

# INTRODUCING THE SANITATION ECONOMY

NOVEMBER 2017



Unilever



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RESEARCH  
COMMISSION



Confederation of Indian Industry

## SANITATION IS EVERY BUSINESS'S BUSINESS.

The Sanitation Economy presents vast potential for global economic growth while addressing one of the most urgent grand challenges of our time, achieving universal access to improved safely-managed sanitation (SDG6). It monetises toilet provision, products and services, biological resources, data and information to provide benefits across the economy and society.

The Sanitation Economy is estimated at \$62 billion market annually in India alone by 2021.

The concepts of Green Economy, Circular Economy and Smart Cities are priority management strategies for global businesses. But sanitation is rarely considered a part of these strategies, and **the role of cross-sector businesses in sanitation** is currently not fully understood.

This is the biggest opportunity in a century to transform sanitation systems into a **smart, sustainable and revenue generating economy**. By accelerating the Sanitation Economy, we can create a robust marketplace of new market opportunity that has been virtually untapped. We can do this while improving lives of the 2.3 billion currently without toilets, and ensuring the capture, safe treatment and use of **3.8 trillion litres** (500 Lpp/a x 7.6 billion global population 2017) of toilet resources which is currently lost and untreated; and by leveraging smart technologies to drive efficiency in sanitation systems, while capturing extensive amounts of data to inform business, policy, and health decision making.

The Sanitation Economy offers new ways of looking at sanitation systems: as a **solution provider for sectors and governments** facing constraints on essential resources such as water, nutrients, energy and proteins; as a **reservoir of information** about human health and behaviour; and as a **test bed** for innovation and new technologies that reinvent the toilet and its ecosystems.

It leverages **new business models and disruptive technologies** together with established technologies and businesses with scale to transform sanitation systems. **The economic case for the Sanitation Economy is clear**, evidence of existing business models, demand, and momentum is building.

**There is an opportunity now for business leaders to adopt the SANITATION ECONOMY as a new business imperative to ensure sustainable growth into the future.**



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## ABOUT THE TOILET BOARD COALITION (TBC)

Founded in 2014, the TBC is a unique business-led partnership with the ambition to address the global sanitation crisis by accelerating the Sanitation Economy. The TBC is enabling private sector engagement; connecting large and small companies; and ensuring close collaboration between private, public and non-profit sectors with the common goal to achieve Sustainable Development Goal 6 (SDG6), universal access to sanitation.

The TBC runs the Toilet Accelerator, the world's 1st accelerator programme dedicated to sanitation entrepreneurs in low-income markets.

The members of the Toilet Board Coalition believe that accelerating the Sanitation Economy will deliver significant impact to business and society.

## The Sanitation Economy links **3** distinct areas for business and societal benefit:

The Sanitation Economy is a **robust marketplace of products and services, renewable resource flows, data and information** that could transform future cities, communities, and businesses.

The Sanitation Economy is smart, sustainable, innovative, cost saving and revenue generating.



### THE TOILET ECONOMY

Toilet product and service innovation that provides toilets fit for purpose for all contexts and incomes. This spans centralised and decentralised, sewered and non-sewered, high water tables and low, low-income to high, rural, urban and peri-urban. Toilet designs apply the Circular Sanitation Economy principals to minimise waste and GHG, and capture data to feed the Smart Sanitation Economy.



### THE CIRCULAR SANITATION ECONOMY

Toilet Resources (the TBC's preferred term for human waste) that feed into a system which replaces traditional waste management with a Circular Economy approach. It connects the biocycle, using multiple forms of biological waste, recovering nutrients and water, creating value-adding products such as renewable energy, organic fertilisers, proteins, and more.

