

# DIGITAL DEVELOPMENT DEBATES

## A toilet for the most vulnerable: the Peepoo

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In 2006, a company was founded in Sweden with a unique mission: to provide anyone who desires access to dignified and hygienic sanitation. In practical terms the company produces a personal, single-use toilet, named Peepoo. Peepoo is designed to be used at home in places without proper sanitation systems. After usage, Peepoo sanitises the human excreta. It thus offers a hygienic, practical to use, ecological and – of course – cheap sanitary solution. Since 2010 it has been sold in the Kibera slum in Kenya.

### The science of Peepoo

It took the architect Professor Anders Wilhelmson several years to find a solution for his goal: a new sanitation tool for the poorest of the poor. In 2005 he began conducting research together with the SLU Swedish University of Agricultural Science and the KTH Royal Institute of Technology. The result looks like a plastic bag in green and white, but it is in fact a high-tech toilet: the “Peepoo”.

Peepoo serves as a home toilet that is clean and simple to use. It is in the form of a slim, elongated bag made of a high-performance, degradable bioplastic. When the Peepoo is opened, a thin layer of gauze unfolds from inside, forming a wide funnel. Shortly after defecation it sanitises the human excreta, thereby preventing the faeces from contaminating the immediate area as well as the larger environment. Furthermore, it improves safety at night, especially for women and children, who are exposed to many risks when they leave their shacks in the night to void waste.

### Used toilets are natural fertiliser

Even a used Peepoo is clean and sanitary. It degrades into waste that neither smells nor is dirty to handle and collect – and it can be used as natural fertiliser. The inside of the Peepoo is coated with urea – a non-hazardous chemical also found in toothpaste or body lotion under the name of carbamide – that is used for hygienisation.

When the excrements come into contact with urea an enzymatic breakdown into ammonia and carbonate takes place, driven by enzymes that naturally occur in faeces. As the urea is broken down, the Ph of the material increases and hygienisation begins. Disease-causing pathogens often found in faeces are rendered inactive within two to four weeks, depending on the surrounding temperature. And when the Peepoo disintegrates in the soil, the ammonia acts as a harmless fertiliser taken up by plants.

Therefore, a used Peepoo offers a safe and valuable nutrient for rural and urban farming. The fertiliser can be used by households or schools, or be collected and distributed profitably to local farmers. Since fertilisers are expensive and scarce in less developed countries, businesses can develop around the collection and distribution of used Peepoos.

The Peepoo value chain thus creates several jobs for micro-entrepreneurs: distributing and selling the Peepoos, collecting the used ones, processing them into fertiliser and selling them to farmers. The production of Peepoo simple and extremely cost effective. After a testing period lasting a few years, Peepoo is now being implemented in Kenya.

### **Nothing to take for granted: the right to defecate safely and in privacy**

The Peepoo was launched in late October 2010 in the Silanga Village slum in Kibera – one of the largest informal settlements in the world in Nairobi, Kenya. Located on approximately 600 acres of land owned by the government of Kenya, Kibera consists of about 600,000 people living in twelve villages.

Built with mud walls and concrete, the average size of a shack here is about 3.5 meters by 3.5 meters. The shacks often house eight or more people – many of whom sleep on the floor. The rent is approximately 700 Kenyan shillings per month (around US-\$ 7.5). Because population density is extremely high and building space is limited, in some areas, more than 300 people share one toilet. And in 2007, 80% of the latrines that existed were filled to overflowing.

When the Peepoo project was first tested in Kibera, user acceptance was very high. Planning for the project was supported by Simavi and Aqua for All, two Dutch NGOs. The Swedish Government fund Vinnova granted Peepoo 750,000 euros for a large-scale launch project in Kenya and one in Bangladesh. In 2011 Simavi received 1.6 million Euro from the Dutch Post Code Lottery to support the launch project in Kibera.

### **Distribution: Saleswomen receive micro-franchises**

Peepoo's main distributors in urban slums are saleswomen. These women were recruited in cooperation with the local community before the launch and their businesses act as "micro-franchises". Functions such as quality assurance, training, branding, marketing and advertising are provided by Peepoo Kenya. Moreover, some charitable foundations or hospitals buy Peepoos directly at Peepoo Kenya to distribute them to pupils and patients.

Because many of the customers in the slums have little available cash, saleswomen sell on credit. Customers receive two rolls of 25 Peepoos every fortnight and payment is collected during the next visit. In this model, customers only pay for the actual number of Peepoos they use – which is most advantageous for customers who do not have ready cash.

