

Franchising Public Toilets

by Gunter Pauli

This article introduces the franchising of public toilets as one of the 100 innovations that shape "The Blue Economy". This article is part of a broad effort to stimulate entrepreneurship, competitiveness and employment.

The Market

The world market for ceramic sanitary ware like toilets, bidets and related bathroom appliances is estimated in 2010 at \$45 billion. Yet there are 2.8 billion people in the world without a toilet. In order to offer them the sanitation that is needed, an additional 500 million toilets need to be installed. China's construction boom has created the world's largest toilet market, with 20 million units sold in 2010. This, plus the change in culture from washing to wiping puts a strong push in the ceramic sanitary ware market for the next decade. Spain is the world market leader in output. Japan is the master in the high end of the market, generating comparable sales to the Spanish with less than half the units.

After the war, Japan did not have a tradition in ceramic sanitary ware. Under the American occupation, systems changed and in order to respond to the emerging demand the country decided to convert its leading tile manufacturing plants into sanitary products which offer a better value for the same cost of raw materials. A comparable reconversion process is now being pursued in China and India, two of the world's top three tile makers by volume. The Italians who are the world's largest ceramic tile producers by turnover, and the United Arab Emirates which tops the ranking by output volume of ceramic tiles measured in square meters, assume minor roles in the sanitary ware segment which is controlled by Spain and the USA.

The European ceramic sanitary ware industry directly employs approximately 22,000 people and has an annual turnover of \$5.9 billion. The largest producer in the world is the Spanish family controlled group Roca, based in Barcelona. Roca produced in 2010 some 32.5 million toilets in 72 factories on four continents employing 21,100 staff. Roca focuses solely on the bathroom and by 2006 the group sold all its non-core activities like water heating and air-conditioning. In the world ranking Roca is followed by another family-run enterprise, Kohler from Wisconsin (USA) which employs 30,000 workers, manufacturing approximately 21 million pieces. Japan has two leaders in the high end market. Toto based in Kita-Kyushu, is Japan's the largest ceramic ware (tiles and sanitary) maker with an annual turnover in excess of \$5 billion. Its close competitor is INAX located near Nagoya. This group controls about 30 percent of the Japanese market.

The Innovation

Toilets have undergone redesign to reduce water consumption. The double flush system has cut water wastage by 67 percent. While a discharge would still require 13 liters in 1980 it has been reduced to a 4.8 liters standard by the turn of the century. The consumption of water

and paper remains an area in need of considerable improvement and scientists have demonstrated that the dry and separation toilet is the best option forward (Case 19). Ceramics on the other hand require very high temperature and mining of raw materials. Panasonic has introduced a stain-resistant organic recycled glass with a bubble cleaning mechanism inspired by the dishwasher and washing machines. In 2005, Toto teamed up with Daiwa House, the world's largest home builder to develop the intelligent toilet which can measure blood sugar in urine and offer the scientific insights if the user is gaining weight. However, the combination of water, ceramics, paper and chemicals leads to a complex mix that requires more than water and energy efficiency to improve its overall performance. Sewer systems around the world are reaching their limits, even in developed countries like Denmark, Sweden and the United Kingdom.

Prof. Dr.-Ing. Ralf Otterpohl, Director of the Waste water and Water Protection Institute at the Technical University of Hamburg-Harburg (Germany), has been studying water and sanitation for decades. He believed that sanitation is a human right long before it was declared so by the UN General Assembly in 2010. Instead of investing more money in sewage systems that will require more taxes to finance the construction without a guarantee of better service, he decided to team up with Torben Lenau, an associate professor at the Technical University of Denmark to embark on a broader initiative that covers branding, design and business models of toilets. The modern use of toilets is engrained in the minds of people, even amongst those who only recently shifted to ceramic flushing toilets. It is key to deal with the image of the toilet, demystifying the realities of urine and feces. Prof. Otterpohl is committed to design solutions that are applicable to India as well as the West up to the point that sewers are no longer needed. It is in India where Dr. Bindeshwar Pathak developed a series of alternative ideas to trench and borehole latrines. Dr. Pathak mobilized volunteers in India to liberate people from the sub-human practice of manual excreta cleaning, and in the process created a new partnership with the government and civil society.

The First Cash Flow

The Sulabh toilet installations in India offer an inspiration. These public systems located in slums are developed according to the specific cultural, geographical, space and resource availability of the location. The flush compost toilet requires only 1.5 liters of water, one third of the best Western standard. The content is managed in two pits, one used daily, the other one that digests the contents over two years time. There are 12 different designs to adjust to local conditions. With one million household toilets installed, it has eliminated the run-offs into the gutter, and relieves the need to build sewers for black water, representing major savings for municipalities that traditionally contract long term external debt to cover this major investment. The cost of investment for one household system can be as low as 500 Indian Rupees (INR), just under ten American dollars. The integrated version of community toilets is connected to a biogas generator which offers energy and a faster processing of the waste into nutrients due to a shorter retention time. Since an individual system does not have sufficient content to warrant the production of so much methane gas, small communities from slums to remote agricultural hamlets quickly see the value of such a cooperation.

The Opportunity

The filthy state of public toilets are a deterrent to its usage. Therefore the model had to be expanded to ensure a system of self-regulation. Now, next to the toilets, facilities are offered for bathing and washing clothes. The clustering of these three activities not only spurs people to maintain cleanliness all around, it also facilitates water use cascading from one to the other. Since the first system was installed in the State of Bihar, over 7,500 public toilets have been constructed and are maintained. A network of 50,000 volunteers support and further spread the operations. The largest unit has 120 toilets, 108 bathrooms and 5,000 lockers for the convenience of visitors, mostly pilgrims to visit Shirdi in the State of Maharashtra.

The toilet complexes are located in public places like bus centers, hospitals, markets and also in slums. Trained attendants work night and day, soap is provided by the complex itself to ensure quality and minimal impact on the environment. The system has now 700 million uses per day (many people use more than once). The savings in water reaches 11.2 million cubic meters per year. The generation of biogas has been perfected to one cubic feet of methane per use per day. This implies that all systems combined represent a potential of 2.8 million cubic meters of biogas, a massive resource normally not available to the poorest of the poor.

The Sulabh organization developed on the basis of its experience a franchise model to roll out the same concept everywhere in the developing world with the support of the World Health Organization and the United Nations Development Programme. These examples permit water and sanitary experts like Prof. Otterpohl to complement this hands-on implementation with scientific knowledge providing an ideal platform for a popular application that can go worldwide and change the rules of the game for popular sanitation once and for all. Converting a public service into a franchised business model, responding to basic needs, continuously improving through the integration of science while improving the environmental performance is a business model of The Blue Economy.

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... Further information on the 100 innovations at www.theblueeconomy.org

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