



This is a peer-reviewed, final published version of the following in press document and is licensed under Creative Commons: Attribution-Noncommercial-Share Alike 4.0 license:

Mallory, Adrian, Akrofi, Daniel, Dizon, Jenica, Mohanty, Sourav, Parker, Alison, Ray, Dolores, Prasad, CS Sharada, Welivita, Indunee, Brewer, Tim, Mekala, Snehalatha, Bundhoo, Dilshaad ORCID: 0000-0003-0262-9868, Lynch, Kenneth ORCID: 0000-0002-5296-2864, Mishra, Prajna, Willcock, Simon and Hutchings, Paul (2020) Business models for circular sanitation: lessons from India. In: Dresden Nexus Conference 2020; Circular Economy in a Sustainable Society, 3-5th June 2020, Online (Dresden). (In Press)

Official URL: https://express.converia.de/frontend/index.php?page_id=14849

EPrint URI: <http://eprints.glos.ac.uk/id/eprint/8490>

Disclaimer

The University of Gloucestershire has obtained warranties from all depositors as to their title in the material deposited and as to their right to deposit such material.

The University of Gloucestershire makes no representation or warranties of commercial utility, title, or fitness for a particular purpose or any other warranty, express or implied in respect of any material deposited.

The University of Gloucestershire makes no representation that the use of the materials will not infringe any patent, copyright, trademark or other property or proprietary rights.

The University of Gloucestershire accepts no liability for any infringement of intellectual property rights in any material deposited but will remove such material from public view pending investigation in the event of an allegation of any such infringement.

PLEASE SCROLL DOWN FOR TEXT.

Business models for circular sanitation - Lessons from India

INTRODUCTION

According to the WHO and UNICEF (2017), 61% of the global population lack safely managed sanitation services. Traditional sewer networks prove to be unfeasible in many low to middle-income high density areas, as waste management and safe disposal become problematic with treatment plants lacking financing for operations. One of the options for a non-capital intensive solution is circular sanitation. Circular Economy (CE) in this context focuses on the whole sanitation chain which includes the provision of toilets, the collection of waste, treatment and transformation into sanitation-derived products including fertiliser, fuel and clean water.

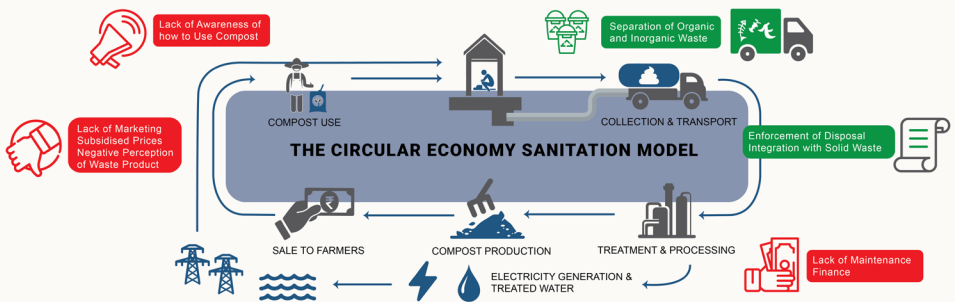
CASE STUDY LOCATIONS



STUDY AIM & METHODOLOGY

This research identifies the main barriers and enablers for circular sanitation business models to succeed. Collection of information from five case studies across [India](#), covering different treatment technologies, waste-derived products, markets and contexts.

FINDINGS: THE ENABLERS & BARRIERS OF THE CIRCULAR SANITATION MODEL



- A framework assessing the technical and social system changes required to enable circular sanitation models was derived from the case studies.
- Some of these changes can be achieved with increased enforcement, policies and subsidies for fertilisers, and integration of sanitation with other waste streams across its value chain to increase its viability.
- Major changes such as the cultural norms around re-use, demographic shifts and soil depletion would be outside the scope of a single project, policy or planning initiative.

CONCLUSION

The move to CE sanitation may still be desirable from a policy perspective but shifting to CE models should not be seen as a panacea that can solve the global sanitation crisis. The presented case studies raise a series of relevant learning points but processes of change that occur across social and technical sub-systems at different scales and timeframes are required to ensure success. While it reduces the financial burden and poses a lot of potential for waste reuse, delivering the public good of safe sanitation services for all, whether circular or not, will continue to be a difficult task.

Authors

Adrian Mallory, Daniel Akrofi, Jenica Dizon, Sourav Mohanty, Alison Parker, Dolores Rey Vicario, CS Sharada Prasad, Indunee Welvita, Tim Brewer, Snehalatha Mekala, Dilshaad Bundooh, Kenny Lynch, Prajna Mishra, Simon Willcock, Paul Hutchings

Corresponding Author

Alison Parker
Cranfield University

Acknowledgment

The research was funded by ESRC and ICSSR (Grant Ref: ES/R006865/1), the Royal Society (grant number CH/L\1\180402) and GCRF QR funds. The following people are thanked for their assistance during the fieldwork: Dr Abraham, Dirk Walther, Jitendra Yadav, Navin Horo, Maha Lakshmi, Dr P.K. Mohanty, Sandhya Haribal, Gagana Shamana, Padmapriya TS, Dr Paramasivan Shanmuga.

For more details see Mallory et al "Evaluating the Circular Economy for Sanitation: Findings from a Multi-case approach" Science of the Total Environment, accepted subject to revisions.