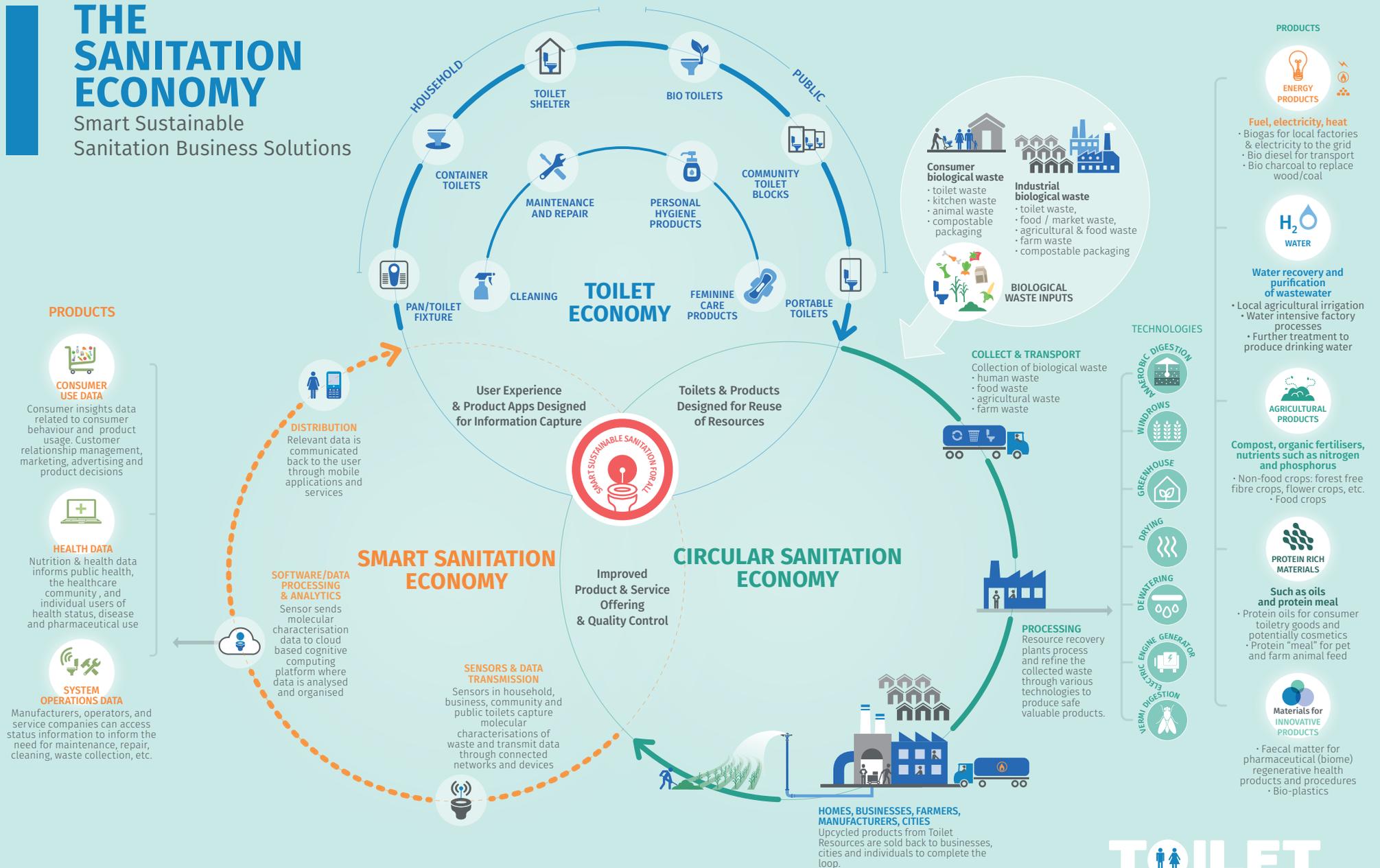


### THE SMART SANITATION ECONOMY

Digitised sanitation systems that optimise data for operating efficiencies, maintenance, plus consumer use and health information insights. Sanitation is included in smart cities architecture monitoring public toilet usage, sewage treatment, health indicators, and detects needs for maintenance and repair throughout the system.

## THE SANITATION ECONOMY

Smart Sustainable Sanitation Business Solutions



## By accelerating the Sanitation Economy, businesses can capture significant benefits:

**1** Access to the growing emerging market customer base (2.3 billion people without access to basic sanitation. 61% of the population without improved sanitation including waste management).

**2** Competitive advantage and innovation, creating smart, sustainable sanitation systems for the future.

**3** Contribution to sustainability targets - addressing resource loss and efficiencies, climate change and zero waste policies.

**4** Reducing costs and accessing new resources through the Circular Sanitation Economy - valuing sanitation waste as "Toilet Resources" and generating new revenue from valuable products derived from Toilet Resources such as energy and fuel, nutrients, proteins, water, information and more.

**5** Access to new data and information for operational decision-making and potentially new market opportunities by leveraging the mobile, digital, big data and smart megatrends for sanitation.

