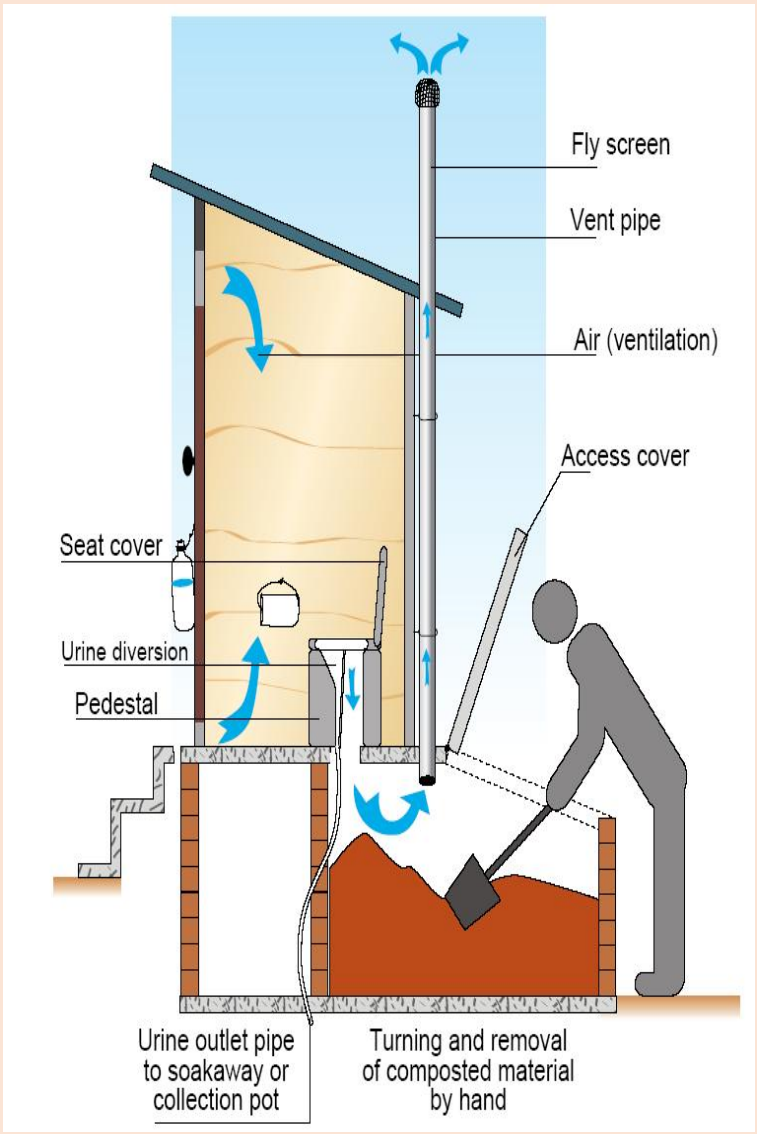

Media Handbook on ECOSAN toilets

Babatope Babalobi

Media Handbook on ECOSAN Toilets

A manual for Journalists

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August, 2015

Cover Photo credit:
Source: http://web.mit.edu/urbanupgrading/waterandsanitation/resources/pdf-files

Contents

Preamble……4

Acknowledgment……..…5

About the WASH Media Network…….….6

The Author……..…..7

Abbreviations and Acronyms……..8

Tables, Photos, and Figures…….9

The Sanitation challenge……10

Introduction to ECOSAN toilets……11

Pilot ECOSAN toilets in Nigeria……16

Resources on ECOSAN toilets…….19

How the Media can promote ECOSAN toilets……..21

References…….22

Glossary of Terms……23

Preamble

Nigeria faces immense sanitation challenges with 103m not having access to improved sanitation facilities; 39m Nigerians still defecating in the open; 70 million Nigerians using unsanitary or shared latrines; and the possibility of not attaining the sanitation Millennium Development Goal (MGD) target for 124 years, according to estimates released by the WHO//UNICEF Joint Monitoring Programme (JMP) in 2014

