

# Changing the sanitation landscape: Narratives of women in sanitation innovation

BILL &  
MELINDA  
GATES  
*foundation*



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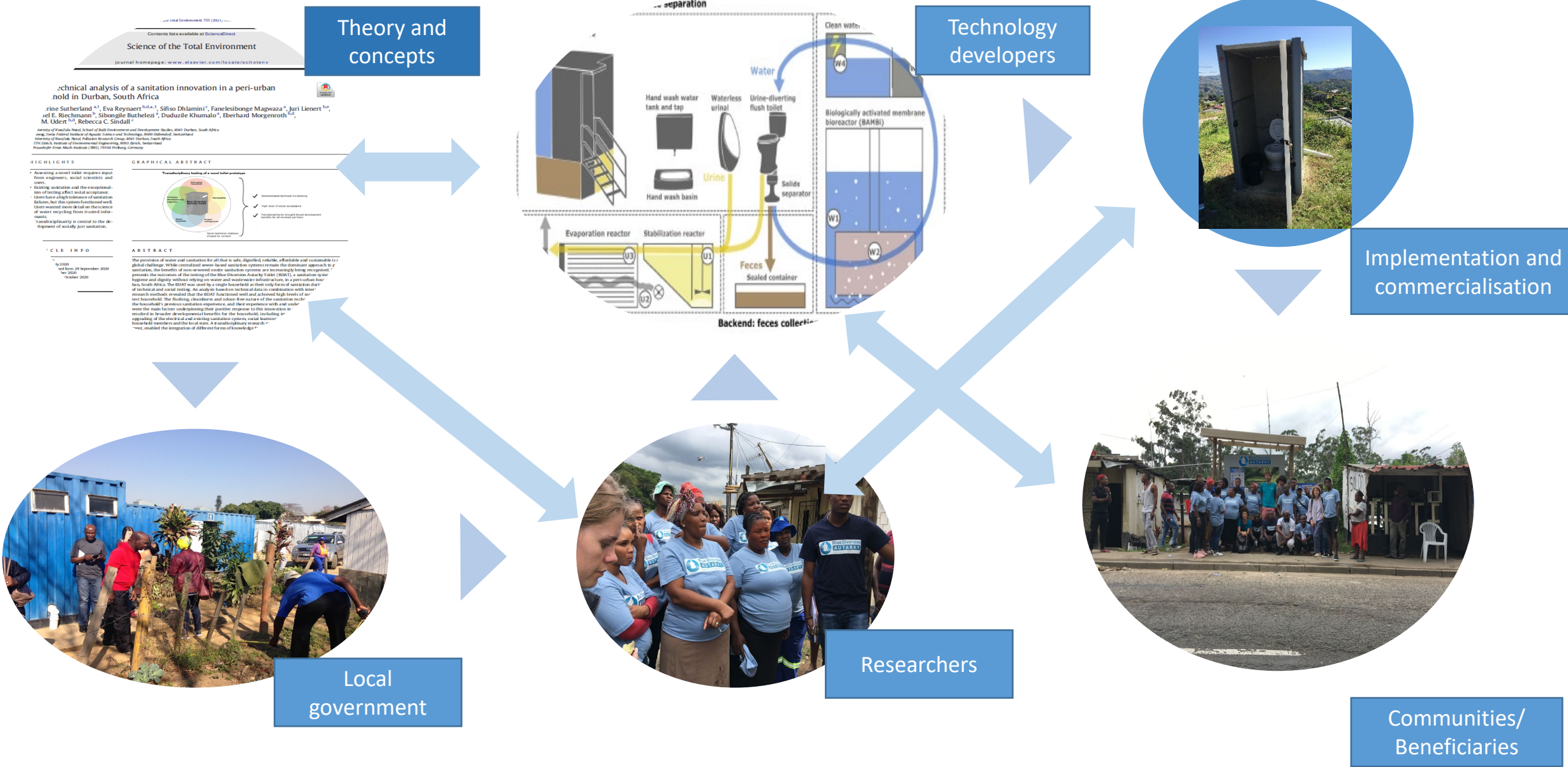