To realise these benefits **strong and visionary business leadership is needed** to disrupt current sanitation lock-ins and to lead the way through the transition phase with policy makers simultaneously setting the direction and creating the right enabling conditions. Other organisations can play important roles including facilitating and participating in collaborative initiatives **to unlock the business opportunity of the decade.**

### Transforming our world: the 2030 Agenda for Sustainable Development

In September 2015 the United Nations, launched the Sustainable Development Goals (SDG) to 2030. A follow-on to the Millennium Development Goals 2000-2015 which sought to halve world poverty in that time, the new SDGs pledge that no one will be left behind with 17 Sustainable Development Goals and 169 targets to achieve global sustainable development.

**Goal SDG 6.2:** By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

Source: <https://sustainabledevelopment.un.org/post2015/transformingourworld>

## SOCIETAL RISKS



- 2.3 billion people globally lack access to basic sanitation - a toilet
  - 61% of the global population do not use a safely managed sanitation service; that is, excreta safely disposed of in situ or treated off-site
  - 892 million people worldwide still practise open defecation
- All of the above from UNICEF/WHO JMP 2017
- \$260 billion: estimated global economic losses associated with inadequate water supply and sanitation (World Bank - April 2012)
    - The annual economic losses due to poor sanitation are equivalent to between 1% and 2.5% of GDP
    - The true cost could be much higher: this analysis only includes losses due to premature deaths, healthcare costs, losses in productivity, and time lost through the practice of open defecation
    - Other impacts of inadequate sanitation are likely to be significant, and further studies should include the costs of epidemic outbreaks; losses in trade and tourism revenue; impact of unsafe excreta disposal on water resources; and the long-term effects of poor sanitation on early childhood development
  - Closing the sanitation gap through pit latrines would be expected to cause large increases of India's annual greenhouse gas (GHG) emissions, equivalent to 7% of current levels (Unilever, SEAC - 2017)
  - The global water gap is 40% (SIWI)
  - Nutrient deficits are affecting food chains and agriculture



## BUSINESS OPPORTUNITY

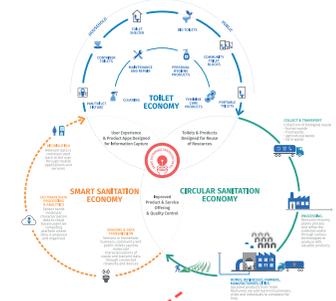
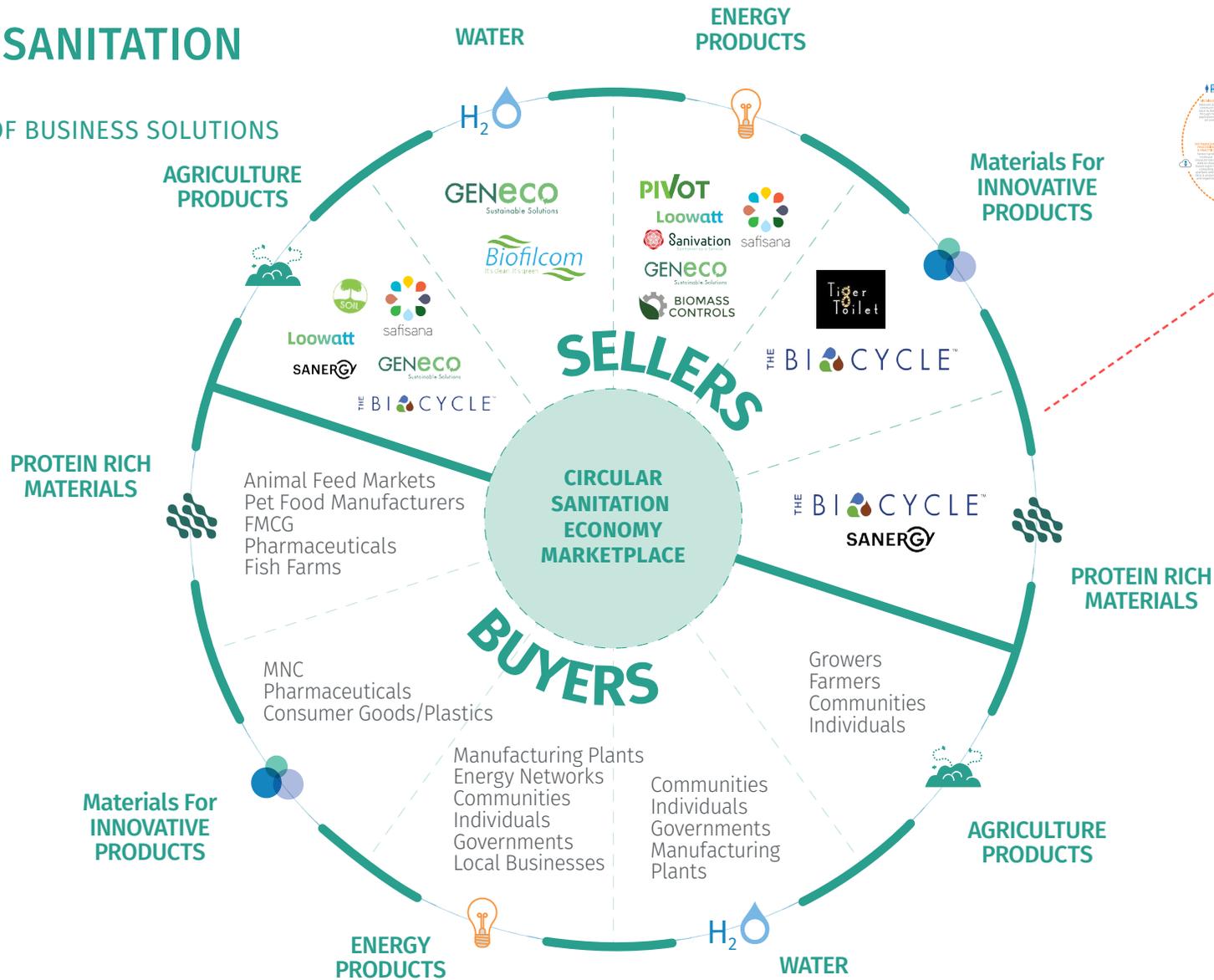