Ecological Sanitation (ECOSAN) has the potential of solving the sanitation challenges of several rural areas, small towns, and urban areas where conventional, water based toilets could not be constructed either of inadequate water supply or rocky terrain. However, it is yet to be popularly adopted as a technological option for accelerating sanitation coverage in Nigeria, in spite of its

Apart from pioneering projects by non-actors such as the European Union/UNICEF Water Supply and Sanitation Sector Reform Programme phase one (WSSSRP I) in a few states, and by the Public Health Department of the University of Ibadan, in South West Nigeria; hardly has any tier of government in Nigeria at the Local, State, or Federal level directly financed or massively promoted the construction of ECOSAN toilets in any part of Nigeria, Africa' most populous country. This is partly due to several factors including political prejudices, cultural biases, conceptual misconceptions, and ignorance.

The mass media has a strategic role to play both as a channel for promoting not only safe, affordable, low cost, and culturally adaptable safe sanitation facilities; as well as a channel in promoting behavioral change communication for promoting safe sanitation practices,. This is what the '**Media Handbook on ECOSAN toilets: A manual on Ecological Sanitation toilets for Nigerian Journalists',** seeks to address and achieve.

This 'M*edia Handbook on ECOSAN toilets in* Nigeria' is a briefing note for Journalists on ECOSAN toilets to enable them popularize its use through feature articles, news stories, commentaries, and documentaries; and it also documents a success story and challenges of the use of pilot ECOSAN toilet in Ijimo community, Oriade Local Government, Osun State, Nigeria, as a learning experience for the benefit of sector service providers, policy formulators, and sanitation marketers.

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August 2015

Acknowledgment

Special thanks to both Professor Sridhar Mynepalli of the Department of Environmental Health, College of Medicine, University of Ibadan, Ibadan, Nigeria and Mr. Olufemi Aluko of the Environmental Health Unit, Department of Community Health, College of Health Sciences, Obafemi Awolowo University, Ile Ife, Osun State, Nigeria for providing background materials on pilot ECOSAN toilets in Nigeria.

The Global Dry Toilet Association of Finland is also appreciated for encouraging the production of this book.

About the WASH Media Network

The Water and Sanitation Network (WASH Media Network) is a National network of Journalists interested in reporting WASH stories for various media outlets including Newspaper, Television, Radio, and the new media**.**

Established in 2006, it is registered as a Non-Governmental Organization under Nigerian laws

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The Author

Babatope Babalobi has worked consistently for the past 15years in Nigeria's Water Supply and Sanitation (WASH) sector, and widely respected as a leading advocate for access to safe water supply and sanitation services, especially for the urban and rural poor in Nigeria.

A WASH journalist, he was the pioneer General Secretary of the West Africa Water and Sanitation Media Network (WASH-JN) www.wash-jn.net between 2011 and 2013, and also the National Chairman, Water and Sanitation Media Network, Nigeria since 2008.

He is also the founder of Bread of Life Development Foundation (BLF), www.blfngo.org Nigeria's leading WASH non-governmental organization (NGO), and edits the eWASH www.ewash.news , a weblog on WASH issues in Nigeria.

A national WASH specialist, he has implemented consultancy studies for several state agencies and development partners including the UNDP, UNICEF, EU, WaterAid, and the National Urban Water Sector Reform Programme in the Federal Ministry of Water Resources, Abuja. Currently, he is the Senior Sanitation Reform Expert of the European Union Water Supply and Sanitation Sector Reform Programme Phase Three (WSSSRP III) in Plateau Adamawa, and Ekiti states, Nigeria.

Babalobi a first degree in Mass Communication and Master's degree in Environmental Management, both from the University of Lagos; and he is presently a Doctorate student in Department for Health, University of Bath, United Kingdom.

