



SANITATION ECONOMY MARKETS: NIGERIA



With Strategic Support From

DECEMBER 2020

ABOUT THE TOILET BOARD COALITION

Established in 2015, the Toilet Board Coalition (TBC) is a business-led partnership platform with the goal to accelerate the transition to the sanitation economy. Our ambition is to transform sanitation systems from unaffordable public costs into robust marketplaces of sustainable business value.

The TBC is facilitating private sector engagement; large-small company partnerships and public-private collaboration to contribute to the achievement of Sustainable Development Goal 6 – universal access to water and sanitation.

We run accelerator programmes and implement strategic projects dedicated to growing sanitation economy business solutions that are smart, circular and resilient to address the unmet sanitation needs of the world's most vulnerable.

The members of the Toilet Board Coalition believe that accelerating the sanitation economy will deliver significant benefits to business and society.



ACKNOWLEDGMENTS

We would like to thank all those who contributed to the preparation of this report for their valuable inputs and insights. In particular we would like to thank the Toilet Board Coalition team and Saikat Mookherjee, who joined us for this work.

The authors are especially grateful to RTI Innovation Advisors, who partnered with the Toilet Board Coalition to bring this document to life. Their expertise and guidance on adapting our methodology from India to new contexts and their wealth of knowledge on sanitation in Africa enabled us to bring together a piece that we are proud of.

This work would not have been possible without the support of WSSCC. Their vision for the role this piece can play in the sector, particularly amidst their own internal transition to the Sanitation & Hygiene Fund, is moving.

As the Toilet Board Coalition's networks and work in Nigeria is limited, we are particularly grateful to the individuals who offered their time for interviews and to review and contribute resources and recommendations to the work: Elizabeth Jeiyol, Halima Abubakar, Dr. Nicholas Igwe, John Sauer and Ada OkoWilliams.

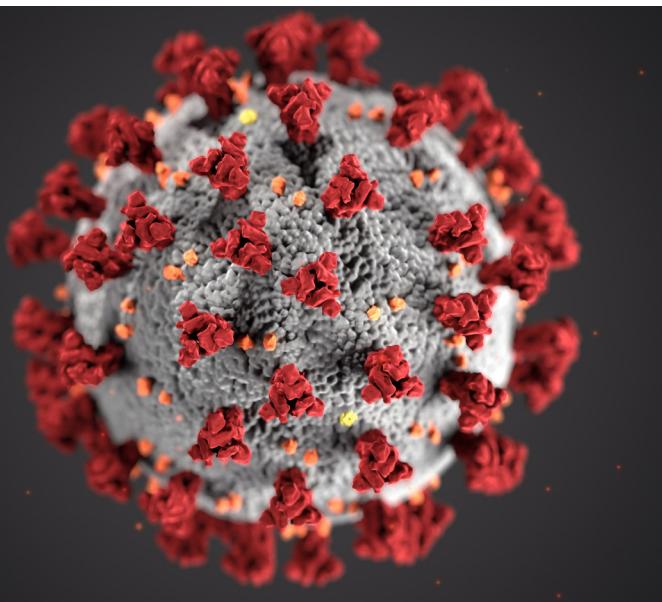
We thank the Toilet Board Coalition members for their contributions and review of the report and their on-going leadership in the sector.

DISCLAIMER

The contents of this paper provide a synthesis of our discussions and findings from the study. All information has been subject to the interpretation of the authors, the Toilet Board Coalition Secretariat, and does not necessarily represent the views of all Toilet Board Coalition members or those companies and experts who participated in the study.

FOREWORD

AS GLOBAL MARKETS BEND, SHIFT AND LOOK UP TO A REVIVAL UNDER THE WEIGHT OF 2020 AND COVID-19, WE HAVE SEEN INCREDIBLE RESILIENCE THROUGHOUT THE SANITATION ECONOMY AND MOST INNOVATIVE BUSINESSES IN THE SECTOR HAVE THRIVED.



1. See [Toilet Board Coalition Resources](#)

With COVID-19, our world has restored the crucial role of sanitation and hygiene in the context of human health and wellbeing and begun appreciating the interdependence of health and stable ecological and environmental systems. Against this backdrop, we have observed some entrepreneurs finding ways to broaden their impact, despite challenging circumstances, growing and developing their businesses with speed to meet heightened demand and react to new opportunities around improved sanitation services that ensure health. Others have bravely weathered the reality of cities shut down and services at a stand-still for a season. A quiet revolution is going on; the sanitation economy is expanding, with sustainable and resilient business models, in spite of and alongside COVID-19. And our work at the Toilet Board Coalition has never felt more relevant.

Over the last five years the Toilet Board Coalition members have driven a shift towards a new framing of sanitation. Replacing outdated perceptions around sanitation as solely a sector of public cost,

with old technologies and unrealistic targets, we advocate for the business opportunity of sanitation. The sanitation economy is a holistic, sustainable and economically-viable approach to sanitation that capitalises on innovation, harnesses the power of smart technologies and is fuelled by the local and global private sector. To propel this transition in thinking, we have developed a market estimate methodology to quantify for stakeholders what a thriving sanitation economy might look like in their geography.

Our first application of the methodology, in 2017 for India, wielded an opening of doors throughout India to this approach. The exercise of attaching a number to the market opportunity of sanitation has brought the potential into perspective for businesses and governments. We have seen greater attention, innovation and engagement across the sector as a result. We have since looked at the market opportunities of the sanitation economy for South Africa, and in 2020 revisit the numbers for India, and now Kenya and Nigeria.

EXECUTIVE SUMMARY

Home to the largest and one of the youngest populations in Africa, Nigeria stands out as culturally diverse and economically powerful nation. The country's vast natural resources fuel its agricultural and energy sectors. A fast-growing tech sector – propelled by increased foreign investment and a burgeoning startup community – signals an appetite for innovation and entrepreneurship amongst Nigeria's citizens. However, amidst great cultural and economic influence, significant challenges remain. The World Bank recently announced that by 2022, approximately 11 million more Nigerians are expected to fall into poverty due to the COVID-19 crisis, bringing the national total to over 100 million. Provision of basic services, such as sanitation, remains weak. According to the latest numbers from the World Health Organisation (WHO) and UNICEF in the Joint Monitoring Project (JMP) of 2019, only 39% of Nigeria's 191 million citizens have access to safely-managed and basic sanitation and a stark 23.5% of the population still defecates in the open.²

The Nigeria Water and Sanitation Program in 2012 estimated that poor sanitation was costing the country the equivalent of \$3 billion annually, or 1.3% of the national GDP, in lost time, premature deaths, productivity losses and health care expenses.³ For Nigeria to be on track to achieve SDG 6, it would need to triple its current budget's allocation to WASH⁴. It is clear that innovation and new solutions must be brought to bear in Nigeria.

