

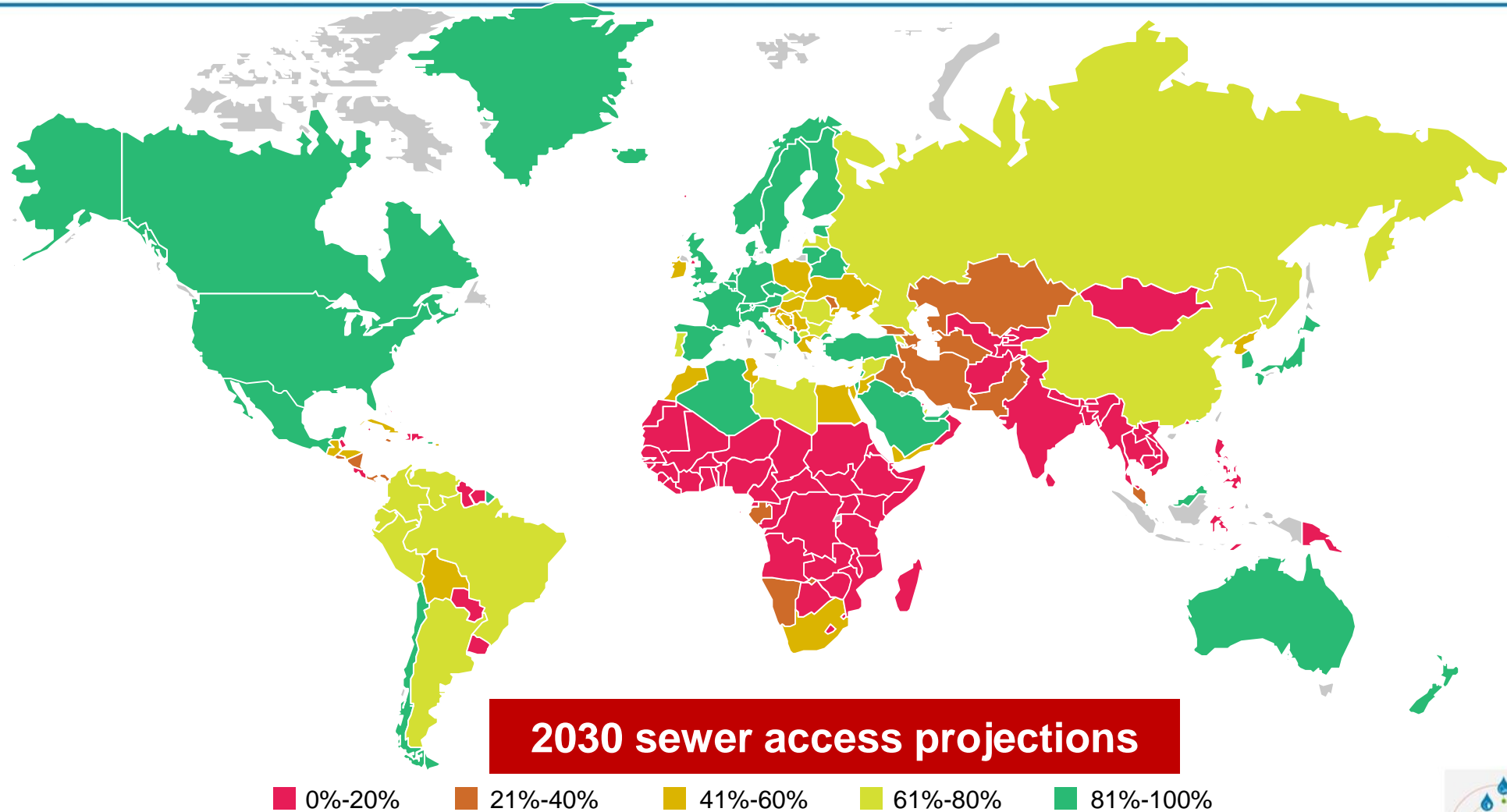
Transformative Sanitation Technologies: A New Path To Safe Sanitation For All