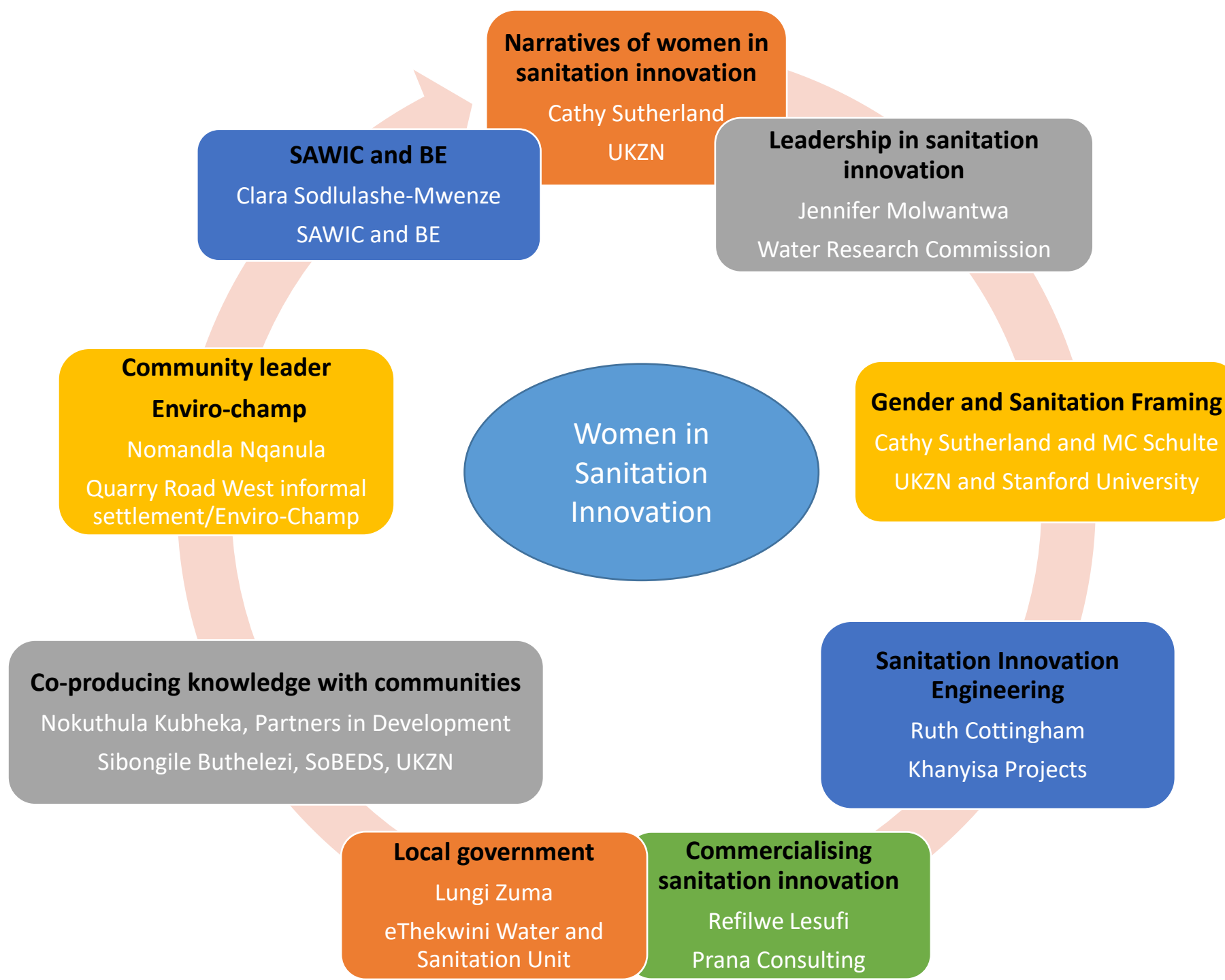
# Introduction

- Sanitation innovation in South Africa
  - SASTEP programme
  - Changing the sanitation landscape
- Women engaged in sanitation innovation
  - Narratives from the sanitation innovation value chain
    - Theorising and conceptualizing sanitation innovation
    - Engineering and design: technology developers
    - Implementation and commercialisation through applied engineering
    - Service provision through local government
    - Researchers who co-produce knowledge with beneficiaries
    - Communities who co-produce knowledge and are sanitation beneficiaries
    - Connecting to larger systems: leadership and construction
- Gendered sanitation innovation