COVID-19 and a crash in oil prices in 2020 have hit the Nigerian economy hard but there has been growth, even in these challenging times, for water and sanitation services, telecommunications services and the agricultural sector⁵. This echos the Toilet Board Coalition's experience that sanitation businesses are remarkably recession-proof due to consistent customer demand, even in times of hardship. COVID-19 and the resulting disruption of global supply chains have forced businesses to

2. JMP data 2000–2017

3. WSP Report: [Economic Impacts of Poor Sanitation in Africa](#) 2012

4. UNICEF: [Water, Sanitation and Hygiene](#)

5. Nairametrics: [These are the fastest growing sectors of the Nigerian economy](#) August 2020

6. UN FAO & Toilet Board Coalition: [Future Proofing Sustainable Agriculture Systems](#) 2020

\$15.5 BILLION

**SANITATION ECONOMY
MARKET OPPORTUNITY
IN 2021**

\$26.1 BILLION

**SANITATION ECONOMY
MARKET POTENTIAL
BY 2030**

2030 PROJECTIONS:

\$22.5 BILLION
Toilet Economy

\$1.0 BILLION
Circular Sanitation Economy

\$2.6 BILLION
Smart Sanitation Economy

shorten their supply chains and increasingly to turn to local resource streams to fuel their operations – this is evident in the agricultural sector specifically and could open doors in a new way to products from the circular sanitation economy⁶.

There is a strong national political will to drive towards open defecation-free (ODF) status, however more federal consistency, local ownership and accountability is necessary. Sanitation amongst the majority of actors in Nigeria is still perceived as ‘toilets’; hence the current focus of even the Clean Nigeria Campaign on ODF. The Clean Nigeria Campaign to drive to being ODF by 2025 is happening amidst a context of political insecurity and economic challenges, compounded by COVID-19. The campaign lacks the unifying and rallying figure as that India had through Ghandi.

Considerable work has been done over the years around regulations- and roadmap-building towards ODF but there are still significant gaps to be filled around waste collection, treatment and re-sell products.

There is a general understanding and desire for the private sector to drive WASH services; however, despite the interest and appetite, understanding as to how to develop private sector contributions is relatively weak. Demonstrations of how the public and private sectors can work together to deliver sustainable services to citizens are needed, specifically mechanisms that give to the private sector and innovation the enabling regulatory environment to flourish, whilst still

providing public stakeholders with the oversight needed to care for their citizens. The careful introduction of public–private partnerships (PPPs) in the operation and maintenance of selected water systems can be a potentially game-changing opportunity, allowing the sector to replenish its skills and learn from experimentation, whilst also placing competitive pressure on public operations to offer better, more efficient services.⁷

There is a readiness by citizens to pay something towards sustainable sanitation services but the current price points still outpace what is financially feasible for potential consumers⁸. There have been advancements around innovative credit solutions that can help to bridge this gap, but both public and private stakeholders will need to collaborate to facilitate this.

CATALYSING A WORKFORCE

Nigeria has made efforts to advance the training capacity and job-creation aspects of sanitation. The Nigerian Federal Government has announced a National Water, Sanitation and Hygiene Capacity Building and Research Programme to strengthen the Nigerian workforce for sanitation delivery, to drive the ambition to eliminate open defecation by 2025 and to provide universal access to sanitation by 2030. The programme is focused on young adults seeking undergraduate education and career paths, senior- and middle-level manpower, artisans and technical field workers and also on continuous learning opportunities for all existing sector professionals.⁹

7. World Bank Group: [A Wake Up Call](#) 2017

8. [Rethinking Approaches to Sanitation in Nigeria](#)

9. Water Aid: [Water, sanitation and hygiene capacity building and research programme to run in selected Nigerian universities](#) February 2020

ABOUT THIS PAPER

The objective of the study is to estimate the size of: the sanitation economy markets of products and services; renewable resource flows; data; and information at a country level for Nigeria, deep-diving into products and services for the toilet economy, circular sanitation economy and smart sanitation economy.

The following pages outline the methodology, give a brief introduction to the sanitation economy approach and then detail the opportunities and estimates for each of the three areas of the sanitation economy. It is important to note that we are estimating the potential addressable market of the sanitation economy operating at scale in a particular geography. These estimates, therefore, do not reflect the current reality. As the sanitation economy scales, the market reality and this work will come into alignment. For instance: if the toilet resources (the TBC's name for human waste) are not collected from sanitation facilities across the country, the products and market estimations of the circular sanitation economy cannot be realised. Many of the businesses graduating from the Toilet Board Coalition's Accelerator are already addressing portions of this market (though not in Nigeria) through their products and services, as are the broader private and development

sectors, so the market numbers listed should not be considered wholly untapped opportunities. Indeed, it is our relationship with those tapping into this market potential that provides us with the data to estimate how the market can develop.

We provide first a number for 2021 and then build towards 2025 for medium-term future and 2030 at the close of the UN's Sustainable Development Goals (SDGs), when our collective work should result in universal access to sustainable, safely-managed sanitation systems.

In principal, the market estimations are a formula of population and market value of products and services, with considerations for cultural and national context. The products and services included are not exhaustive to the sanitation economy but, rather, align with the market under consideration. They were selected based on data availability, pertinence to our current entrepreneurial network and relevance. Data sources are from reputable published work by government and trusted sources, combined with on-the-ground knowledge and insights from the Toilet Board Coalition's entrepreneur network.