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Water Sanitation & Hygiene
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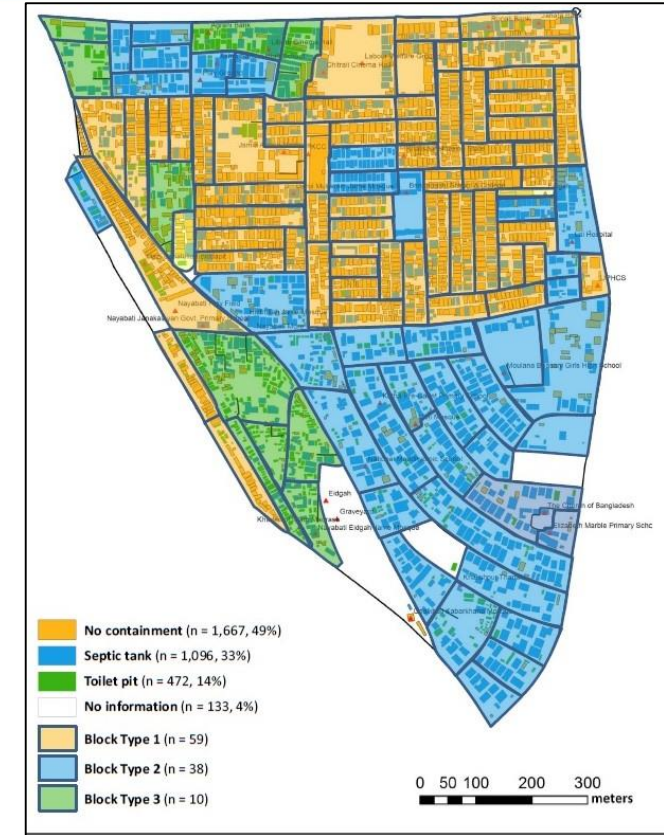
Many parts of the world will continue to lack access to sewers



Note: countries in gray do not have data reported
Source: JMP 2017 Report; BCG analysis



Khulna City, Bangladesh (1.5 million population)



Safe Sanitation- means entire sanitation value chain



Transformative Technologies: 3 sub-portfolios

- REINVENTED TOILET



Single-unit (SURT)



Multi-unit (MURT)

- OMNI INGESTOR



- OMNI PROCESSOR



Household scale

Multi-unit scale

Pumping and processing

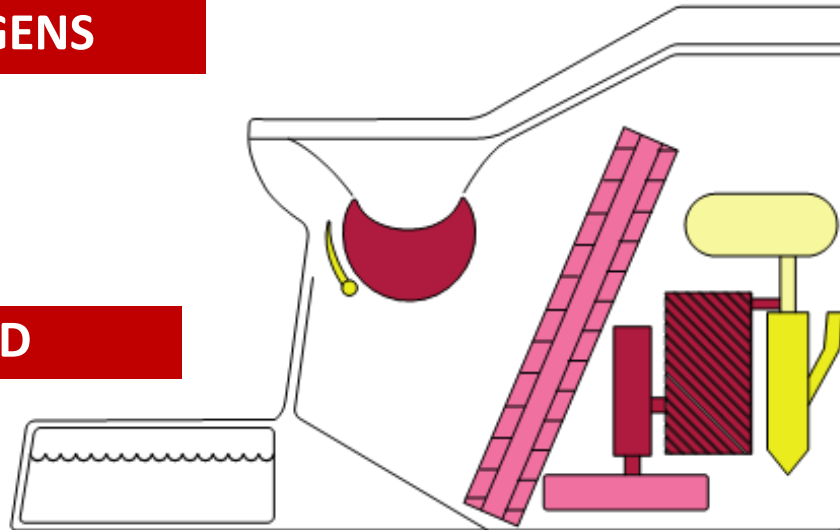


Re-inventing the toilet-address daily challenges

The Reinvented Toilet is a modular, transformative technology that offers a non-sewered sanitation solution, eliminating the need for a piped collection system. The aim is to: destroy all pathogens onsite and recover valuable resources, operate without sewer, water or electricity connections and cost less than \$0.05/user/day