# Women in sanitation innovation in South Africa





# Sanitation and gender framing

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In association with Marie Celine Schulte

Stanford University



# Universal centralized systems ..... Non-sewered sanitation systems

The urgent need: developing sanitation systems where the sewer does not go

## The Right to Water & Sanitation



### THE RIGHT TO WATER AND SANITATION IS A FUNDAMENTAL HUMAN RIGHT THAT IS PROVIDED FOR IN THE BILL OF RIGHTS.

The Water Services Act provides that:

- Everyone has a right of access to basic water supply and sanitation services;
- Every water services institution must take steps to realise these rights;
- Every municipality must plan in its water services development plan to realise these rights.

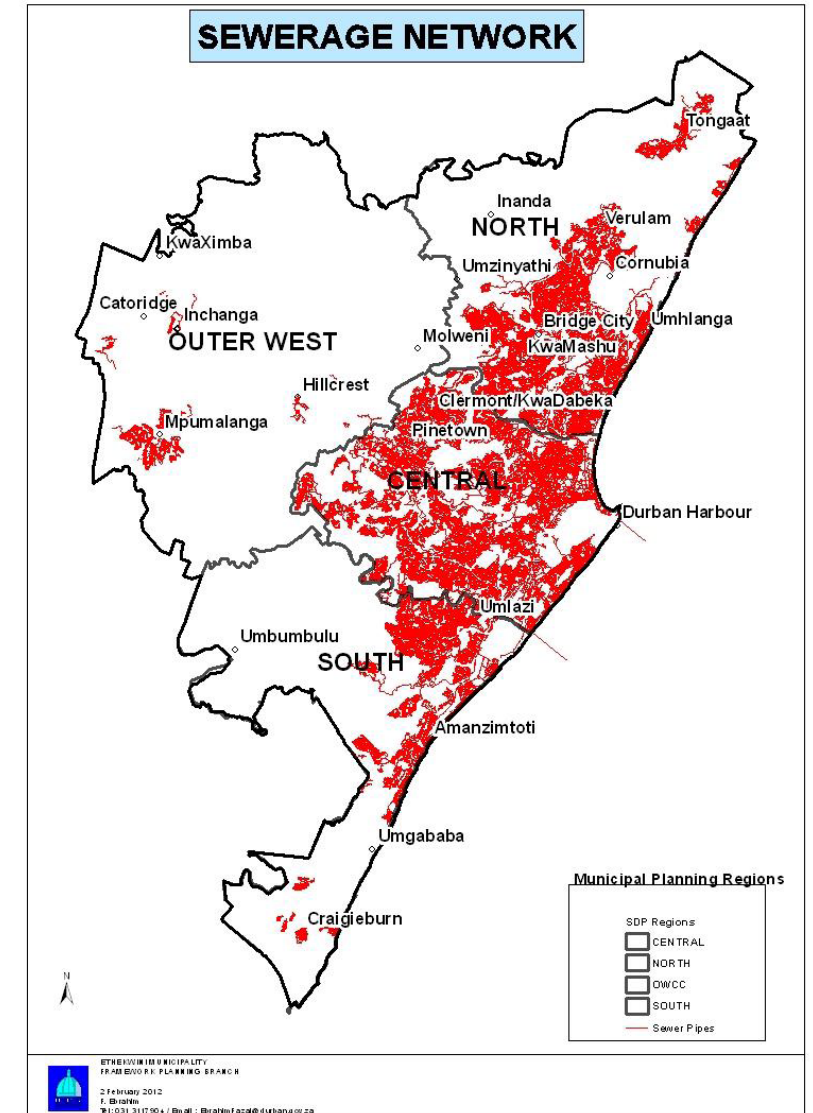
Chapter 2 of the Constitution of South Africa provides that:

***"Everyone has the right to have access to sufficient food and water."***

In order to give effect to this right Parliament has enacted the Water Services Act 108 of 1997. The purpose of this Act is to provide for the right to basic water supply and basic sanitation services.