Abbreviations and Acronyms

ECOSAN	Ecological Sanitation
EU	European Union
NGO	Non-Governmental Organisation
UDDTs	Urine-Diversion Dry Toilets
UDD	Urine Dry Toilets
UNICEF	United Nations Children's Fund
WASH	Water Supply, Sanitation, and Hygiene
WHO	World Health Organization
WMN	Water and Sanitation (WASH) Media Network
WSS	Water Supply and Sanitation
WSSSRP	Water Supply and Sanitation Sector Reform Programme

Tables, Photos, and Figures

Table 1: Comparative Analysis of various toilets technologies……13

Fig 1: Features of ECOSAN toilets……..15

Pix 1: Pilot ECOSAN toilets in Osun State, Nigeria……17

Fig 2: The fabricated ECOSAN toilet in Abuja, Nigeria.....19

The Sanitation challenge

- 2.5 billion people remained without access to improved sanitation facilities.
- 547m of this figure are in Africa, and 103,023,260 are Nigerians
- Every year, unsafe water, coupled with a lack of basic sanitation, kills at least 1.6 million children under the age of five years.
- Significant regional disparities in access.
- Sanitation coverage in sub-Saharan Africa 30% versus 69% in South-East Asia.
- 41% of South Asia population (692m) practice open defecation versus 15% in South-East Asia.
- Rural-urban disparities – 86% of the 1.1 billion that practice open defecation live in rural areas.
- 79% urban versus 47% of the rural population use improved sanitation
- Disparities across wealth quintiles – analysis of 35 sub-Saharan African countries shows that in urban areas >90% of richest quintile use improved sanitation and drinking water; 60% have piped water on premises.
- Poorest quintile in rural areas: piped water not available; open defecation practiced by >60% of households
- 39m Nigerians still defecating in the open
- Over 868,000 Nigerian children about a quarter of which are from water related and vaccine preventable diseases such as pneumonia, diarrhea, meningitis and measles.
- 70 million Nigerians use unsanitary or shared latrines
- On a typical day, more than half the hospital beds in Sub-Saharan Africa are occupied by patients suffering from faecal-related disease.
- Poor Sanitation costs $3 billion globally /it costs Nigerians N455b annually

  (Source: WHO//UNICEF Joint Monitoring Programme (JMP) and WSP)

Introduction to ECOSAN toilets

The term *'ecological sanitation'* is used to describe sanitation systems that recycle excreta in a safer way and to be used as inputs for agriculture, rather than releasing them in to the environment without treatment.

Some of the limitations of conventional sanitation technologies listed by Chariar et al, 2011, are as follows:

1. *Massive infrastructure needed*
2. *Contamination of water sources & environment.*
3. *Elimination of organic matter and nutrients at sewage treatment plants requires Enormous amounts of energy and chemicals.*
4. *Use of freshwater to transport human excreta in sewers results in high drinking water demand. In water-scarce regions, additional pressure is put on limited freshwater resources.*
5. *Valuable nutrients present in human excreta are misplaced in the water bodies and environment as these conventional sanitation technologies fail to recover useful products.*

Ecological Sanitation (ECOSAN) toilets area waterless, dehydration / evaporation system that provides a safe, non-polluting and cost effective solution to the worldwide sanitation problem. It offers a standard of respectability and convenience, comparable to a waterborne system, yet without the prohibitive costs and obvious strain on precious water resources.

The three main pillars of ECOSAN toilets are:

1. *Collection: If feasible and appropriate, separate collection of (most) waste components, with minimal dilution water.*
2. *Treatment: Treatment that will allow safe reuse (safe for public health and for environment); pathogen destruction is a key requirement.*
3. *Utilization: Beneficial reuse which recycles nutrients and organic matter to the soil (or aquaculture)*

The toilet's main features are:

1. ECOSAN toilets are relatively lightweight and easy to move into position during installation.
2. The unit does not require any type of flushing mechanism, eliminating the risk of mechanical failure.
3. It uses no water, so no plumbing is required.
4. It has no sewer connections.
5. It is ideally suited for both city and rural homes.
6. It has a modern and functional design and is easily transportable.
7. It uses no chemicals
8. Requires user training and awareness, e.g. must not urinate into the faeces compartment (one should also provide waterless urinals for men)
9. Can produce odours if not used correctly
10. Still relatively new concept amongst NGOs, municipalities, universities, consultants, manufacturers, etc.
11. Dried faecal matter must be removed once or twice per year
12. Anal washing with water (if practised) must take place over a drain which is separate from the faeces vault
13. Urine must be collected, stored, transported and used as fertiliser, or infiltrated into the ground or otherwise dealt with
    - Urine collection container could be stolen
    - *Even the collected urine itself is known to have been stolen once people appreciate its value as a fertiliser (experience of CREPA in West Africa)!*

Table 1: Comparative Analysis of various toilets technologies

Table 1

Toilet type \ Condition/ Situation	Urban &/or peri-urban	Water logged areas	Shallow groundwater	Permeable soil with deep ground water	Impermeable soil	Shallow bed rock	Areas with limited space	Water scarcity	Close to natural water sources	Water use for anal cleansing after defecation	Other materials (e.g. paper) use for anal cleansing after defecation
Water seal toilet (direct/ offset pit)				×			×			×	
Ventilated improved pit toilet	×			×	×	×	×				
Septic tank & soak away pit, water seal toilet	×			×			×			×	
Septic tank & drain field, water seal toilet	×			×	×	×				×	
Small bore sewer system with household toilets and common treatment / pit	×					×	×			×	
Direct / offset pit pour-flush water seal built up toilets	×	×	×	×	×	×				×	
Ventilated improved pit, built up toilet		×	×	×	×	×				×	×
Eco san toilet (UDDT is one of them)	×	×	×	×	×	×	×	×	×	×	×

Source: Helvitas, 2005

Advantages of ECOSAN toilets

1. Improvement of health by minimizing the introduction of pathogens from human excrements into the water cycle
2. Promotion of safe recovery and use of nutrients, organics, trace elements, water and energy
3. Preservation of soil fertility and improvement of agricultural productivity
4. Conservation of resources
5. Preference for modular, decentralised systems for more appropriate, cost-efficient solutions
6. Promotion of a holistic, interdisciplinary approach
7. Material flow cycle instead of disposal
8. Can be indoors, because:
    a. *No pit required (the pit would normally allow liquid to seep into the ground)*

b. *No odours (because urine and faeces are not mixed*)

9. Suitable for areas with:
    a. *High-density settlements*
    b. *Difficult soil conditions*
    c. *A danger of groundwater pollution*
10. Easy to recycle excreta
11. Does not require faecal sludge management (vacuum tankers for pit emptying)
12. Does not require regular digging of new pits
13. Can be more portable

Disadvantages of a UDD toilet compared to a pit latrine

1. Requires user training and awareness, e.g. must not urinate into the faeces compartment (one should also provide waterless urinals for men)
2. Can produce odours if not used correctly
3. Still relatively new concept amongst NGOs, municipalities, universities, consultants, manufacturers, etc.
4. Dried faecal matter must be removed once or twice per year
5. Anal washing with water (if practised) must take place over a drain which is separate from the faeces vault
6. Urine must be collected, stored, transported and used as fertiliser, or infiltrated into the ground or otherwise dealt with
    a. *Urine collection container could be stolen*
    b. *Even the collected urine itself is known to have been stolen once people appreciate its value as a fertiliser*

