waste. As the restrictions on water usage get stricter, citizens will probably not want to use their allocated water for sanitation purposes and instead might turn towards makeshift toilets that don't require flushing. If they don't build the right kind of toilets, poor sanitation conditions may lead to further disasters such as Cholera and dysentery outbreaks.

FURTHER CHALLENGES



Besides restrictions for the people, the general environment, the agriculture will also be affected by the restrictions in water supply. And since there will be none or very limited water to irrigate the fields, it will have a negative impact on the quality and quantity of yields and therefore affecting the livelihoods of the farmers as well as leading to possible food shortages in the city.

Additionally, without water, the problem of poor sanitation and hygiene is inevitable unless a proper sanitation system that adapts to the situation in Cape Town is implemented.

CRISIS SOLUTIONS AND RESPONSES BY GOVERNMENT

WATER RATIONS

Citizens limited to 25 litres of water per person per day

DISTRIBUTION POINTS AND CENTRAL MANAGEMENT

200 distributions points around the city with a population of over 4 million people.

MAINTAINING STABILITY

Authorities contemplating declaration of a “national disaster” for water crisis in order to boost police presence and maintain peace in the city



WHILE THE EFFORTS OF THE GOVERNMENT WILL LIKELY HELP IN KEEPING SOME CONTROL OF THE SITUATION, THE EFFORTS ARE NOT A SOLUTION TO REDUCING WATER CONSUMPTION IN THE LONG RUN AND ARE UNLIKELY TO MEET THE WATER NEEDS OF THE CITIZENS FOR EVEN BASIC SANITATION AND HYGIENE.

SOLUTION

We propose the deployment of Urine Diverting Dry Toilets (UDDTs) for the households in Cape Town.

These affordable and mobile toilets **don't require flush water**, are **odor-free** and would **prevent the risk of sanitation related disease** spreading due to water shortages. Also, they are **ecological**, safe and **low in maintenance**, easy to use, adaptable to the local context and **could be installed in apartment buildings**.

This dry toilet management system is an alternative to pit latrines and flush toilets especially **when water resources are scarce**. Moreover, if required, the urine and feces collected through these dry toilets over time can be composted and could be used as manure for agricultural purposes which in turn can help solve agriculture related grievances and bring economic benefits.



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Toilet flushing is the single highest use of water in the average home, so it also presents a prime opportunity for water conservation. With the average person flushing five times a day, toilets make up about 31% of overall household water consumption.

- Alliance for Water Efficiency



URINE DIVERTING DRY TOILETS (UDDT'S) PROVIDE A SOLID AND SUSTAINABLE ALTERNATIVE TO FLUSH TOILETS IN TIMES OF WATER CRISIS. THEY CAN PREVENT DISEASE OUTBREAKS IN URBAN SETTINGS DUE TO POOR SANITATION CONDITIONS AND COULD BE THE SINGLE MOST EFFECTIVE MEASURE IN CONSERVING WATER.

HOW IT WORKS

1

Full containers are being collected from household and exchanged for new ones.



2

Containers are brought to collection station, emptied and refilled with cover material.



3

Material from collection stations is either brought to composting plants or burnt in thermal recovery.



4

In case material is composted, it can be applied as a soil enhancer.



BEST PRACTICES

CLEAN TEAM GHANA

provides safe, affordable in-home toilets for low-income families in Ghana. The customers pay a small weekly fee for the service and Clean Team provides the toilet. Clean Team now installed over 600 toilets and is serving 4,500 people in Kumasi, Ghana, making lives cleaner, healthier, and more dignified.



XRUNNERS

installs affordable dry toilets in homes in Lima, Peru. For a small recurring fee, the team collects the waste every week, which is, then recycled into high quality compost that is used to enrich soil. They now provide suitable toilets to homes without access to running water, allowing more than 3600 people to enjoy a better quality of life.