The saleswomen register the delivery and credits in a credit book where all regular clients and customers confirm the transactions by a fingerprint or signature. By making Peepoos readily available at home, this model provides more incentive to use (and thus buy) the toilets, so women entrepreneurs can sell in larger quantities.

### **Collection: 100-400 Peepoos in a few hours time**

To maximise the collection of used Peepoos customers receive a refund: one Peepoo is sold for 3 Kenyan shillings and each used Peepoo is worth a refund of 1 Kenyan shilling (around 3 and 1 US-dollar cent).

Currently, users or independent collectors bring the used Peepoos to centrally located drop-points, from which the Peepoos are transported daily to a temporary storage area. In future, a local enterprise will be buying the used toilets from people then selling the fertiliser to farmers at a higher price. To achieve economy of scale and maintain sufficiently high throughput, the enterprise should ideally serve more than 20,000 users.

About 35% of customers actually bring their used Peepoos to the drop-point – the others often feel too shy about walking around with the used toilets. Some people have recognized this as a way to earn extra money and recollect the used Peepoos from the houses. Some collect as many as 100-400 Peepoos daily in a few hours time.

### **Price challenges: even a minimal sum may be too expensive for some**

Average daily income in Kibera is low. Pay toilets cost between 3 and 5 Kenyan shillings to use, and these are only open during the daytime. During the field-test in Kibera in 2009, as many as 70% of participants used flying toilets, plastic bags thrown away after use, on a regular basis. They are either obtained for free when shopping or purchased for 3 Kenyan shillings each for use as a toilet during the night.

At a price of 2 Kenyan shillings per Peepoo, the net cost for using the Peepoo sanitation system is still a considerable amount for the very poor. Peepoople Kenya is thinking about offering vouchers as “payment” for Peepoos being redeemed as mobile phone airtime with a value higher than their actual cash value. This may also have other advantages such as encouraging women to use mobile phones and thus helping to empower them.

### **Marketing: word of mouth and plot parties**

Promotion for Peepoos is accomplished mainly by word of mouth. But there was also a short marketing campaign on local radio, Pamoja FM, before the launch. This was followed by road shows in Silanga, as well as a football tournament and “pull program” with vouchers.

Currently the Peepoo project is marketed through plot parties. In Kibera, most people live around compounds or plots with 10 to 50 houses organised around a courtyard. The party plan involves hosting a social event with an elder, a Peepoo customer and saleswomen present. The saleswomen demonstrate how the Peepoo functions and take orders before the gathering ends.

By the end of 2011, the target is to sell 2,000 Peepoos per day. The best customers today are often men under the age of 30 who are not yet married or are widowers. They are less shy than women and easier to convince, according to Peepoo saleswomen. For these men a home toilet is practical. Mothers with young children are another important customer group. A third group are plot owner landlords who are responsible for sanitation – and people who rent the plots.

### **Difficulties: corruption and threats**

Despite Peepoople's success so far, however, some challenges remain. Corruption is a huge problem in Kenyan society – and even Peepoople Kenya has encountered it in some cases. For example, in order to receive more commission, some saleswomen have invented fake customers or have not reported actual payments to Peepoople Kenya.

Furthermore, due to the vulnerable living situation in the slum, threats are common within communities and NGOs, and Peepoople Kenya is no exception. Peepoople Kenya staff members received a threat to destroy the success of the project sent via email, for example.

### **Peepoo toilets for schools**

Peepoople Kenya also began a school project in an area called Gatwekera where Peepoos were given to pupils for free. In spring 2011, a school with more than 1,000 pupils in Silanga began buying Peepoos. In both cases, children and teachers have been trained in wash and soak pits that are built for privacy when eliminating waste. Peepoos are used inside the soak pits for defecation and placed in a bucket afterwards. Peepoople Kenya is also working with the schools to grow food in sacks where used Peepoos serve as fertiliser.

As of October 2011, Peepoople Kenya is serving 11 schools with more than 2 000 children. The aim is to reach 15 schools by the end of 2011.

### **Peepoos' use for food security**

In Kibera, Peepoos are also being used in bag-gardens and contribute to food security. A bag-garden is a sack filled with earth, fertiliser and stones, so it works like a mini plot. Each bag-garden is comparable to one square meter of land. The bag takes little space and can be placed in alleys or in courtyards in urban informal settlements. About 30 to 40 seedlings can be planted in a 90 kg sack.