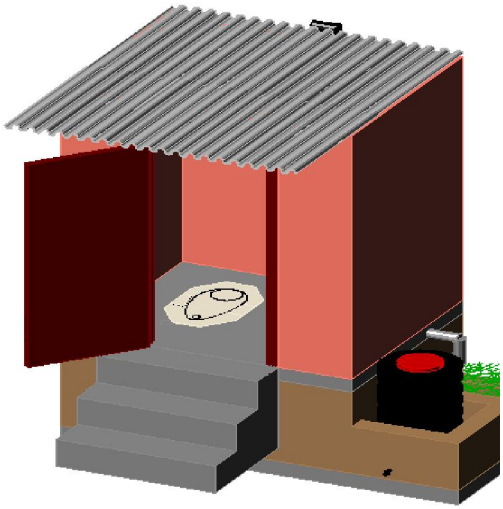
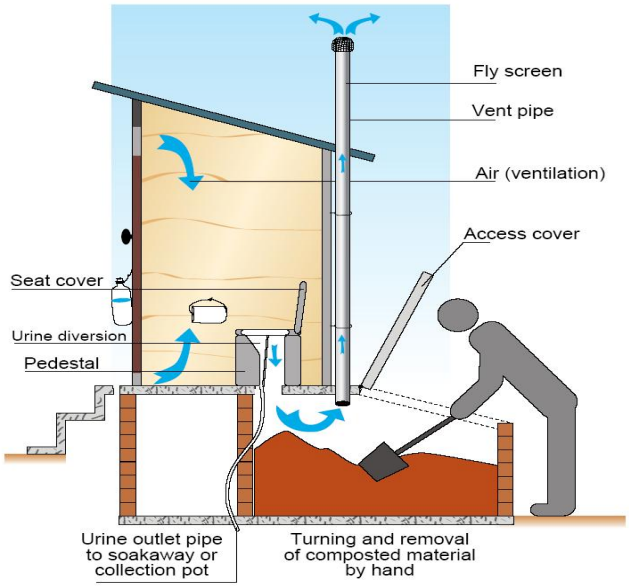


Fig. 1: Features of ECOSAN toilets



Source: http://web.mit.edu/urbanupgrading/waterandsanitation/resources/pdf-files

Pilot ECOSAN toilets in Nigeria

1. The European Union Water Supply and Sanitation Sector Reform Programme Phase 1 (EU-WSSSRP I) supported the UNICEF to construct pilot ECOSAN toilets in several states in Nigeria. One of such was constructed in Ijimo community in Oriade Local Government, Osun State. Femi Aluko of the Obafemi Awolowo University, Ile Ife, Nigeria in 'Ecosan Experience sharing from Osun State', said Ijimo community was chosen for the pilot scheme because of its physical conditions, as major part of Ijimo is rocky and difficult to excavate for conventional improved toilet.

   A field visits to the Ijimo ECOSAN toilet sites have revealed the following:

   a. *Community ownership and management is key to sustainability of ECOSAN toilets*
   b. *Various ECOSAN types should be constructed for children, adults, men, and women. Children avoid using ECOSAN toilets visited because it is not considered safe, while women prefer the squatting positions rather than sitting positions for ECOSAN toilets to avoid contacting diseases through their private organs.*
   c. *Physical accessibility is key to use of ECOSAN toilets in communities*
   d. *ECOSAN toilets would be popularized if information on its successful use is available in the public domain.*

Lessons

   a. *A block Of ECOSAN toilet with two vaults could be constructed for as low $1500*
   b. *Human urine produced from ECOSAN toilets is being used as a bait/trap to catch wild animals, when poured on farmlands by villagers. This potential needs to be further investigated.*
   c. *ECOSAN toilet is the most viable sanitation situation where there is a rocky terrain.*
   d. *ECOSAN toilets have low maintenance cost, as it may not be evacuated for up to 6 years.*
   e. *It is important to involve artisans such as plumbers and welders in the community management committees for ECOSAN toilets.*

Pix 1: Pilot ECOSAN toilets in Osun State, Nigeria

2. A team led by Taiwo Hammed, of the Department of Environmental Health, University of Ibadan, Ibadan, Nigeria has also designed and fabricated a novel 'composting toilet, or 'waterless urine diversion toilet' with provision for anal cleaning device, which has been put to use in a marker community in the Federal Capital Territory, Abuja, Nigeria.

