



## Reinvented Toilet – a New Definition to Sanitation

Prakash Amatya, Treasurer, ENPHO

Beijing, the capital of China hosted a unique business expo on reinvented toilet in the first week of the November. Bill Gates, Co-Chair of the Bill and Melinda Gates Foundation was hosting the Reinvented Toilet Expo to commercialize futuristic toilets that don't need water or sewers. Bill Gates stunned the crowd in Beijing with a jar of human faeces in his hand.

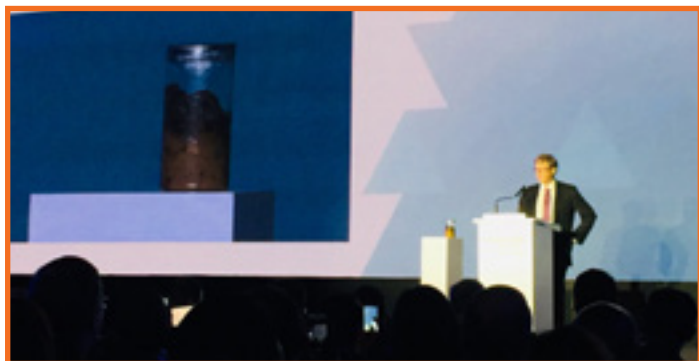
“Can't stop thinking about that moment when Bill Gates brought poop to the podium during his great speech on “New” toilet revolution at #Reinvented Toilet Expo in Beijing, China,” recalled Bipin Dangol, Executive Director at Environment and Public Health Organization. He witnessed not only the 20 different innovative toilets in the expo that will change the definition of the toilet but saw the solutions that can potentially bring a big change in the public health.

The management of human waste needed a paradigm shift. The 19<sup>th</sup> century sanitation solutions in cities of Europe and other developed cities are fast becoming outdated, prohibitively expensive to maintain, and rely too much on water, don't kill pathogens and human excreta always remained waste as a by-product.

Still one in three people in the world lives without a decent toilet, meaning that too much faecal matter are not safely dealt with (“Bill Gates: from software to toilets”, Simon Kuper, November 10). This negligence of the human right to water and sanitation results in the death of a child under five every two minutes. Gates is right that the global sanitation problem will get worse if we don't do something about it.

Gates urged in his speech, “Today, rich countries have a sewage system where you bring water in, put the human waste in it and it goes out to all the way to a treatment processing plant. That requires the installation of a lot of pipes. It's very expensive and it's not going to happen in these newer, poorer cities.”

Dr. Doulaye Kone, Deputy Director at BMGF and Chairman, ISO 30500 quoted that the era of innovation in the toilet has come. On May 24<sup>th</sup>, 120 experts from 33 countries met on top of the world, in Nepal and approved a new standard ISO 30500 that set requirements for toilets that kill pathogen, and do not produce any waste.



Bill Gates showing the poop jar during his keynote speech at Reinvented Toilet (RT) EXPO, Beijing, China

A delegate comprised of government, development agencies, scientists, civil society and private business representatives from Nepal participated in this expo. Though the Minister for Water Supply has to cancel her trip at the last minute, Nepal team made a significant presence and contributed in the high level panel. Sunil Kumar Das, Deputy Director General at the Department of Water Supply and Sewerage Management shared that its right time for Nepal to adopt new systems and technologies for the safe and sustainable sanitation. The next generation toilet is onsite sanitation and it's the only way to recover the resources. We have to collaborate with the scientists, development partners and the private sectors to transfer the skills and promote the new #reinvented toilet technologies. This expo has also highlighted a need to reform in the public toilet sector as well. We have seen different models to introduce the innovative public toilet. The department is committed to formulate the appropriate guidelines to bring necessary changes in the public sanitation.

Bhim Prasad Upadhaya, former Secretary to the Ministry of Water Supply opined that the science and engineering never thought of toilets beyond pan and commode but this expo highlighted the importance of the holistic approach of the toilet. The innovative toilet products in the expo were amazingly reengineered. It's not only the toilet solutions but brings a massive opportunity for the business as well where Nepal has a population of 29 million people. Nepal cannot ignore the faecal sludge management and should prioritize it to bring a sustainable development and prosperity.

Dr. Roshan Raj Shrestha, Lead, Urban Sanitation Market (USM) at BMGF signifies that the technology alone cannot serve the purpose. It has to opt a favorable policy environment and that can come only with the political willingness. Failed to bring the private business actors in the market creation of the reinvented toilet solution will further lag behind in the developing countries like Nepal, he worried. A toilet solution bundled with timely services and behavior changes is required to make it successful in this century.



Sunil Kumar Das, DDG of Department of Water Supply & Sewerage Management Nepal (second from the right) during the high-level panel discussion at RT EXPO



Reinvented Toilet Technology at the EXPO

The dream for an ideal toilet that kills 100 percent pathogens, uses minimum water, and produces resources such as energy, clean water, and fertilizers has come true. The grantee of the BMGF at the Reinvented Toilet Expo has proved that new toilets in the 21<sup>st</sup> Century are possible. Government of Nepal, now, should take leadership role and take a proactive move to tap these opportunities and collaborate with all to bring these solutions in the market that make the citizen healthy and country prosperous.