ELIMINATE PATHOGENS

OPERATE OFF GRID



CONVEY LOW LIFE-CYCLE COSTS

PRESENT ATTRACTIVE INTERFACE



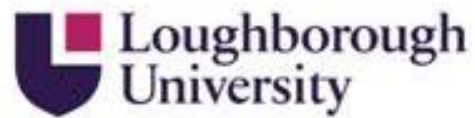
Our core processing technologies

- Electrochemical



Caltech

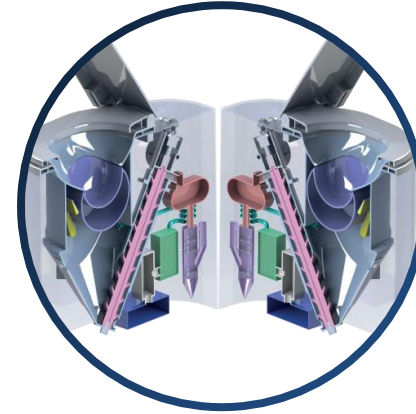
- Wet oxidation



eawag
aquatic research ooo



- Dry combustion

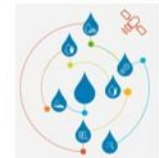
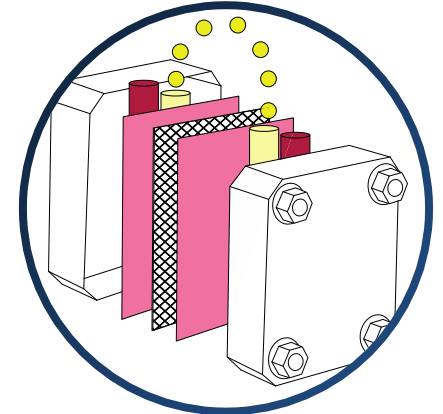


Cranfield
UNIVERSITY



JANICKI BIOENERGY

- Biological



Nano-membrane Toilet (Cranfield University)

IWA Project Innovation Awards – Gold winner!!



<http://www.nanomembranetoilet.org/>



Caltech Electrochemical toilet | details

Use Cases: *MURT*

- Scalable; capable of servicing 50-800 users per day with one system.

Key Features:

- Unique electrochemical cells process mixed wastewater
- Process effluent can be reused as toilet flush water.
- Compatible with any type of flush toilets (squat pan, western style, etc.)
- At least one commercial partner prototype can be fully containerized

Commercialization: *Partnerships with large and small companies, open to additional partnerships*

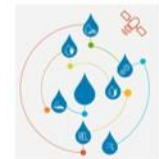
- Patents pending in the United States, India, and China. See WO 2014/058825 A1 for further information.
- Test licenses in place with multiple commercial partners with path to commercial license. No commercial licenses negotiated to date.

Learn More: <http://hoffmann.caltech.edu/>

2017 EcoSan prototype of public toilets (MURT), also available in a fully containerized solution.



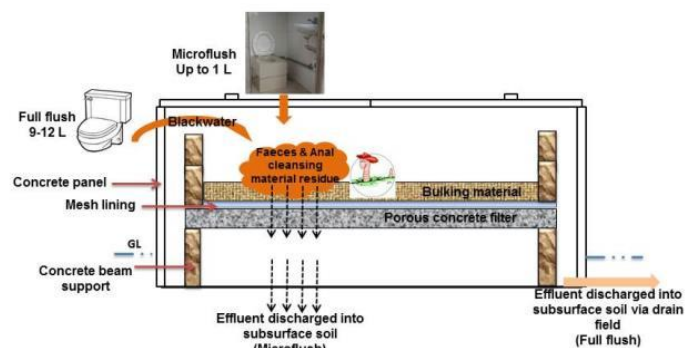
Earlier prototype of the CalTech technology