APPROACH FOLLOWED

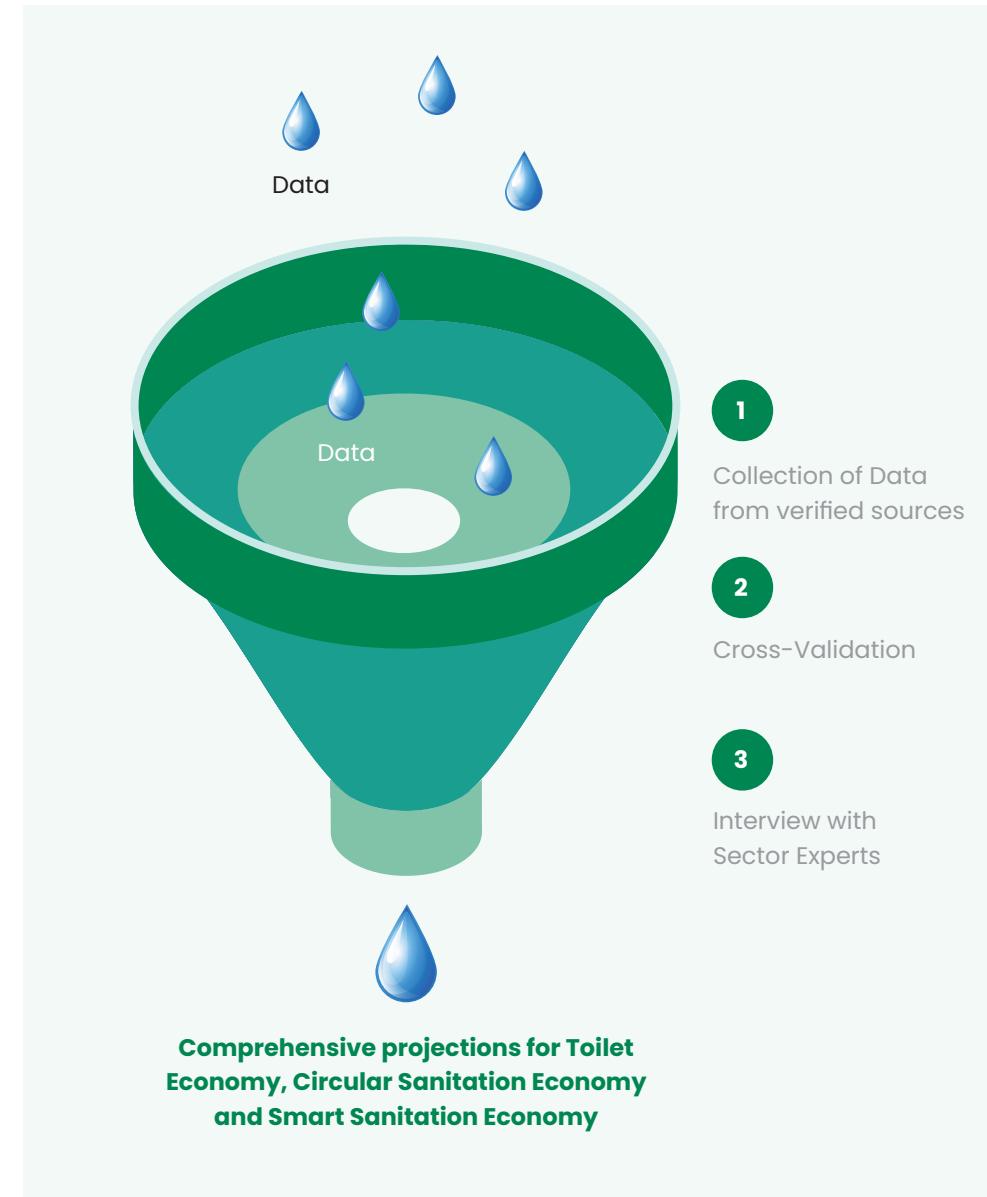
OBJECTIVES OF THE EXERCISE

The objective of the study is to estimate the size of the sanitation economy markets of products and services, renewable resource flows, data and information at a country level for Kenya, deep diving into products and services for the toilet economy, circular sanitation economy and smart sanitation economy.

APPROACH FOLLOWED

The overarching approach followed for the estimations was a **modified top-down approach**. In this approach, high-level chunks of information at the feature or design level were estimated and were decomposed progressively into smaller chunks or work-packets as information was expanded. For this approach, extensive secondary research to collate verified data from the published government or trusted sources was collated and cross-verified with other indicators. Care was taken to scan each source of information in terms of the following aspects:

- **Validity:** data clearly and adequately represent the intended result
- **Integrity:** data have safeguards to minimize risk of transcription error or data manipulation
- **Precision:** data have sufficient level of detail to permit management decision-making
- **Reliability:** data reflect stable and consistent data collection processes and analysis methods over time
- **Timeliness:** data available at a useful frequency, are current, and timely enough to influence management decision-making



SANITATION ECONOMY

The team referred to 50+ leading publications and notifications from government; development partners plus INGO project reports; leading consulting firms; research publications; notifications; press releases; and interviews with entrepreneurs. An elaborate depiction of the secondary sources referred to has been provided at the close of the report. Another unique feature of this approach is the fact that it aims to arrive at the universal figures of numbers of toilets under each sub-component before using existing market-based assumptions (validated from real stakeholders in the market) and statistics-based growth rates to estimate the future scenario of products and services. The modelling technique also attempts to build up an algorithm, which has several sub-components, that can be updated in line with the real-time price revisions across various geographies.

TOILET ECONOMY

- Household Toilets
- Community Toilets
- Public Toilets
- O&M and high-relevance auxiliary products

CIRCULAR SANITATION ECONOMY

- Biogas
- Electricity
- Biochar
- Agricultural Products
- Animal Feed

SMART SANITATION ECONOMY

- Health Data
- Smart Technologies
- Smart Logistics
- Data Analytics & Applications

THE SANITATION ECONOMY

The sanitation economy is a growing marketplace of products and services, renewable resource flows, data and information that is transforming cities, communities, and businesses and driving progress towards the Sustainable Development Goals.

The Toilet Board Coalition has previously published 14 reports on the Sanitation Economy, unpacking its value and impact across sectors, supply chains and cities. Our 2019 report, 'Scaling Up The Sanitation Economy' details the sustainable and scalable business models we see operating in this space and the financial scenarios of the scaling from a government and private sector perspective. Learn more at: <https://www.toiletboard.org/resources>

In this model, all natural and biological resources (energy, nutrients, water), as well as valuable information about human health and behaviours, are used to generate value within three domains: the toilet economy, circular sanitation economy, and smart sanitation economy. Each offers business models with new revenues, while providing economic, environmental and social benefits.

Grounded in collaboration between private and public sectors, the sanitation economy is a place where innovation, entrepreneurship and investment bring new business opportunities to what used to be seen as an unaffordable public cost.

The sanitation economy harnesses one of the population's most consistent and yet overlooked daily activities to provide valuable resources and information to our population. It is a source of energy, nutrients and water that uniquely grows with the population.

The sanitation economy links three distinct areas for business and societal benefit:

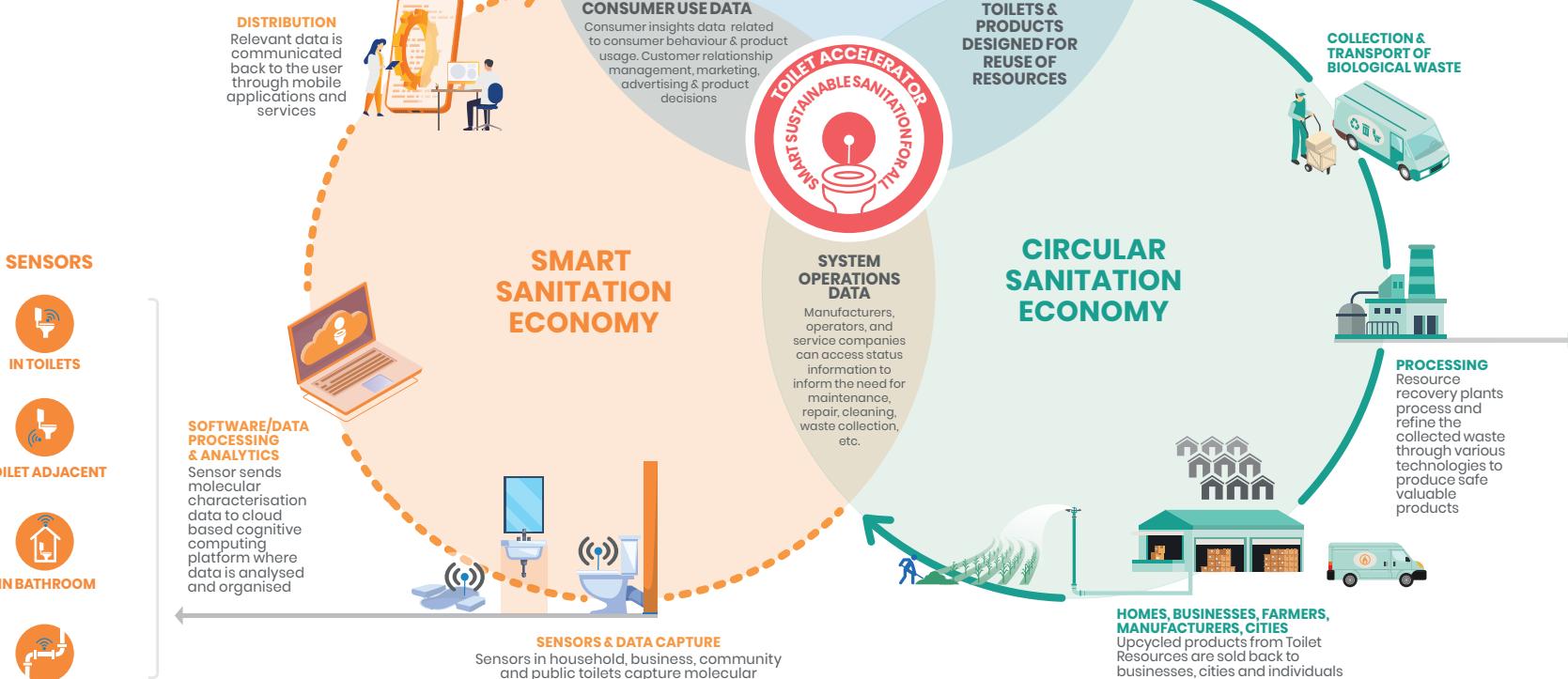
THE TOILET ECONOMY: Products and services that provide safe toilet access for all, whether public or private. This spans centralised and decentralised, sewered and non-sewered, high and low water tables, low-income to high, rural, urban and peri-urban. Toilet designs apply circular sanitation economy principals to minimise waste and greenhouse gases and capture data to feed the smart sanitation economy.

THE CIRCULAR SANITATION ECONOMY: Toilet resources (The TBC's preferred term for human waste) 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 and health indicators, and detects needs for maintenance and repair throughout the system.

THE SANITATION ECONOMY

MARKETPLACE



Fuel, electricity, heat

- Biogas for local factories & electricity to the grid
- Bio diesel for transport
- Bio charcoal to replace wood/coal



Water recovery and purification of wastewater

- Local agricultural irrigation
- Water intensive factory processes
- Further treatment to produce drinking water



Compost, organic fertilisers, nutrients such as nitrogen and phosphorus

- Non-food crops: forest free fibre crops, flower crops, etc.
- Food crops



Such as oils and protein meal

- Protein oils for consumer toiletry goods and potentially cosmetics
- Protein "meal" for pet and farm animal feed



• Faecal matter for pharmaceutical (biome) regenerative health products and procedures

- Bio-plastics

THE SANITATION ECONOMY AND THE SUSTAINABLE DEVELOPMENT GOALS

The sanitation economy takes sanitation beyond SDG6 and becomes an enabler for water and food security, mitigates climate change and advances human rights. It places sanitation at the centre of a new grid which fundamentally realigns flows of nutrients, water, energy, data and capital.



Climate Action / Affordable and Clean Energy

Contributions to slow climate change by producing renewable energy and reducing carbon and methane emissions, helping businesses meet low carbon targets, while also helping agricultural systems adapt to changing rainfall patterns.



Clean water and Sanitation

Providing water security through new sources of clean water for agricultural and industrial use, reduced contamination of existing water sources, lower water use in sanitation, and reduced need for irrigation.



Zero Hunger

Providing food security by improving soil health, agricultural productivity, climate change resilience, and reducing plantation operating costs through organic fertilisers and soil conditioners .



Good Health and Well-being

Improving the health of workers, both with sanitation's traditional function of preventing disease transmission, and also by providing real-time data for preventative and reactive healthcare for employees.



Sanitation can create new economic value and becomes a solution provider for urgent business and societal issues that address many of the Sustainable Development Goals – from water security, to climate change, food security and human rights.



Industry Innovation and Infrastructure

Enabling innovation, sales, marketing and consumer research opportunities with consumers in developing markets.



Gender Equality

Enabling female empowerment and health benefits.



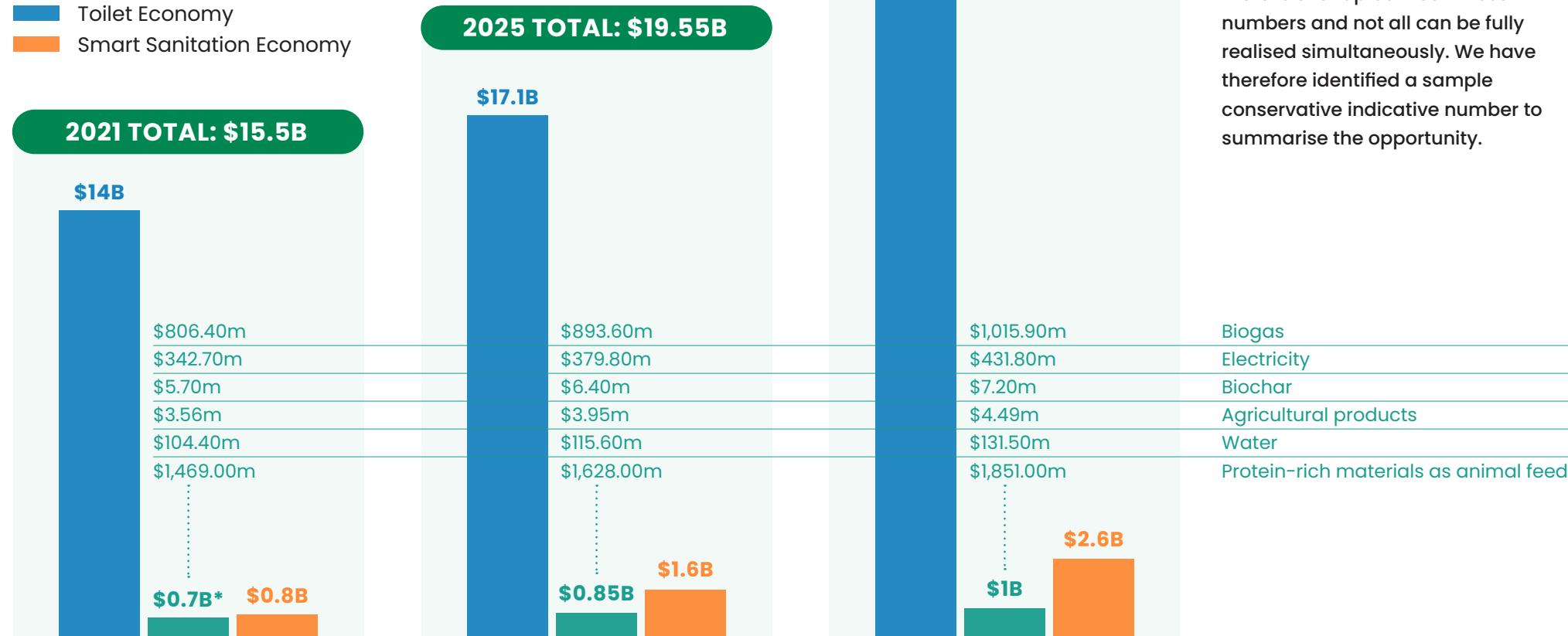
Responsible Consumption and Production

Creating a waste pathway for all forms of compostable (biological) waste, preserving nutrients and energy in the process, and enabling the replacement of plastic items with compostable alternatives.