### For global press release:

Beijing Expo “showcases, for the first time, radically new, decentralized sanitation technologies and products that are business-ready” says Bill Gates. Read full story [<https://www.dropbox.com/sh/xvawtennct6ulqa/AAADTx7VbB9J4v4tHWzOrvMna?dl=0>]. #ReinventedToilet



## The Neglected Public Toilets in the Kathmandu Valley

Shreesha Nankhwa\* and Prakash Amatya

On average, we go to the toilet 6 -7 times a day. So, having access to a safe and sanitary toilet, wherever, one goes is undoubtedly essential. Toilets are a basic need those who have regular access to toilets often take for granted. SDG 6, which aims to “Ensure availability and sustainable management of water and sanitation for all” cannot be achieved if we cannot provide access to safe and sanitary toilets for everyone wherever they happen to be. And to provide that access, public toilets are essential.

A survey done by GUTHI in the public toilet of Ratnapark showed that 44% users (58% of male users and 38% of female users) of public toilet were repeat customers. These are often people who engage in some kind of economic activity near the public toilets. They often either operate a footpath business or are drivers and conductors of public buses. Without the availability of public toilets, these users would have no place to relieve themselves throughout their workday. They would either be forced to not drink and eat during their long work hours to avoid having to use the toilet, which could be detrimental to their health or they would be forced to relieve themselves in an undignified and unsanitary manner in public spaces, which would jeopardize the health of everyone on the vicinity.

Public toilets provide value that goes beyond providing a basic service to those in need for a place to relieve themselves. Nepal is trying to encourage more tourists to visit the country, especially with Visit Nepal 2020 Campaign. In 2017, the number of tourists who visited Nepal was 940,218. This number is expected to grow every year. And while these tourists visit the places around Nepal, they would need sanitary public toilets for their use, especially in dense urban cities like Kathmandu and Pokhara. Having well functioning public toilets near highly touristic areas would add to the experience of the tourists visiting Nepal.



AEROSAN Hub Public Toilet in Ratnapark

While there has been a great rise of urbanization and urban spaces in Nepal, there has been no equivalent increase in the number of public toilets available to the public. Currently there are 59 public toilets in Kathmandu Metropolitan City, 21 in Lalitpur Metropolitan City, seven in Kirtipur Municipality and 6 in Bhaktapur Municipality (GUTHI Survey 2018). These numbers include toilets in hospitals, government institutions and malls that the public may have access to. This number gives us a ratio of 1 public toilet per 16695 persons in Kathmandu city. As the numbers show us, the availability of public toilets in Kathmandu is beyond pitiful.

Public toilets provide a space for people to carry out a basic bodily function with dignity and without risking the cleanliness of the nearby environment. In order to create a clean urban environment, access to public toilets should be easily available and universal. People from all classes, genders and people with or without disabilities should also have easy access to toilets. Our data research has found that for every 3 male users, there is only one female user of public toilets. Furthermore, the rate of female users during the evenings is very low compared to female users in the morning and afternoon. This discrepancy in male to female users needs to be further studied.

In consultations with toilet operators, we found that having access to adequate water while running a public toilet was a major constraint for them. Having customers who lack awareness about the need for sanitation, whether it be using the toilets properly without creating too much mess or even hand-washing after using toilet was another concern. A survey at Ratna Park public toilet showed that only 26% of men and 17% of women washed their hands after using the facilities. This percentage is in line with the global rate of 11% of people who wash their hands after using toilet. Another concern they have is the long term financial sustainability of public toilets.

So, given what we understand about public toilets and their needs and issues, where do we turn for the solution? One solution could be found in the interventions used by social business solutions such as Aerosan HUB developed jointly by AEROSAN and GUTHI, which has already piloted at Ratna Park's public toilet. The major interventions used in Aerosan HUB were a cleaning compliance program, renovations targeted towards gender equality and a biogas plant for energy recovery. These interventions have shown to be effective in increasing the overall satisfaction of the users. Cleaning compliance programs ensure that public toilets are as sanitary and safe to use as other toilets. Biogas plant that operates using the waste created by the public toilet adds economic value to the enterprise and also takes care of environmental concerns of the waste.

It is essential that regular users as well as passersby have easy and affordable access to clean public toilets. Those who use public toilets cannot stop their bodily function or their need to urinate and defecate throughout the day. And in the absence of a sanitary public toilet available for their use, these users will have no option other than to relieve their bodily fluids out in the open. Having sustainable public toilets that not only provides public service but also adds economic, social and environmental value to the community is essential in today's cities.