Loowatt– Laguna PTS Pilot



Biofil toilet



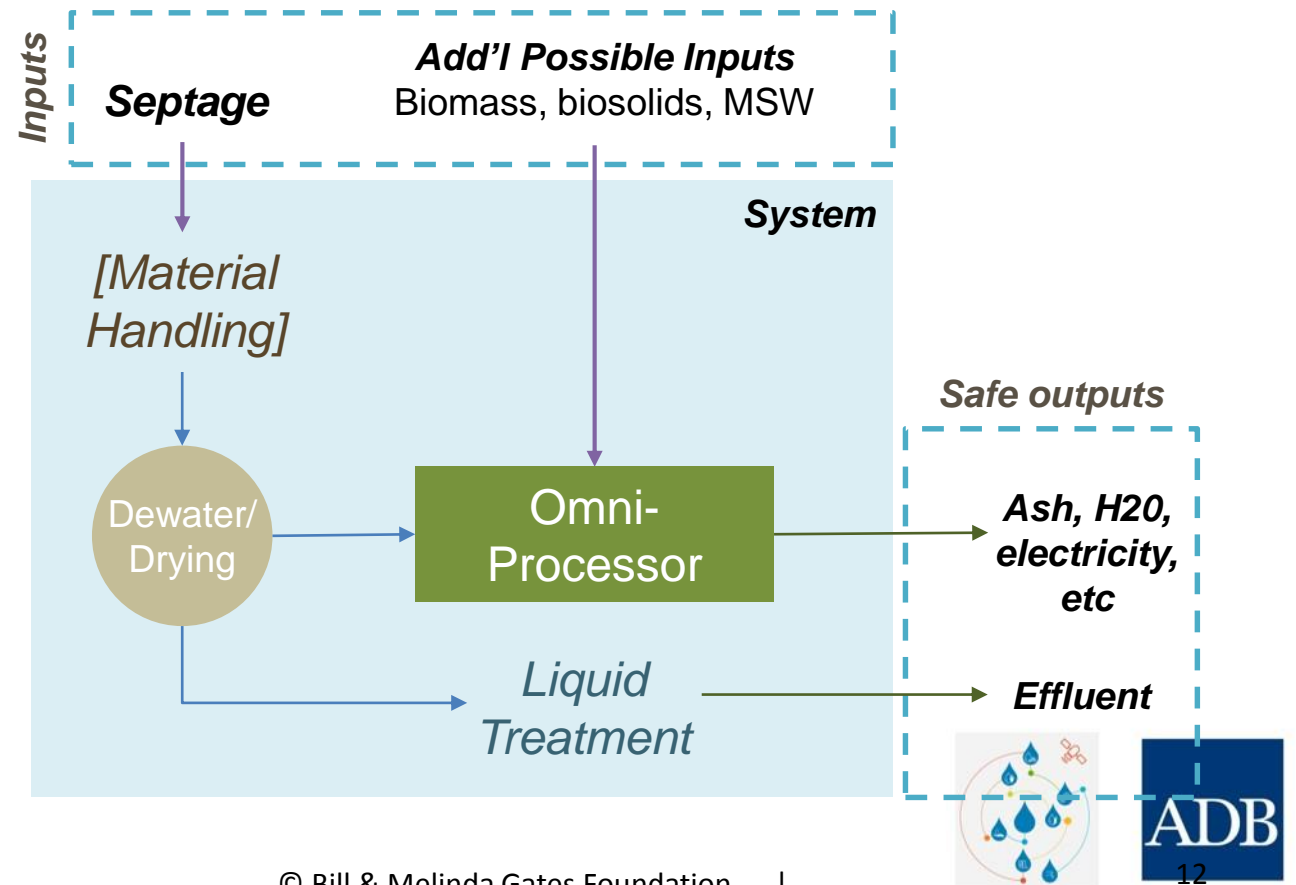
The era of innovation in the toilet industry has come. On May 24th, 120 experts from 33 countries met on top of the World, in Nepal and approved a new standard ISO 30500 that set requirements for toilets that kill pathogens, and do not produce any waste. #ReinventedToilet

Dr. Doulaye Kone
Deputy Director, BMGF WSH
Chairman, ISO PC 305



What is the omni-processor?