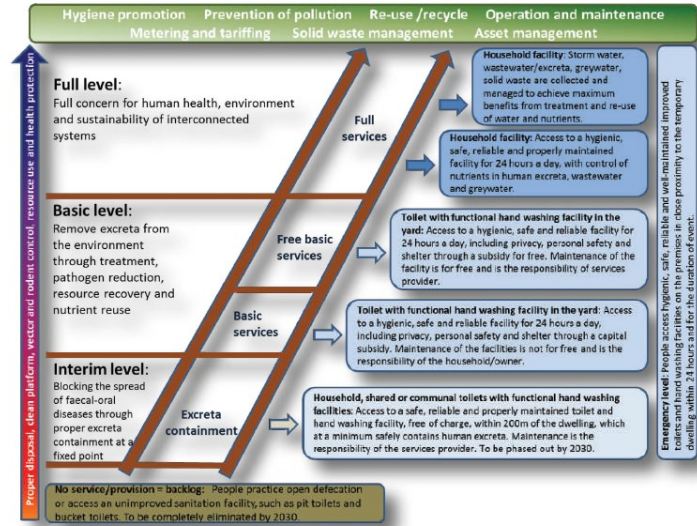
This Act recognises that the right of access to basic water supply and to basic sanitation services is necessary to ensure sufficient water and an environment that is not harmful to health or wellbeing of people and animals.

- City Wide Inclusive Sanitation
- Water and sanitation are inextricably linked, sanitation is the major challenge
- Water scarcity, climate change (WWTW), resource recovery and reuse, cost of service provision, shocks disrupt large scale infrastructure (COVID, social unrest, floods, economic decline)



# Ladder of sanitation

well established discourse  
incremental services



SDG Sanitation Ladder

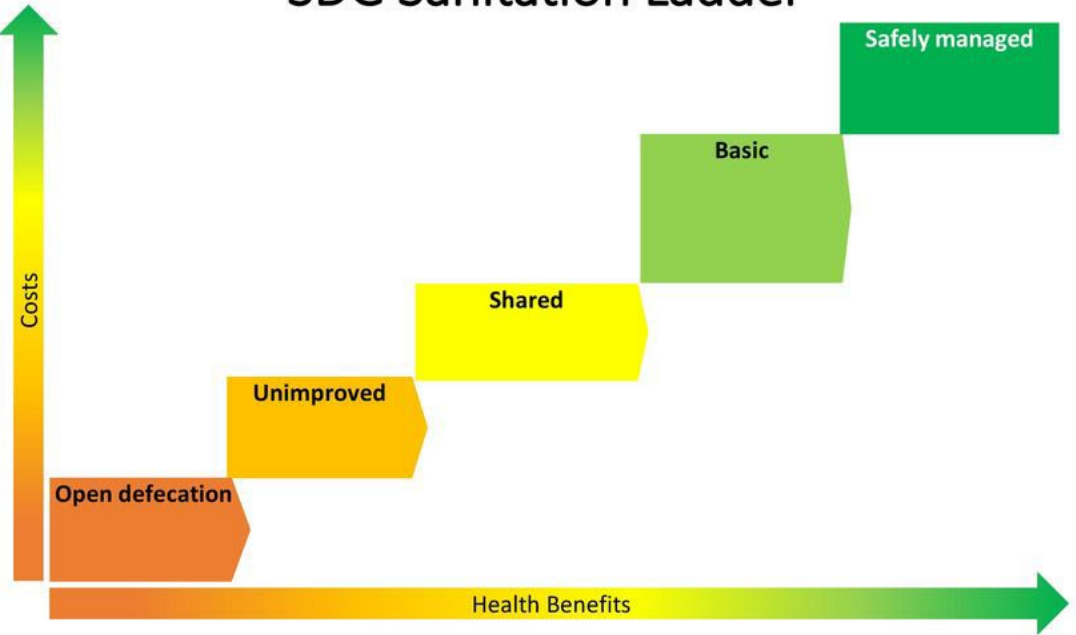
**Safely managed**  
A basic sanitation facility which is not shared with other households and where excreta are safely disposed in situ or treated off-site

**Basic (was improved)**  
Flush / pour flush to piped sewer system, septic tank or pit latrine, ventilated improved pit latrine, composting toilet or pit latrine with a slab not shared with other households