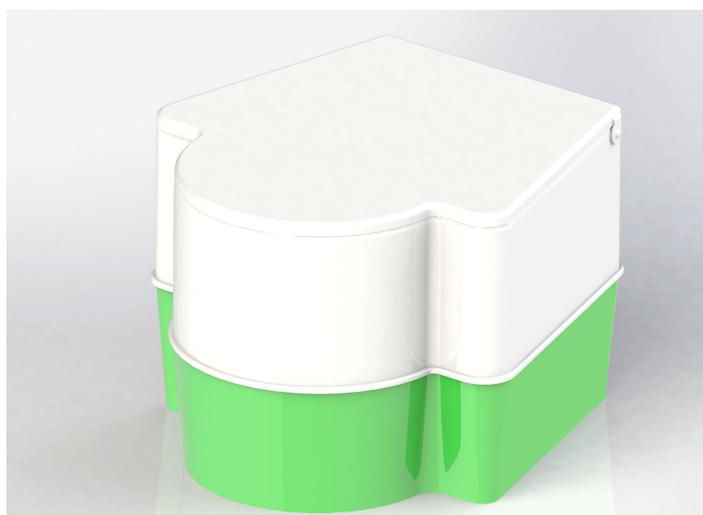
ECOTOILETTEN

provides mobile dry toilets for outdoor events as well as homes and gardens in Germany. Additionally, they build off grid public dry toilets for the city of Berlin. The company has gathered experience with sanitation projects in India, Bangladesh, Germany as well as Ghana and is an ongoing supporter of Non-Water Sanitation's mission.

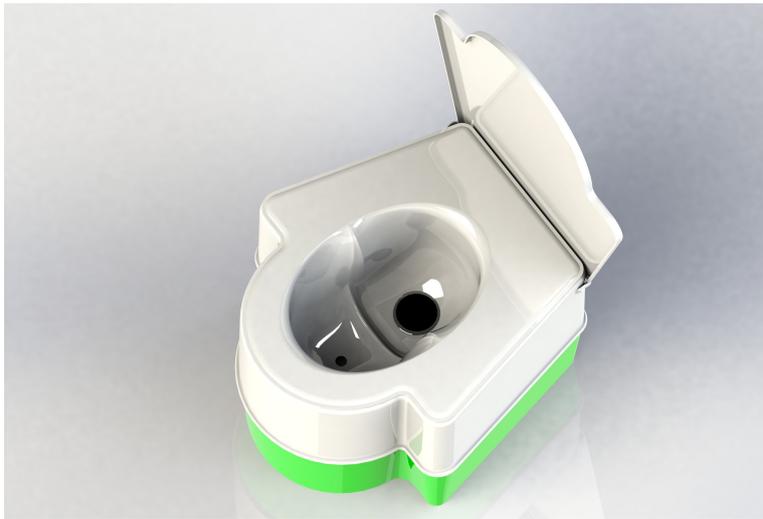


NON-WATER SANITATION INT.

We see ourselves as an implementation partner with a strong network and years of experience in ecological sanitation, making sure that projects get implemented efficiently, resources are employed in an effective manner and results are long term and sustainable. In implementing, directly or indirectly through local partners, we favor eco-friendly waterless toilets wherein product designs are created with local context in mind, and implemented with maximum involvement of local manufacturing capacities if possible, keeping in mind possible local capacity constraints. Depending upon the needs and situation, these toilets can be a) household based or b) community based.



PRODUCTS



HOUSEHOLD BASED

Household based mobile UDDT's are the ideal solution for a waterless sanitation provision in urban areas with high population density and areas in times of water scarcity.

A UDDT separates urine from feces. The solid material falls into a separate container and the users pour a handful of sawdust or alternative cover material over it, to dehydrate the solids, eliminating bad smell and ensuring that insects and flies don't enter.

If there is access to a water toilet, the Urine collected in the UDDT could simply be poured away into the water toilet. The solid waste gets picked up, at least on a weekly basis. The feces is, then recycled into high quality compost that is used to enrich soil or can alternatively be burned, depending on local policy regarding human manure.

It is important to note that with correct usage, there is no bad smell and is achieving very high satisfaction rates with users in the urban context.

MODERN WATERLESS COMMUNITY TOILETS

Apart from household toilets, the critical situation in Cape Town might require additional measures to cope with the impending crisis. Mobile or stationary community toilets that don't require water might be a quick and easy to deploy measure to ensure that people can still do their daily necessities with dignity. The solutions range from simple dry toilets that are fool proof and easy to use, to high tech solutions that recycle flush water. These systems, ideal for institutions and companies, do not only conserve water, they actually gain water, as urine is entering the water recycling process and being restored to clear and odorless water for flushing.



NECESSARY COMPONENTS FOR IMPLEMENTATION

SERVICE &
LOGISTICS



PROCUREMENT &
SUPPLY CHAIN



WASTE
MANAGEMENT



FUNDING
ENTITY



ADOPTION STRATEGY

MAKING TIME COUNT

As Cape Town is nearing Day Zero, quick and effective action is required to reduce the negative impact of the water crisis on Cape Town's citizens.

Understanding the current situation in different neighborhoods in Cape Town and hearing the most pressing needs of citizens through direct surveys on the ground could be a sensible first measure..

UNDERSTAND ENGAGE & SUPPLY

Step two could be **awareness raising and gauging interest** for waterless sanitation solutions. This could be done across the water distribution points in Cape Town. If local demand for a waterless sanitation solution is as high as expected, the deployment could start in priority neighborhoods i.e. surroundings that are especially vulnerable.