- A component of a fecal sludge treatment plant (FSTP), or combined WWTP/STP and FSTP providing the treatment element in the FSM value chain
- Results in safe and effective treatment of fecal sludge (pathogen free)
- May generate valuable outputs (e.g., electricity, fertilizer, water, ash, etc)
- May require less land / foot print than traditional treatment
- Ideally energy neutral



Janicki omni processor (JOP) Technology

patented technology designed for city level use, produces usable outputs

- JOP TECHNOLOGY TO BE ADAPTED BY THREE DIFFERENT COMMERCIAL PARTNERS

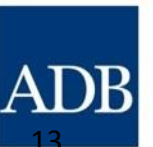


Current JOP Version 2 characteristics – varies by commercial partner adaptations

- Population served: ~ 300k-400k people (v2 size)
- Kills all pathogens; no harmful emissions
- Produces:
 - Electricity: 300 kW (250 kW net)
 - Dry sterile ash (fertilizer)
 - Distilled / potable water: 80,000 liter/day

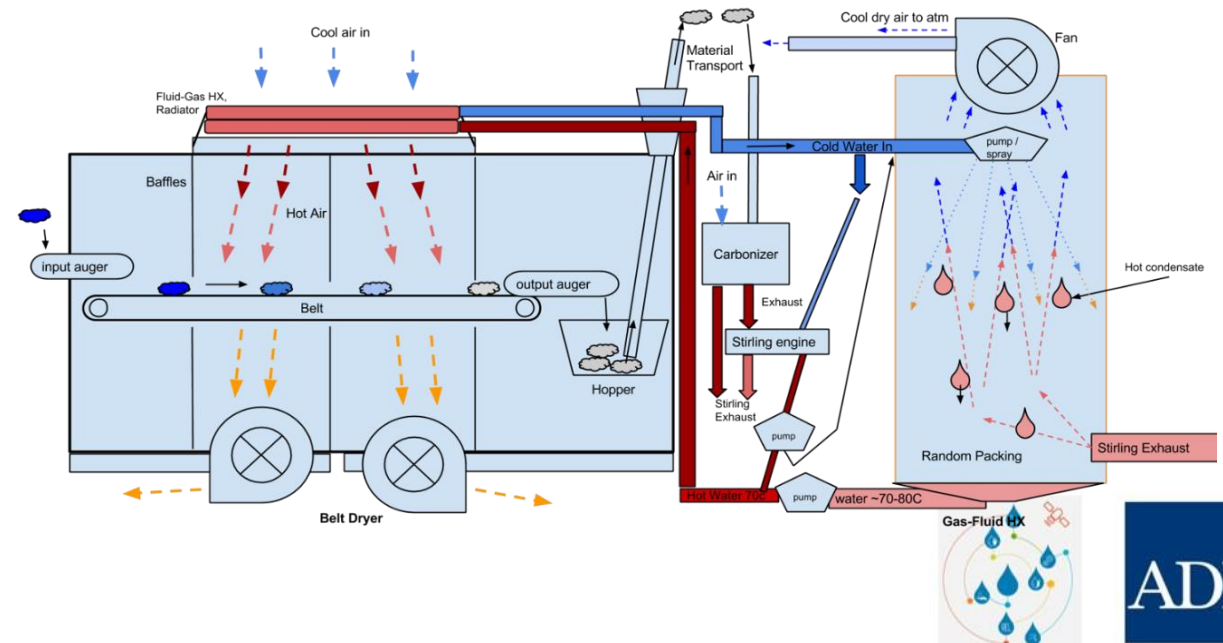
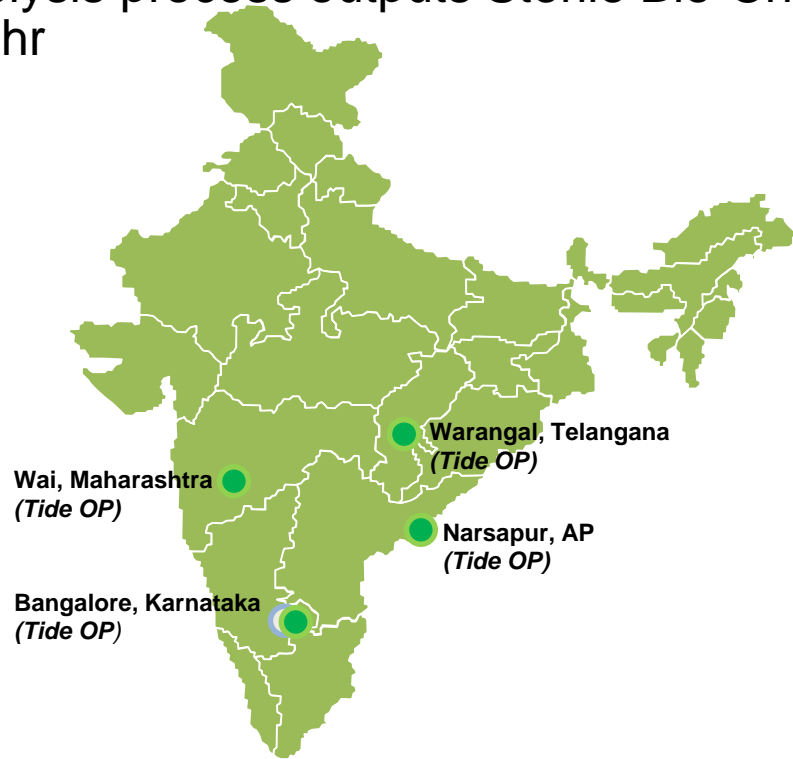
Learn More:

- **Janicki Bioenergy:** <https://www.janickibioenergy.com/janicki-omni-processor/how-it-works/>
- **Ankur Scientific:** <https://www.ankurscientific.com/>
- **CRRC:** <http://www.crrcgc.cc/en>

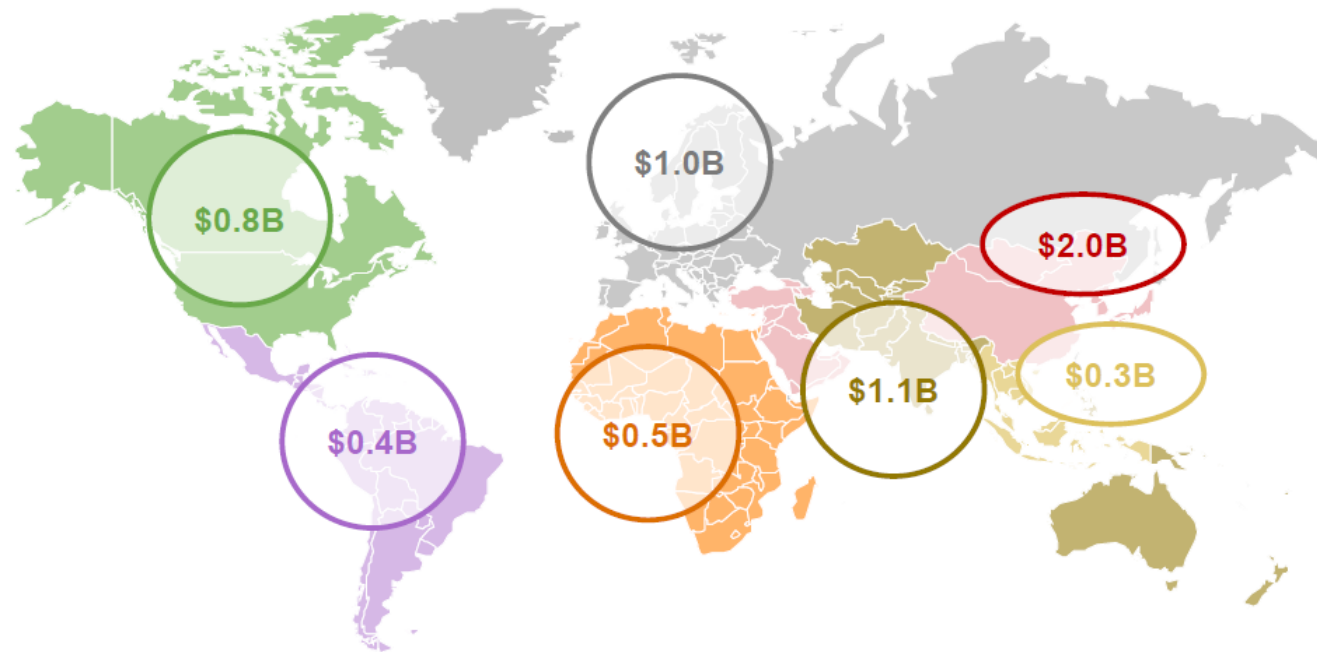


Tide technocrats OP technology

- Population served 15,000 – 30,000 people
- Kills all pathogens, pyrolyzing sludge at 600 to 800 degree Celsius
- No harmful emissions
- Pyrolysis process outputs Sterile Bio-Char 4kg.hr



Reinvented Toilet represents a potential \$6B+ global annual revenue opportunity



2030 projections

Technology currently in pilots and ready for commercialization

Ecosystem of partners and enablers exist to plug into

Extensive market intelligence conducted to inform business model

STeP and BMGF continue to develop market and enabling environment to maximize opportunity

Need Successful Demonstration Sites

People come to visit our FSTP thinking it's a new park



Khulna, Bangladesh





Business opportunities for innovations

PR/MC1 / 25 Window/ 2510 /2018.

SWACHHA ANDHRA CORPORATION
#303, Vijaya Lakshmi Residency,
ESI Road, Gunadala, Vijayawada-520004.
Ph: 0866-2456708, Mail Id: swachhaandhra2015@gmail.com

EXPRESSION OF INTEREST
Swachha Andhra Corporation, is inviting EOI for selection of Concessionaire(s) for setting up of Faecal Sludge Treatment Plants (FSTPs) on DBOT basis in 78 ULBs of Andhra Pradesh for effective Treatment and Safe Disposal of Faecal Sludge.
The Interested firms are requested to submit expression of interest (EOI) on or before 15:00 hours of 30.01.2018. The EOI document may be downloaded from www.sac.ap.gov.in tenders
Sd/-Chief Engineer
Swachha Andhra Corporation



ABSTRACT

Municipal Administration and Water Supply Department - In Principle approval for creation of 49 numbers of Faecal Sludge and Septage Management (FSSM) treatment facility to cover 51 Municipalities and 59 Town Panchayats - Orders - Issued.