THE SANITATION ECONOMY QUANTIFIED

That table below summarises the annual market opportunity for each of the three sanitation economy domains in 2021, 2025 and 2030. All estimates are presented in USD and notes whether they are in the millions or billions. For these calculations we have used a fixed currency conversion rate of: 1 USD = 381.5NGN.

- █ Circular Sanitation Economy
- █ Toilet Economy
- █ Smart Sanitation Economy



THE TOILET ECONOMY



MARKET INSIGHTS

There are currently limited toilet product offerings for rural and peri-urban consumers. A diversified suite of products that meet customers' specific needs and preferences will be important, once customers have entered the market.

Traditional toilet technologies require bespoke installation and skilled labour. The government has made moves to expand the workforce to fill this gap but further research and development to simplify the installation process would unlock growth.

Most waste that is safely managed is contained in situ. There are very few operating treatment plants for fecal sludge in Nigeria.

Research has shown that community and shared toilets do not produce the sense of ownership required to activate a shift away from open defecation.¹⁰

Despite significant opportunity, high costs of entry and consumer acquisition hamper market expansion and limit incentives for distributors to enter the market.

10. [Rethinking Approaches to Sanitation in Nigeria](#)



FOCUS ON HEALTH

Preventing infections is one of the key objectives of the innovations, technologies, products and services that make up the Toilet Economy, eg: handwashing with soap after the use of a toilet is a primary line of defence around infectious diseases and with COVID-19. Similarly, cleaning, sanitisation, operation and maintenance of toilets are aimed at addressing filth and malodour; a primary trigger of disgust that can lead to individuals turning to open defecation and other infectious disease-spreading behaviours.

The WHO/UNICEF JMP 2015 report reveals that, in Nigeria, almost a third (29%) of hospitals and clinics do not have access to clean water and the same percentage do not have safe toilets, whilst one in six (16%) do not have anywhere to wash hands with soap. The risk is high for babies and mothers in healthcare facilities that do not offer a hygienic birth environment and have inadequate WASH facilities.

2020 and the COVID-19 pandemic have added further stress to an already crippled infrastructure. The African Development Bank estimates 80% of Nigeria's health facilities are at different levels of operational dysfunction.

Sources: WaterAid: Nigeria's Sanitation Crisis, 2016 & African Development Bank Group: [African Economic Outlook 2020](#)

THE TOILET ECONOMY

Aligning with the TBC's experience developing sanitation economy market estimates for other geographies, the cleaning services and menstrual health products are the most significant financial opportunities in the toilet economy. Of primary importance is first bringing customers into the sanitation economy market through access to sanitation. The recurring purchasing power related to services like cleaning, operations and maintenance holds important keys to the business viability of serving the Nigerian market. As highlighted throughout this publication, profit margins to serve this market are low, so entrepreneurs and public stakeholders need to collaborate and innovate to ensure sustainable services and product availability to serve the population. We see across toilet economy markets that scale is key, whether through volume of sales or breadth of products and services.¹¹

In other publications we have calculated the market for toilet products and services associated with public office spaces. We were unable to find sufficient data to calculate an estimate for this category in Nigeria.

CASE STUDY / WET: THE WATER EASY TOILET

WaterAid Nigeria launched the Water Easy Toilet (WET) as part of its sanitation marketing (SanMark) approach, as a way of providing entrepreneurial opportunities and, at the same time, encouraging communities towards latrine uptake to end open defecation. WET is a dual-model improved toilet whose design is based on the inputs and needs of prospective users. It is durable, affordable, readily available, easy to install and also user-friendly for people living with disabilities. It is demand-adaptable and can easily be produced and installed by local masons, block industries and related businesses.

Sanitation marketing is a market-based approach that has the potential to solve the social problem of open defecation as well as to contribute to the economy of communities and states by providing job opportunities.

Source: Water Aid: [Case studies from the Sustainable Total Sanitation project January 2016](#)

11. USAID: [Creating Viable and Sustainable Sanitation Enterprises March 2020](#)

EXCERPT: RETHINKING APPROACHES TO SANITATION IN NIGERIA WITH WATERAID

TBC Member WaterAid collaborated with the Institute for Fiscal Studies (IFS) for the impact evaluation of its STS Nigeria project, funded by the Bill and Melinda Gates Foundation. The main objective of the project was to work out ways to increase and sustain toilet ownership and usage in order to eliminate open defecation in communities in the long run. Specifically, the research activities undertaken focused on examining the effectiveness of two tools for reducing open defecation and increasing good toilet sanitation practices in Nigeria.

The research aimed at investigating the efficiency of Community-Led Total Sanitation (CLTS) – which was officially adopted by the Nigerian government in 2008 as a national strategy for scaling up sanitation and hygiene in the nation. It also sought to investigate the effectiveness of Sanitation Marketing (SanMark), a relatively new development, in its testing and learning phase, which, similar to CLTS, aims to increase private investments in toilets but does so by working with and through supply agents.

The combination of CLTS and SanMark was chosen because, combined, they intervene on both the demand and the supply side of WASH markets and products. What CLTS does is simply to provide graphic information about the dangers of bad toilet practices to communities. The broad idea is to trigger a desire for collective behaviour change in communities (demand), stir people into action – constructing and using toilets – and encourage innovation and mutual support. On the other hand, SanMark seeks to increase the supply of affordable toilets, especially Water Easy Toilets (WET) so that when community members are triggered and are considering their toilet options, they end up constructing safe, functional and hygienic toilets. According to WaterAid, “WET is a branded line of high-quality household sanitation products, including hygienic, low-water-use toilets suitable for a wide range of on-site sanitation environments”.