Enlisting support in the adoption of a new sort of sanitation solution will be crucial if sizable impact is to be created within a short amount of time.

The survey's as well as the engagement of citizens at central public meeting spots, such as the water distribution points, could best be handled through the enrollment of student volunteers from universities across Cape Town i.e. in cooperation with the faculty of Humanities of the University of Cape Town. Such an enrollment of civic support would speed up the process and keep costs at a necessary minimum.

IMPLEMENTATION



LEAN AND LOCAL APPROACH

We propose a lean and local approach to implementing and testing a waterless and water saving sanitation system in Cape Town.

In order to do that, Non-Water Sanitation International would work through its own South African non-profit entity Non-Water Sanitation SA and enlist and train local partners to fill the roles necessary to reliably provide the services. Furthermore, political buy-in and a Cape Town Sustainable Sanitation Alliance, designed as

a public private partnership, to ensure the long term sustainability and scope needed to make a sizable impact, would be highly desirable if not necessary to launch a successful project.

If there is political will to support a waterless sanitation strategy through endorsement and policy and the pilot runs successfully and is scaled up, Cape Town could turn itself around and become a model city in terms of sustainability and water preservation through sustainable sanitation

PROPOSED ROLE

Our expertise is in sustainable and waterless sanitation and bringing partners and expertise together to implement small and large scale sanitation projects. Thus, Non-Water Sanitation SA can take the role of a consulting and managing agent in a public private partnership, helping to outline a sustainable sanitation strategy for Cape Town and implementing it with and through local partners to meet the water conservation targets and support Cape Town's citizens.

TYPE'S OF PARTNERS NEEDED

- City Council | Ministry | PPP
- Awareness raising and surveying partners
- Manufacturing partner(s) able to meet demand
- Servicing and maintenance partner, with existing network and fleet
- Procurement and supply chain partner
- Waste management partner
- Media partnerships
- Etc.

PHASES OF IMPLEMENTATION

01

PREPARATION

survey stakeholders, get partners on board and define the project scope, roles and responsibilities

02

LAUNCH TEST

Implement a test project, observe, go through iterations and implement improvements and share results

03

SCALE

Based on results of the test, decide on and implement a scalable sustainable sanitation approach that is resilient to water shortages



FINANCING AND BUSINESS CASE



OUTLOOK

Non-Water Sanitation International is a non-profit. Our main aim is to create sustainable projects for long-term impact. In the case of Cape Town the objective is to design and implement a mix of financing -

that ensures the long-term viability for a waterless sustainable sanitation approach and allows the project to reach a scope that has a sizable impact in terms of water saved and people served.

ESTIMATES

Each implementation phase will need separate funding to launch successfully. In order to give an estimate of the costs per household in setup and recurring expenses, as well as expected revenue, more research has to be undertaken. However, there are indicators for the actual costs per month per household from the international case studies. To give a Cape Town specific number, the following aspects have to be considered in more detail:

- Prices and services of local vendors
- Demand and affordability of waterless sanitation solution for households
- Possibilities for price discrimination and cross financing (i.e. high income households pay a bit more to subsidize low income households)
- Actual costs incurred after test run

SOURCES OF FINANCING

01

RECURRING FEE

households pay a monthly or weekly fee for the pickup of the solid matter.

02

ONE TIME INSTALLATION FEE

Households pay a one time installation fee for the toilet.

03

FUNDRAISING

International donor agencies and institutions that support water conservation and humanitarian projects

04

PUBLIC PRIVATE PARTNERSHIP

Sanitation as part of basic public services, should get supported in the effort to conserve water.

OBJECTIVE

- To raise awareness and interest with the government agencies for the possibility and feasibility of waterless, ecological and safe sanitation systems as a way to save water and ensure hygiene.
- To introduce a rough outline for a possible way forward in implementing waterless sustainable sanitation in Cape Town.
- To demonstrate our willingness and interest in helping the citizens of Cape Town with waterless sanitation and gauging interest and potential for partnerships tackling the pressing problem faced by Cape Town's citizens.

SUMMARY

The situation in Cape Town, with Day Zero nearing, requires concise and massive action to make the best effort to conserve water.

Using modern waterless sustainable toilets is not only the most straight forward way to conserve water otherwise wasted through flushing but also provides citizens the comfort and security of a safe, odor-less private toilet in times of inaccessibility of water and extreme water scarcity.

Last but not least, the water crisis in Cape Town is not only a very severe issue but also an opportunity to implement the measures necessary to handle extreme droughts better prepared in the future.

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