   Taiwo Hammed et al in '*Design and Fabrication of Waterless, Urine Diversion Composting toilet with Anal Cleansing Device'*, said the dry toilet is 'first of its kind in Nigeria set up for a market community.

   Here, the human faeces and urine are separated into two separate bowls. The feces admixed with saw dust or wood ash is allowed to drop on to a gear driven augur which will convey it into a primary pit where it stays for a predetermined time. The mixture stays in the primary pit for certain number of days to allow degradation to continue. Later, it is taken to a secondary composting area in a fly-proof and well ventilated shed where it is allowed to further degrade and cure until a hygienically acceptable compost is produced. The composting process is manually operated.

   There is provision for the culturally sensitive users who may wish to use water for anal cleaning. This water which is a small amount controlled by hand-pressed sprayer is diverted to a soak away pit. The urine flows into a storage tank which has commercial value as the traders have agreed to sell it for farming purposes with revenue generation.

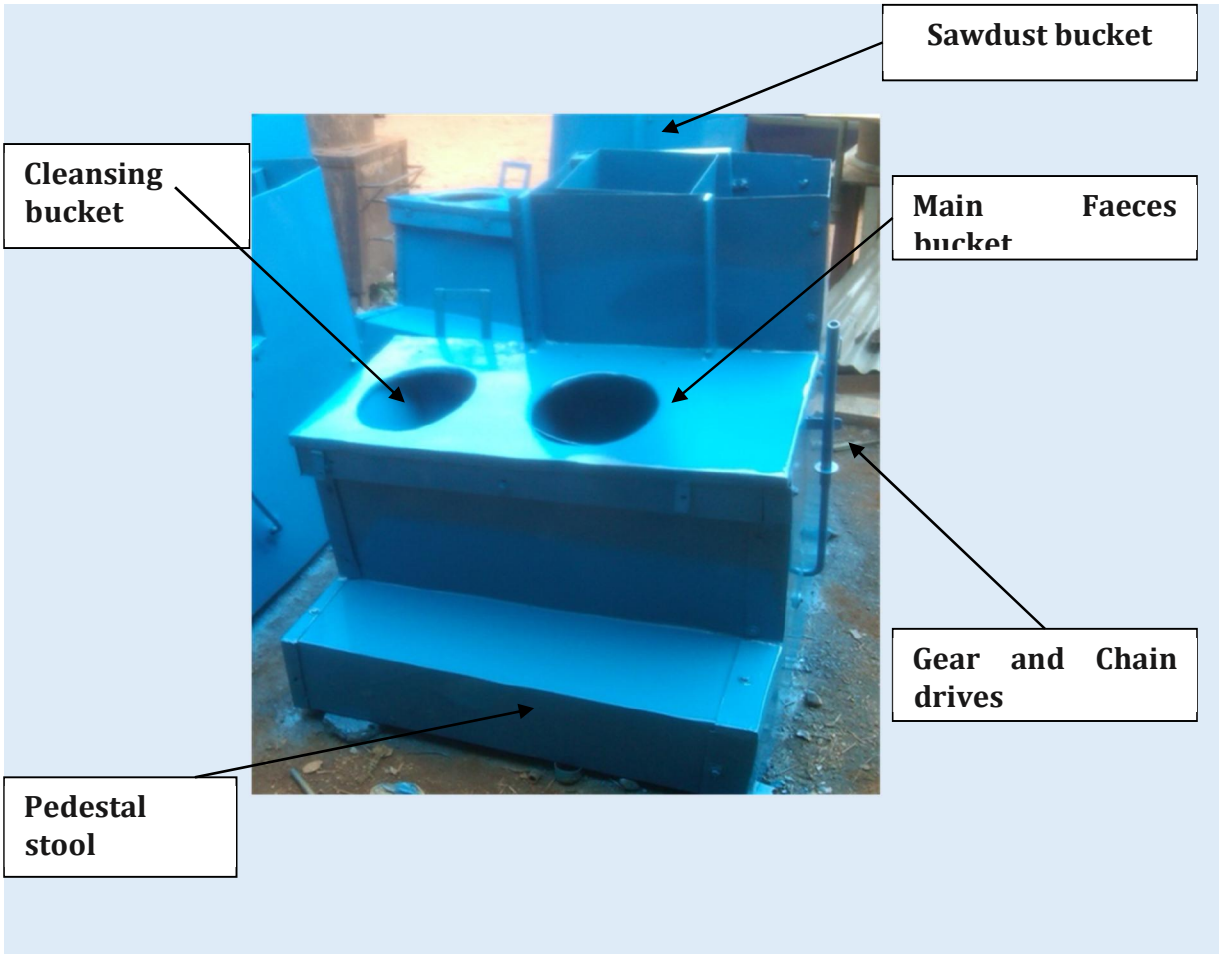
   Other features of the machine are the sawdust bucket with paddle dispenser, the mechanical chain driver mounted on the frame that control the augur movement and sawdust dispenser. The gear unit drives the augur and sawdust dispenser rides in a grease bucket. A toilet user sits comfortably on the 'faeces bucket', and defecates. On finishing, he or she will pull down the crank handle on the left side of the unit down once.