- Universal access to water and sanitation by 2030 implies all settings, not only households, but also schools, health care facilities, workspaces and other public spaces (WASH4WORK 2017)
  - 3.8 trillion litres (500 L p.p/a x 7.6 billion global population 2017) of Toilet Resources (human waste) created each year (based on current population)- reliable, renewable resource (and growing) - which can be used to create treated water, renewable energy, organic fertilisers and protein products
  - Data can be captured throughout the sanitation system to inform operational decision-making. Data captured from within the composition of Toilet Resources can provide new information related to human health and behaviour
  - For every \$1 invested in water and sanitation, \$4.30 is generated in economic returns through increased productivity
  -
- FROM TBC REPORT THE CIRCULAR SANITATION ECONOMY 2017:
- The delivery of sanitation faster, at scale
  - Lower-cost and revenue-generating sanitation delivery
  - A flexible, scalable, approach requiring less infrastructure
  - Renewable materials and energy, and improved waste disposal
  - Private sector and investor engagement



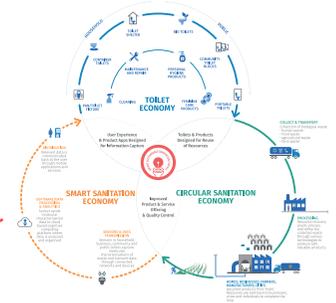
# CIRCULAR SANITATION ECONOMY

A MARKETPLACE OF BUSINESS SOLUTIONS



# SMART SANITATION ECONOMY

A MARKETPLACE OF BUSINESS SOLUTIONS



## HOW COMPANIES ARE EMBRACING THE SANITATION ECONOMY



Unilever

## TOILET ECONOMY

**The economic case is clear and on the rise.**

There is now a clear business case for building toilets and keeping them secure and well-maintained and there is an economic incentive for creating a "Sanitation Economy."

Addressing the global sanitation crisis is a key component of Unilever's Sustainable Living Strategy, with a commitment to helping 25 million people gain improved access to improved sanitation by 2020 by promoting the benefits of using clean toilets and making toilets accessible.

In 2012 we prototyped a new container based toilet for underserved families in Kumasi, Ghana. This was one of the first toilet service models which focused not on the sale of the toilet but of on the cleaning and servicing of the toilet to ensure the safe management of sanitation at home. This has now spun off into a new sanitation business, Clean Team.