Highlights of Findings:

- CLTS is not enough. Although CLTS worked in poor communities by increasing the ownership of functional toilets and improved toilets, the impact was not substantial. Based on the research findings, open defecation in poor communities reduced by just under 10% over the three-year period. On the other hand, CLTS had no impact in the comparably better off, ‘richer’ communities selected for the project.
- SanMark, in its current form, is still a young intervention with potential. The activities include the development of a low-cost, affordable and aspirational toilet, named the Water Easy Toilet (WET); approaching and training of potential sellers of these toilet models; and identification and training of sales agents, who work with the interested businesses. WaterAid made significant advances in all of these aspects but continues to refine its current model, and wider market-enabling factors need to be targeted to address the country’s sanitation gap.
- Although Water Easy Toilets are being sold by more businesses, sales are still low. Research findings show that, whilst purchases of these toilets trickled in lightly, the overall sales were low and the profit margin for businesses who sell them is also low.
- Sales agents (going door-to-door) play an important role in facilitating product sales: just as polio door-to-door campaigns have increased the number of children getting immunised against the disease, sales agents who went door to door to market WET products were seen to be influential in increasing the purchase of WETs, especially to households that did not own private sanitation facilities previously and households that wanted to upgrade their toilet facilities.

Source: [Rethinking approaches to sanitation in Nigeria](#)

EXAMPLE OF METHODLOGY BREAKDOWN

Estimated numbers of toilets per establishment were arrived at based on secondary data, which have been provided in course of discussion. The cost of products for the maintenance of toilets and manpower was calculated as per existing norms, to arrive at the estimate for the current year. For future projections, revisions at existing rates were considered. This was on the basis of exhaustive secondary research and interaction with policy makers and the few entrepreneurs/sector experts working in the domain.

For example: to arrive at **soap usage/handwash figures** for Nigeria, the sum of urban and rural household numbers was derived for the year 2021, using Census 2019 figures and applying 2.6% growth rate per annum. The urban and rural household size calculated was also as per the 2019 census. As understood from various sources we have interacted with, an average expenditure on soaps per toilet is 30 USD/annum. All calculations were performed on USD/ annum, which was then converted to USD Mn.

PRODUCT OR SERVICE	2021	2025	2030
Household or Community			
Rural Toilets (new installations)	\$59.7m	\$67.10m	\$66.70m
Rural Toilets (upgrades & emptying services)	\$797.80m	\$884.10m	\$990.60m
Mid/High Income Urban Toilets	\$264.10m	\$321.90m	\$402.60m
Low-Income Urban Toilets	\$38.60m	\$42.80m	\$48.60m
Public			
Schools/College/Universities	\$36.10m	\$39.70m	\$43.70m
Railway & Bus Stations	\$0.20m	\$0.30m	\$0.30m
Airports	\$0.01m	\$0.01m	\$0.01m
Malls	\$0.003m	\$0.003m	\$0.004m
Hotels/Accommodation units	\$0.30m	\$0.30m	\$0.30m
Hospitals	\$2.40m	\$2.70m	\$2.70m
O&M and high-relevance auxiliary products			
O&M (cleaning) for household & community	\$3,023.10m	\$3,549.10m	\$4,738.20m
O&M (cleaning) for public	\$2,331.30m	\$3,339.50m	\$5,264.20m
Hand washing using soap	\$1,363.10m	\$1,999.30m	\$3,226.10m
Menstrual health and hygiene products	\$6,094.70m	\$6,753.70m	\$7,678.50m
Total	\$14.0b	\$17.1b	\$22.5b

THE TOILET ECONOMY

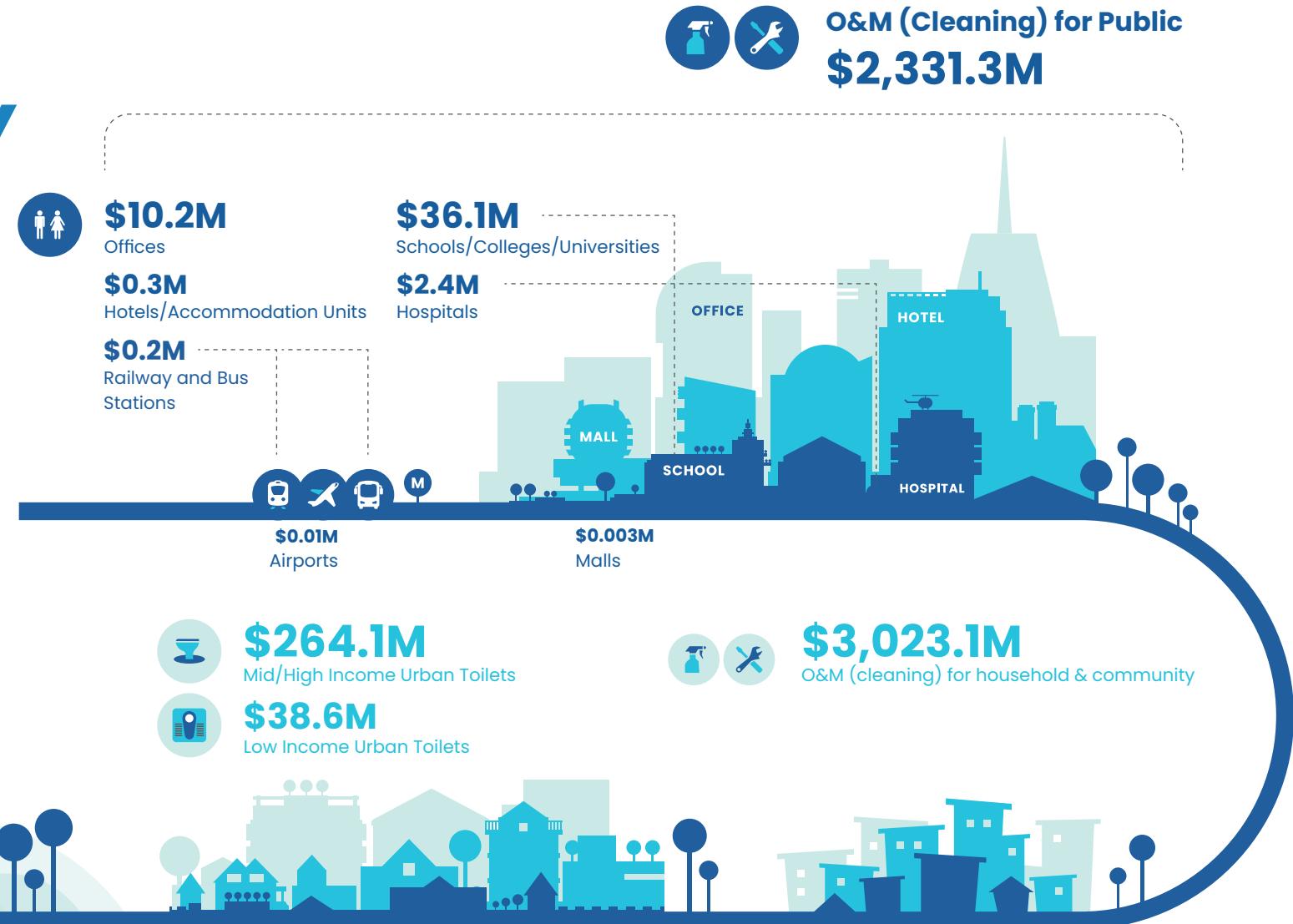
2021

 **\$6,094.7M**
Menstrual health & hygiene products

 **\$1,363.1M**
Hand washing using soap

 **\$59.7M**
Rural Toilets (new installations)

\$797.8M
Rural Toilets (upgrades & emptying services)



CIRCULAR SANITATION ECONOMY



MARKET INSIGHTS



The collection and treatment of toilet resources (the Toilet Board Coalition's preferred term for human waste) is imperative not only from an environmental and public health perspective, but also from a business perspective. It is the addition of these services and the services of the Smart Sanitation Economy that shifts Sanitation Economy business models into profitable territory. To learn more please read '[Scaling the Sanitation Economy](#)'.