   The handle through a ratchet operates a set of gears and chain and sprocket mechanism that simultaneously dispense sawdust on the faeces and roll the augur a few cm towards the primary composting tank. The function of the augur is to mix the faeces with sawdust, promotes aeration

of the mixture and transports the mixture to the primary composting pit. The handle automatically returns to its initial position with the aid of a helical spring. The user then moves to the anal cleaning bucket if so wishes for using water.

The facility is women friendly as it provides total privacy, menstrual pad disposal facility, a bathing facility and handwash basin with soap/disinfectant. The entire facility is 'Pay and Use' type and the revenue generated is used for facility management through a management team.

Figure 1: The fabricated ECOSAN toilet in Abuja, Nigeria



Resources on ECOSAN toilets

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2. Pilot ECOSAN toilet in Kuje, Federal Capital Territory, Abuja, Nigeria. %Women Friendly Initiative (WFI), Aa1 Close, Employment Area, Street 85a, Funtaj College Road, Kuje, FCT. Abuja srhecosolutions@gmail.com

3. Global Dry Toilet Association of Finland, organizers of International Dry Toilet Conference, www.drytoilet.org

4. Sustainable Sanitation Alliance- www.susana.org

5. Sustainable Sanitation and Water Management Toolbox- www.sswm.info

6. GTZ ecosan sector project (Germany)- www.giz.de/ecosan

7. Ecological Sanitation Research -EcosanRes www.ecosanres.org

8. Composting Toilet World www.compostingtoilet.org

9. IRC International Water and Sanitation Centre- www.irc.nl

10. World Toilet Organization -http://worldtoilet.org/

11. United Nations Children's Fund -http://unicef.org

12. Water and Sanitation Programme -https://www.wsp.org/

13. Water and Sanitation for Africa - wsafrica.org

14. Practical Action – www.practicalaction.org

15. ECOSANclub -http://www.ecosan.at/

How the Media can promote ECOSAN toilets

1. Individual Journalists should read more about various Sanitation technologies including ECOSAN toilets in order to be more informed.
2. The media should investigate sanitation crises in communities, and propose appropriate solutions including ECOSAN toilets, where feasible.
3. Training programmes should be organized for Journalists on ECOSAN toilets.
4. Organizations promoting ECOSAN toilets should prepare media packs for Journalists, and work with them to create public awareness on ECOSAN toilets
5. Invitations should be invited to media representatives to attend national, regional, and international meetings on ECOSAN toilets.
6. Media focused conferences on ECOSAN toilets should be organized.
7. Success stories on ECOSAN toilets should be documented and distributed to media houses.
8. Field visits to ECOSAN toilets sites should be organized for the media.
9. Research institutions and Universities should organize short courses on ECOSAN toilets targeted at the media.
10. This Media handbook and similar briefs on ECOSAN toilets should be massively circulated to Journalists.
11. Non-Governmental Organizations involved in the construction of ECOSAN toilets should build synergies with the media.
12. The media through publications should advocate for the use of ECOSAN toilets where appropriate.
13. Organizations promoting ECOSAN toilets should ensure there is a Media section, on their web sites.
14. Organizations promoting ECOSAN toilets should work with relevant media networks to create more awareness on the ECOSAN toilets.
15. The media should advocate for a review of sector policy, legal, and institutional frameworks to accommodate and promote the use of ECOSAN toilets.