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## “I would not have lost my Son” – Bahadur Bhul

Bahadur Bhul, 50, inhabitant of Nawaghar, Koteli-1 in Dadeldhura district belongs to a “so-called” Dalit community. He lives with his seven family members. Neither of his family members were adequately aware on sanitation and hygiene. The WASH triggerers of SUSAHARA II program found his house, kitchen, handwashing station, toilet and surroundings very unhygienic. The cowshed and house yard were all filthy due to unmanaged cow dung. Dadeldhura district was declared as open defecation free in 2013. But, the home of Bahadur Bhul clearly depicted the need of efforts for the improvement in sanitation.

SUSAHARA II program conducted various orientation and awareness raising programs on sanitation and hygiene in Bahadur’s community. One day, he participated in one of the orientation programs. Throughout that program, he vividly remembered his son, whom he had lost due to diarrhea and fever. His son was just 17 months old then. Through the WASH orientation program, Bahadur recognized the main reasons behind losing his son. “I never gave much importance to sanitation and hygiene. Due to poor sanitation and hygiene, I lost my son,” Bahadur shared with tearful eyes.

After learning from the program, improved sanitation and better hygiene have been a part of his daily routine. He now regularly uses toilet, filters water for drinking and has even constructed “Juthelno” – a dish drying rack. “If I had known and done all this before, I would not have lost my son,” Bahadur said. Even his neighbours have now started adopting hygienic behavior. The community has changed its identity from poor and disadvantaged to a totally sanitized community.



## Strong Desire for Urban Agriculture

Rapid urbanization, population growth and lack of agricultural land have compelled people in urban areas to rely on neighboring district and country for the agricultural products. Nevertheless, the chemical fertilizers used in agricultural products are posing potential health hazards. Similarly, environment pollution and solid waste management have been two other major challenges in the urban areas. With the aim of solving such problems, from 2011 to 2016, ENPHO with the support of WASTE- the Netherlands and RUAF Foundation conducted various activities and programs on water, sanitation, solid waste management and urban agriculture in Birendranagar Municipality of Surkhet district. As the part of the program, several trainings were organized on the use of organic waste as compost for kitchen gardening.

Upon the completion of the training, Ratna Giri, resident of Pragati Tole, Birendranagar-6 learned how to grow vegetables in her house, sufficient for her six family members. Further, she has also been able to make an income of Rupee 1000 to 1500 by selling the seasonal vegetables. “Lack of agricultural land should not be our barrier. If we are determined and have a strong desire, vegetable farming is possible even by reusing plastic bottles and buckets. This is how I have been able to make money,” Ratna shared. Pragatinagar Tole, Mangalgadhi Tole, Bhagwati Tole of Birendranagar Ward 6, Ektanagar Tole of Ward 16 and Panchajwala Tole of Ward 18 have been effectively re-using organic waste and grey water to grow vegetables through kitchen gardening.

## Precious Urine

About 64% of Nepal’s population depend on agriculture as their major occupation. However, for the extensive production of agricultural products, the farmers use chemical fertilizers and pesticides resulting to adverse effect on public health and environment and degradation of soil quality.

With an aim to contributing in sustainable social and environmental development, ENPHO with the support of Nepal WASH Alliance, WASTE and RUAF Foundation implemented various activities and programs on productive reuse of waste in Birendranagar Municipality of Surkhet district. The farmers from Birendranagar and Kunathari, the then Village Development Committees (VDCs) were oriented and trained on consequences of using chemical fertilizers and pesticides and the proper use of urine in agriculture. Three schools in Surkhet district have conducted studies and research on the application of urine in agriculture. Furthermore, 80 farmers from Birendranagar Municipality have constructed EcoSan toilets and have been using urine in their farming.

Urine, rich in Nitrogen, Phosphorus and Potassium, is a good fertilizer for plants and vegetables. Both the schools and community have been effectively using urine for farming. This has resulted to considerable reduction in the use of chemical fertilizers and pesticides. Due to the increase in demand of urine, few schools have even started the business. Till date, there are 110 EcoSan toilets in Surkhet.



## Celebrating World Toilet Day 2018- Hiking Along Bagmati Corridor

Every year, World Toilet Day is celebrated on November 19 to tackle the global crisis of sanitation with an action for significant improvement on sanitation. On the occasion of World Toilet Day 2018, Paschim Paaila and ENPHO jointly organized Hiking Along Bagmati Corridor on 17 November, 2018. The hiking started from Sundarijal upto Narayantar with an objective of observing the status of Bagmati river as it flows from source to down the city. Water quality testing was one of the key activities of the event. Participants tested river water quality using ENPHO Field Water Test Kit. Water was tested at four points- dam site, agricultural site of Sundarijal, Uttarbahini temple and Narayantar. The tested result showed decrease in pH value whereas increase in the value of Ammonia and Nitrate from the source to Narayantar.

Altogether, 17 youths and WASH activists actively joined the event. In addition to water quality testing, the event also included photo competition and pitching the creating ideas for working ahead for improvement of the environment. The results of the competition and creative ideas are to be announced shortly.



## Faecal-Oral Transmission Route and Preventive Measures