As mentioned at the outset of the piece, Nigeria's focus remains directed at improving access to sanitation and the strength of the toilet economy. In order to unlock the financial viability of a sanitation economy, stakeholders must widen their gaze also to include the circular sanitation economy.

The collection and treatment of toilet resources is imperative not only from an environmental and public health perspective, but also from a business perspective. It is the addition of these services and the services of the smart sanitation economy that shifts sanitation economy business models into profitable territory.

Toilet resources provide new reservoirs of renewable resources, such as water, energy, nutrients and protein for animal feed. In the circular sanitation economy, new technologies are creating more cost-efficient, decentralised alternatives to the capital-intensive waste management systems of today.

Biogas production and protein for animal feed are usually the two most significant financial opportunities presented through our market estimates. We should not, however, only factor in the numbers, as the environmental benefits to agriculture from compost, nitrogen, phosphate, potassium and water are important. For a true circular approach, the nutrient value of the resources should be prioritised for the optimum long-term value to be realised. Agriculture remains the largest sector in Nigeria contributing an average of 24% to the nation's GDP over the past seven years (2013 – 2019).

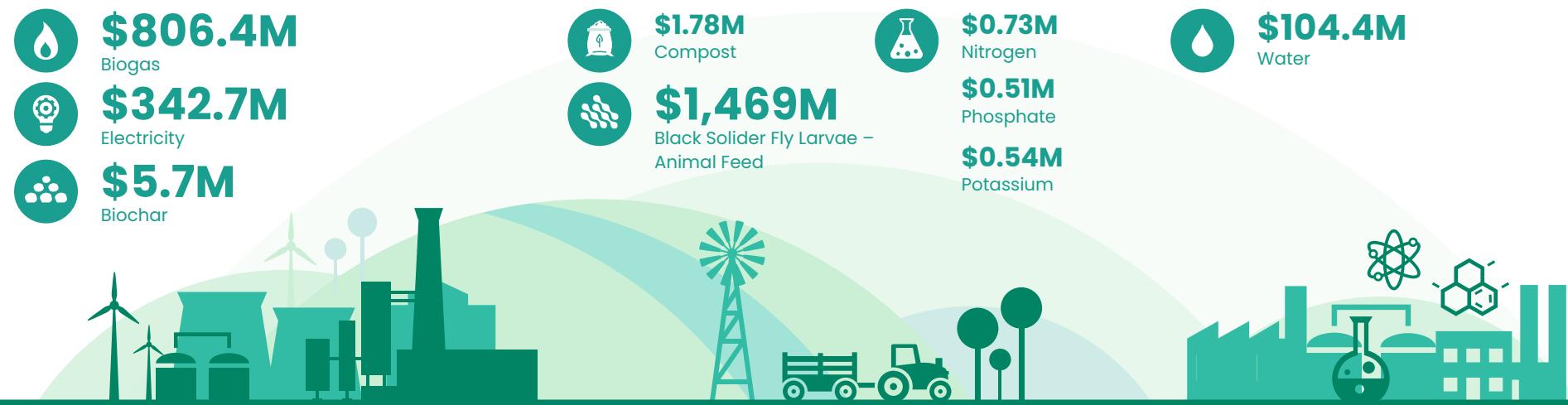
EXAMPLE OF METHODOLOGY BREAKDOWN

The basis of calculation of the first four components of the circular sanitation economy was the Toilet Resource Calculator, coined by the TBC. Taking the same into consideration and extrapolating the same on Nigerian population numbers, the amount of toilet resource was calculated in quantity terms per annum. An extensive search for unit cost was conducted and the average value was multiplied by the quantity to arrive at estimates for the sub-components. It may be noted here that the sub-components are mutually exclusive and may not add up to a total figure as they would do for the rest of the economies under consideration.

For example: to arrive at **biogas-generated figures** for 2021, 2025 and 2030, the TBC calculator for waste resources was used. Population figures were derived on the basis of the 2019 census and 2.6% growth rate per annum was computed to arrive at figures for 2021, 2025 and 2030 respectively. Since, in the TBC calculator, the biogas output was assumed at MJ of heat, this was converted to kWh of energy used and existing energy costs were applied in order to arrive at final estimates of biogas production.

PRODUCT	2021	2025	2030
Biogas	\$806.40m	\$893.60m	\$1,015.90m
Electricity	\$342.70m	\$379.80m	\$431.80m
Biochar	\$5.70m	\$6.40m	\$7.20m
Compost	\$1.78m	\$1.97m	\$2.24m
Nitrogen	\$0.73m	\$0.81m	\$0.92m
Phosphate	\$0.51m	\$0.57m	\$0.65m
Potassium	\$0.54m	\$0.60m	\$0.68m
Water	\$104.40m	\$115.60m	\$131.50m
Black Solider Fly Larvae – Animal Feed	\$1,469.00m	\$1,628.00m	\$1,851.00m

2021



SMART SANITATION ECONOMY



MARKET INSIGHTS

In the Fourth Industrial Revolution, digital technologies and data are disrupting industries and providing new ways to create business value. In the smart sanitation economy, sensoring technologies and earth observation via satellite technologies provide real-time monitoring of sanitation systems, bringing operational efficiencies and new insights about human health and consumer behaviour.

In reviewing the opportunities and potential of a smart sanitation economy in Nigeria, the challenge of power (electricity) must be taken into consideration. Whilst there is a lot of innovation currently happening in the technology and IT sectors in Nigeria, taking to scale and conversion of the innovations to viable businesses is hampered by the lack of a steady/adequate power supply to fuel the innovations.