In 2016 we launched our first Suvridha centre in Mumbai India. Suvridha, meaning 'facility' in Hindi, provides families with a safe, clean community centre which can service all of their water and sanitation needs close to home. The centre has toilet facilities, shower facilities, laundry facilities and a water kiosk. The centre will provide more than 1,500 people living in the slum. Based on the principles of a Circular Economy, the centre provides access to fresh water for handwashing, clean showers, safe drinking water and laundry, with the wastewater from these activities then used for flushing toilets, saving an estimated 10 million litres of water a year.

In 2017 we have launched a new affordable Domestos toilet cleaning powder to fit the specific contexts of low-income families, often with their first toilet.

## THE TOILET BOARD COALITION



## CIRCULAR SANITATION ECONOMY

**Developing Next Generation Sanitation Solutions.**

Increasing access to sanitation is a core focus of Kimberly-Clark's global 2022 Social Impact goal to improve the lives of 25 million people, along with helping children thrive and empowering women and girls. The Company aims to help accelerate the development of the Sanitation Economy and new circular business models that approach human waste, or Toilet Resources differently. Looking to the future, Kimberly-Clark is bringing its innovation capabilities to help develop commercially sustainable and scalable solutions to the sanitation crisis. As a participant in the Toilet Board Coalition's "Toilet Accelerator" programme, Kimberly-Clark employees mentor local entrepreneurs to develop new technology, programmes and business models, which convert waste from a cost to a valuable resource with the ultimate aim of creating a self-sustaining Sanitation Economy.

In 2017 members of Kimberly-Clark's Corporate Research & Engineering team have been helping to mentor BioCycle, an innovative South African business, on the development of a unique production technology which uses fly larvae to convert waste into high value products including animal feed and biodiesel. This is just one solution of many in the Circular Sanitation Economy where entrepreneurs around the world seek to generate revenue from waste, creating an economic incentive to develop new sanitation systems in underserved regions.

## HOW COMPANIES ARE EMBRACING THE SANITATION ECONOMY

**LIXIL**

Link to Good Living

TOILET ECONOMY

**Reinventing toilets for all.**

In 2016, LIXIL created a specialised and dedicated business unit called SSI, or Social Sanitation Initiatives, to accelerate the design and production of new toilet and water technology solutions that are fit for purpose for low income families, water scarce and non-sewered locations around the world, as well as exploring new systems for the circular sanitation economy. SSI is an entrepreneurial startup nestled inside a \$16 billion company, able to take advantage of the resources and expertise found inside one of the world's largest players in sanitary ware.

Though the SSI unit has several prototypes and/or toilet technologies in development, it already operates a commercial business in its award-winning SATO brand of products (<http://www.sato.lixil.com/>). Launched in 2013 with one model – the “SATO Pan” – this business is now global, offering a range of products tailored to local market preferences. SATO delivers improved sanitation to over 6 million users in over 15 countries today. SATO products are designed and produced to suit the needs and preferences of users in different regions and offer high quality, durable products with price points that start at \$2 per pan. Created to improve the user experience and safety of open-pit latrines in rural communities, SATO products enable communities to achieve ODF goals with convenient, affordable, and sustainable product innovations.

LIXIL has set a target of improving access to sanitation and hygiene for 100 million people by the year 2020. LIXIL's SATO business unit is playing a key role in achieving this, and is now strengthening its manufacturing capabilities and coverage. To date, it has established manufacturing license agreements in five countries including Bangladesh, India and Uganda, and working with local companies to expand further in countries such as Nigeria, Ethiopia and South Africa. In addition, LIXIL is trialing the Portable Toilet Systems (PTS), a container based system for urban areas, in partnership with Manila Water Corporation that is expected to launch in the near future.

**TATA TRUSTS**

SMART SANITATION ECONOMY

**Leveraging India's business assets for sanitation.**

The vision of Tata Trusts is to impact positively the lives of 100 million underserved people in India by 2021. One of the key themes for Tata Trusts is the area of Water, Sanitation and Hygiene, where Tata Trusts aims to create a healthy future for underserved people by providing safe, assured and adequate drinking water through direct interventions; and by facilitating improved sanitation and hygiene facilities. The Swachh Bharat Mission (SBM) of the Government of India has set October, 2019, as the deadline for making India Open Defecation Free. In 2016, Tata Trusts became a development support partner to the government, for all aspects of sanitation and toilets in the SBM. In 2017, Tata Trusts launched Zila Swachh Bharat Preraks (ZSBP), a cadre of 600 skilled “young professionals” to support the administration to implement the SBM, one in each district, across India. An initiative the Prime Minister of India called, “praiseworthy” via Twitter. In the last few years, the Indian economy has been one of the fastest-growing. This has meant growth opportunities for businesses across sectors, and more specifically for the Sanitation Economy related to the drive under the SBM. The Tata Group companies are getting involved to test new potential business solutions across the Sanitation Economy. Tata Trusts is supporting new toilet and waste management businesses across India, as also identifying new opportunities to create Smart Sanitation solutions.