MUNICIPAL ADMINISTRATION AND WATER SUPPLY (MA3) DEPARTMENT

G.O.(Ms) No. 88

Dated : 31 .08.2018
திருவள்ளூர் ஆண்டு 2049
விளம்பி, ஆவணி 15

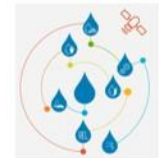
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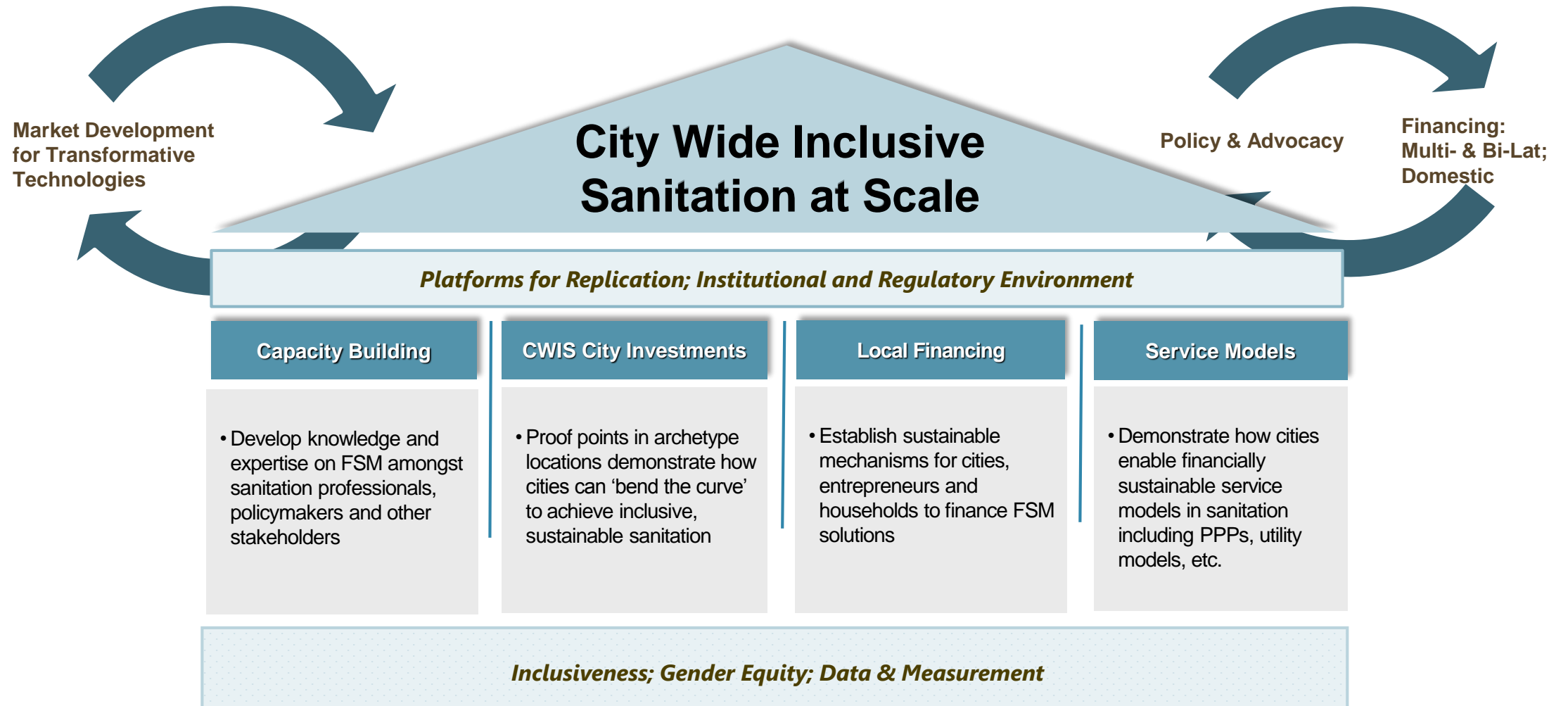
1. G.O. (Ms.) No.106, Municipal Administration and Water Supply (MA3) Department, dated 01.09.2014.
2. From the Commissioner of Municipal Administration Letter No.47718/UGSS-2 dated 4.07.2018.

ORDER:

The Honourable Chief Minister has made an Announcement under rule 110 regarding creation of 49 numbers of Faecal Sludge and Septage Management treatment facility to cover 51 Municipalities and 59 Town Panchayats on 12.6.2018 as follows:-

“தமிழ்நாட்டில் உள்ள 135 நகர்ப்புர உள்ளாட்சி அமைப்புகளில் (சென்னை தவிர) 35 நகர்ப்புர உள்ளாட்சிகளில் பாதாள சாக்கடைத் திட்டம் முடிக்கப்பட்டு பயன்பாட்டில் உள்ளது. மேலும், 3 மாநகராட்சிகள், 25 நகராட்சிகளில் பாதாள சாக்கடை பணிகள் செயல்படுத்தப்பட்டு வருகின்றன. பாதாள சாக்கடை திட்டம் செயல்படுத்துவதில் எதிர்கொள்ளும் சிரமங்களைக் கருத்தில் கொண்டு, ஒரு மாற்று ஏற்பாடாக, கசடுக்கழிவு மேலாண்மைத் திட்டத்தினை செயல்படுத்த முடிவெடுத்து 51 நகராட்சிகள் மற்றும் 59 பேரூராட்சிகள் பயன்பெறும் வகையில் 49 நகரங்களில் கசடுக்கழிவு சுத்திகரிப்பு நிலையம் ரூ. 217 கோடி செலவில் அமைக்கப்படும்”.





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