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2. Femi Aluko, University 'Ecosan Experience sharing from Osun State' Environmental Health Unit, Department of Community Health, College of Health Sciences, Obafemi Awolowo, Ile Ife, Osun State, Nigeria.

3. The Ecosan Source Book, Tool Box and Data SheetGTZ Information Support for Ecological Sanitation Christine Werner, Florian Klingel, Patrick Bracken Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH ecological sanitation programme, Division 44 – environment and infrastructure.

4. Elizabeth Tilley, Lukas Ulrich, Christoph Lüthi, Philippe Reymond and Christian Zurbrügg Compendium of Sanitation Systems and Technologies 2nd Revised Edition

5. Conventional onsite sanitation UNESCO IHE Lecturer: Mariska Ronteltap, m.ronteltap@unesco-ihe.org

6. A second Look at UNICEF-supported ECOSAN latrines construction: technology and social norms Guy Mbayo Kakumbi UNICEF Rwanda 4th Dry Toilet Conference Tampere University, 23 August, 2012 Finland

7. Sustainable Sanitation for all, Dr. Elisabeth v. Münch, Urban Water and Sanitation Department. UNESCO-IHE. e.vonmunch@unesco-ihe.org

8. Christine Werner, Martin Wafler, Johannes Heeb, Hinnerk Bartels, Dayanand Panse German Agency for Technical Co-Operation (gtz). Ecological sanitation programme, Division 44 – environment and infrastructure

Glossary

Composting: The process by which biodegradable components are biologically decomposed by microorganisms (mainly bacteria and fungi) under controlled aerobic conditions

Ecological Sanitation (EcoSan): An approach that aims to safely recycle nutrients, water and/or energy contained in excreta and wastewater in such a way that the use of non-renewable resources is minimized. (Syn.: Resources-Oriented Sanitation)

Offsite Sanitation: A sanitation system in which excreta and wastewater are collected and conveyed away from the plot where they are generated. An offsite sanitation system relies on a sewer technology (see C.4-C.6) for conveyance.

Onsite Sanitation: A sanitation system in which excreta and wastewater are collected and stored or treated on the plot where they are generated

Parasite: An organism that lives on or in another organism and damages its host. Pathogen: An organism or other agent that causes disease.

Methane: A colourless, odourless, flammable, gaseous hydrocarbon with the chemical formula CH4. Methane is present in natural gas and is the main component (50-75%) of biogas that is formed by the anaerobic decomposition of organic matter.

Microorganism: Any cellular or non-cellular microbiological entity capable of replication or of transferring genetic material (e.g., bacteria, viruses, protozoa, algae or fungi).

Nutrient: Any substance that is used for growth. Nitrogen (N), phosphorus (P) and potassium (K) are the main nutrients contained in agricultural fertilizers. N and P are also primarily responsible for the eutrophication of water bodies. Toilet: User interface for urination and defecation

Wastewater: Used water from any combination of domestic, industrial, commercial or agricultural activities, surface runoff/ stormwater, and any sewer inflow/infiltration.

Dry Toilet: A composting toilet is a type of dry toilet that uses a predominantly aerobic processing system to treat human excreta, by composting or managed aerobic decomposition. These toilets generally use little to no water and may be used as an alternative to flush toilets.