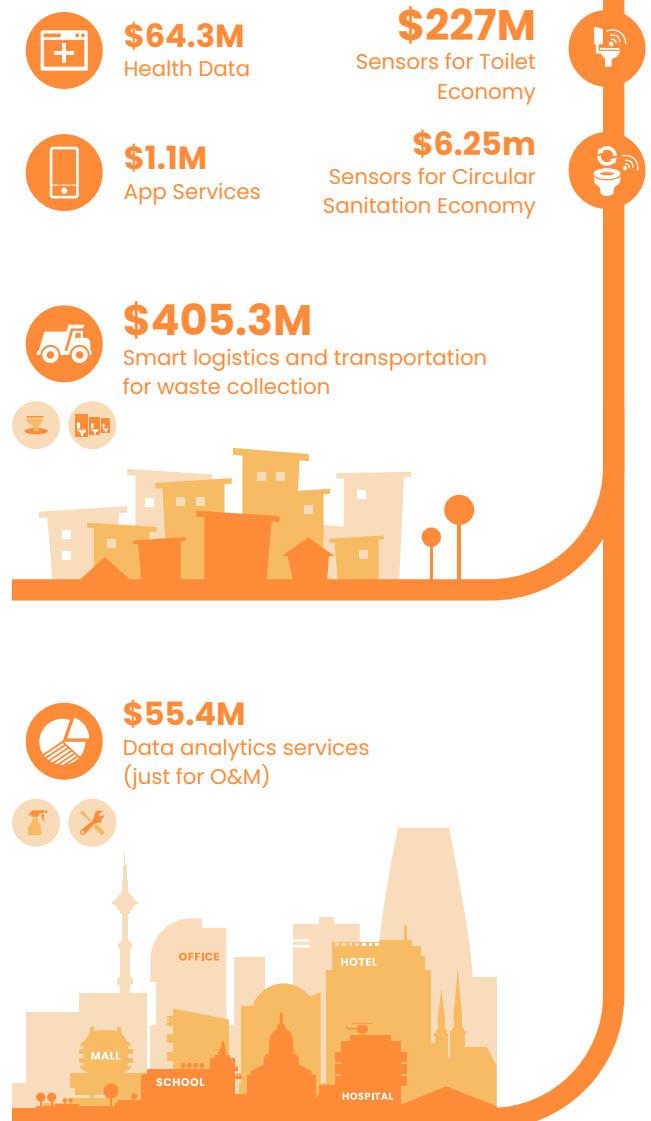
We advocate that this is an opportunity to revisit as the other elements of the sanitation economy are realised. Urban contexts and toilets in public spaces will have earlier opportunities to reap the benefits of smart sanitation technologies due to their proximity to supporting technologies and congruent data streams.

EXAMPLE OF METHODOLOGY BREAKDOWN

The smart sanitation economy is based on futuristic concepts of monitoring health or ironing out infrastructure bottlenecks, based on the emerging digital landscape. In relation to each of the sub-components, data from trusted sources were referred to and cross-referenced with other data points. For example: smart logistics and transportation for waste collection was cross-referenced with total community in the urban slums. It was assumed that, for four households, one community toilet facility was available and that for emptying the latrines, a cost of 118.9 USD/annum is being levied. All calculations were performed on a USD/annum basis, which was then converted to USD Mn.

For example: for estimating the **sensor-fitted toilet technologies**, the number of toilets in public spaces, which was calculated in the toilet economy, was used as the starting point. It was assumed that an organic growth in adoption of sensors would occur in those toilets (which was 5% from 2021-2023, 10% from 2025-2027 and 15% from 2028-2030). For calculation, replacement demand was assumed at every four years. An average cost of a sensor module at existing market rate in NGN (Nigerian Naira) was considered. After adding up all the estimated revenue, the exchange rate of USD and NGN was taken into consideration (1 USD = 318.5 NGN) to arrive at figures in USD Mn.

PRODUCT OR SERVICE	2021	2025	2030
Health data	\$64.30m	\$134.70m	\$339.30m
Sensors for toilet economy	\$227.00m	\$831.10m	\$1,385.20m
Sensors for circular sanitation economy	\$6.25m	\$5.43m	\$6.250m
Smart logistics and transportation for waste collection	\$405.30m	\$449.10m	\$510.60m
Data analytics services (just for O&M)	\$55.40m	\$162.20m	\$391.90m
App services	\$1.10m	\$2.30m	\$3.70m
Total	\$809.40m	\$1,584.80m	\$2,637.00m



CALL TO ACTION

The members of the Toilet Board Coalition have come together to align and amplify private sector engagement and investment in the sanitation sector. With this work, we hope to catalyse further focus and investment within Nigeria as she progresses towards sustainable sanitation for all her citizens.

And we reiterate The World Bank's 2017 call to all stakeholders: "To generate a sustained impact, the WASH sector must be fully co-ordinated with the interventions and programming of associated sectors, such as public health, education, urban and rural development, environment, and governance. The combination of such interventions will have more impact than the sum of their parts."¹²

12. The World Bank : [A Wake Up Call](#) 2017

1

GOVERNMENTS

We call on public stakeholders to address the high interest rates and lending practices in the financing sector, incentivise investment and innovation for SMEs in the WASH sector, and consider concessions and rebates for WASH and allied sectors as stimuli for investments. Make WASH a focus in poverty alleviation/youth empowerment programmes and initiatives. Commission a comprehensive review of the enabling environment to address the bottlenecks in policies, institutional arrangement and effective citizen participation.

2

PRIVATE SECTOR

We call on the private sector to continue developing innovative products and services that address inequalities and promote universal, equitable, sustainable access for all. Work with complementary stakeholders to identify ways for your business sustainably to enter and grow your presence in this market.

3

INVESTMENT

We call on the investment sector to continue working with governments and the private sector to build innovative lending mechanisms that enable SMEs and consumers to initiate a sanitation economy marketplace throughout Nigeria.

ADDITIONAL SOURCES

SL	REPORT TITLE	PUBLISHED BY	DATE OF PUBLICATION
1	AFDB Statistics Pocketbook	AFDB	2019
2	Digital Market Overview: Kenya	Frost & Sullivan Report	2018
3	Evaluation of the UNICEF supported Federal Government of Nigeria Water, Sanitation and Hygiene Programme (2014–2017)	Ministry of Health, Govt. of Kenya	2020
4	Nigeria beyond GDP	Deloitte	2014
5	Sanitation, drinking-water and hygiene status overview	UN Water – World Health Organization	2014
6	NIGERIA BIENNIAL ECONOMIC UPDATE - Water supply, sanitation & hygiene—a wake-up call	World Bank Group	2019
7	Unmasking the Naija lifestyle	Ipsos	2019
8	PROMISING PRACTICES IN WASH – Some case studies of Nigeria	UK AID – European Union – UNICEF	2017
9	Nigeria's sanitation crisis	Water Aid	2016
10	Ensuring sustainability and improving functionality water supply facilities through VLOM in Nigeria – from pilot to national strategy	F. Khan, M. Niang, Z. Jurji & G. Mahato (Nigeria)	2018
11	https://www.ng.undp.org/content/nigeria/en/home/sustainable-development-goals/goal-6-clean-water-and-sanitation.html	UNDP	2020
12	https://www.wateraid.org/ng/press-releases/water-sanitation-and-hygiene-capacity-building-and-research-programme-to-run-in	WaterAid	2020
13	UN – World Water Development Report – Wastewater, the untapped resource	UNESCO	2017
14	JMP datasets for Kenya	JMP	2020
15	The World Bank data	The World Bank	2020
16	A review of the hotel industry in Nigeria: size, structure and issues	Belinda Nwosu (Wavecrest College of Hospitality, Lagos, Nigeria)	2016