In 2017, with the Toilet Board Coalition, Tata Trusts has supported the linkage of global and local businesses to the Pune Municipal Corporation to create the world's first Smart Sanitation City. This initiative leverages two main areas of focus and growth in India today, sanitation systems and smart cities infrastructure, where India's strong IT sector can be leveraged. Sanitation systems can leverage the sensors being implemented around cities to collect data and information, which amongst other uses, helps support repair and maintenance in the water and sanitation management systems. Monitoring capabilities of the smart cities platform can track behaviour change and usage patterns. Further, additional possibilities are opening up for the future - new sensor technologies and usage in the sanitation system and the toilets that may help data-driven personal health monitoring, public health decision-making, and many others.

## HOW COMPANIES ARE EMBRACING THE SANITATION ECONOMY

# Firmenich

## TOILET ECONOMY

### Making Safe Toilets, Save Lives

Many toilets in the developing world, especially pit latrines, don't get used because they smell bad and people prefer to relieve themselves in the open where the air is fresher. This is a worrying trend that threatens to undermine the progress that's been achieved to-date in global sanitation.

When we realized that smell could play a critical role in enabling more responsible hygiene habits, we decided to be part of the solution. The science of smell is our business. We have a legacy of world-class science, including a Nobel Prize in Chemistry and over 2,900 patents in force today. That is why the Bill & Melinda Gates Foundation approached us to join their 'Reinvent the Toilet Challenge' and co-finance a broad-based 5-year research program to uncover the science of malodor. We sent our scientists out in the field to understand the science of bad smell in latrines across India, South Africa, Kenya and Uganda. Toilet odours are complex, with more than 200 different chemical compounds arising from faeces and urine that change over time and vary depending on the health and diet. Mobilizing our research teams from Geneva to New York, we applied our world-class science in receptor biology to isolate the chemical components responsible for the malodor. This focused work enabled us to develop break-through technologies that effectively counter the malodor in toilets.

Today, we are launching projects in communities across India and Africa, in partnership with sanitation entrepreneurs, to understand the applications and fragrances that will make toilets and pit latrines more inviting for users. Our goal is to bring these solutions to the populations most in need through affordable and easy-to-use hygiene products.

As a business, we deeply believe in partnerships for impact. Given the scale of today's sanitation challenge, no single sector can solve it alone, which is why we are committed to working with policy makers, local governments, educational institutions, as well as the private sector.



a Saraplast Enterprise

## TOILET ECONOMY

### Pioneering Silicon-Valley style start up culture to Sanitation in India.

Saraplast is a start-up sanitation business that got its start in supplying the demand for portable toilets to businesses with temporary workers such as construction sites and festivals. After almost 10 years of operations, the company is now worth over 10 million, one of the most successful sanitation businesses in India.

Saraplast is now innovating its offering in the sanitation sector to include household toilets and a set of aspirational public toilets for women (which the founder calls "restrooms" or feminine health and hygiene centres) and which currently sit on refurbished buses in public spaces around the city of Pune. The Toilet Integration Toilet Bus for women is now also becoming a kiosk of feminine hygiene products and services with the aspiration to become accessible health centres for women, while providing e-commerce options.

1

**Mitigate Sanitation Risks**

Understand your company's exposure to the risks of poor sanitation

2

**Provide Sanitation Access**

Ensure access to sanitation for employees, including supply chains

3

**Choose your Sanitation Economy Strategies**

Choose the areas of the Sanitation Economy where your company can add value and create new business opportunity

4

**Collaborate**

Collaborate with the business leaders, entrepreneurs and innovators of the Toilet Board Coalition to create robust ecosystems for your Sanitation Economy strategies

5

**Lead**

Be an advocate for accelerating the Sanitation Economy with business partners, governments and stakeholders

# CALL TO ACTION



**TOILET**  
BOARD COALITION

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