**Shared**  
Sanitation facilities of an otherwise acceptable type shared between two or more households

**Unimproved**  
Pit latrines without a slab or platform, hanging latrines and bucket latrines

**Open defecation**  
Human faeces disposed of in fields, forests, bushes or open bodies of water, beaches or other open spaces or disposed of with solid waste



SDG Sanitation Ladder

Type of sanitation	Characteristics	Sanitation systems
Ecological sanitation ECOSAN	<b>Reduction, reuse, recycling</b> <ul style="list-style-type: none"><li>Reduction of water use</li><li>Separate and re-use faeces and urine</li><li>Recycle grey water</li></ul> <b>Reduce pollution</b> <ul style="list-style-type: none"><li>Prevent soil, water and air pollution</li></ul> <b>Public health</b> <ul style="list-style-type: none"><li>Block pathogens from humans</li></ul> <b>Social Acceptance</b> <ul style="list-style-type: none"><li>Quality of system: innovation, supports concern re water scarcity</li><li>Can be perceived as inferior technology for urban poor</li></ul>	Sanitation systems that extract and re-use nutrients in human excreta, use limited water, recycle water and re-use grey water, often off grid, Urine diversion dehydration toilets, Blue Diversion Autarky toilet (EAWAG).
Sanitation systems supported by built infrastructure and ecological infrastructure	<b>Reduction, reuse, recycling</b> <ul style="list-style-type: none"><li>Reuse of treated wastewater and sludge</li><li>Treatment of waste water and sludge</li></ul> <b>Reduce pollution</b> <ul style="list-style-type: none"><li>Prevent soil, water and air pollution</li><li>WWTW failures; rivers as buffers</li></ul> <b>Public health</b> <ul style="list-style-type: none"><li>Block pathogens from humans</li></ul> <b>Social Acceptance</b> <ul style="list-style-type: none"><li>Gold standard of flush toilet</li><li>Shared public facilities (CABs): good and poor state and maintenance, distance from homes, edge of settlements</li></ul>	Waterborne systems Flush toilets connected to waterborne sewerage systems Sewerage systems connected to Wastewater treatment plants  Safe septic tanks, emptied or discharged Sealed pit latrines  Communal Ablution Blocks
Improved basic sanitation	<b>Reduction, reuse, recycling</b> <ul style="list-style-type: none"><li>Limited, Black soldier fly project (UDDTs), innovation ongoing.</li></ul> <b>Reduce pollution</b> <ul style="list-style-type: none"><li>Pollution impacts reduced by sealing or drying waste and burying it.</li></ul> <b>Public health</b> <ul style="list-style-type: none"><li>Humans come into contact with pathogens through toilet use and emptying</li></ul> <b>Social Acceptance</b> <ul style="list-style-type: none"><li>Low level of social acceptance, smell, lack of dignity, emptying of toilets</li></ul>	Ventilated improved pit latrines  <b>Dry systems</b> Urine diversion dehydration toilets, waste buried on site.
No sanitation	<b>Reduction, reuse, recycling</b> <ul style="list-style-type: none"><li>None</li></ul> <b>Reduce pollution</b> <ul style="list-style-type: none"><li>High levels of pollution</li></ul> <b>Public health</b> <ul style="list-style-type: none"><li>High levels of health impact: untreated and uncontained sanitation waste.</li></ul> <b>Social Acceptance</b> <ul style="list-style-type: none"><li>Unacceptable, unsafe and undignified.</li></ul>	Open Defecation Buckets in households disposed of in open spaces, rivers and CABs.



# State response: large scale, top down and universal (eThekweni Municipality 2001 - 2016)



199 000 free low cost  
houses delivered since 1994  
on flush, main sewer  
network

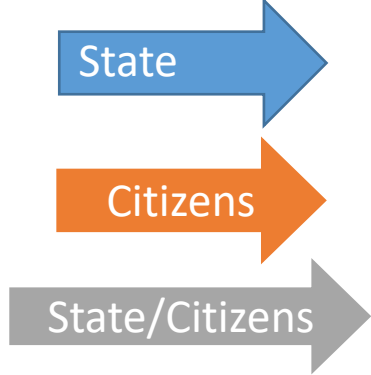
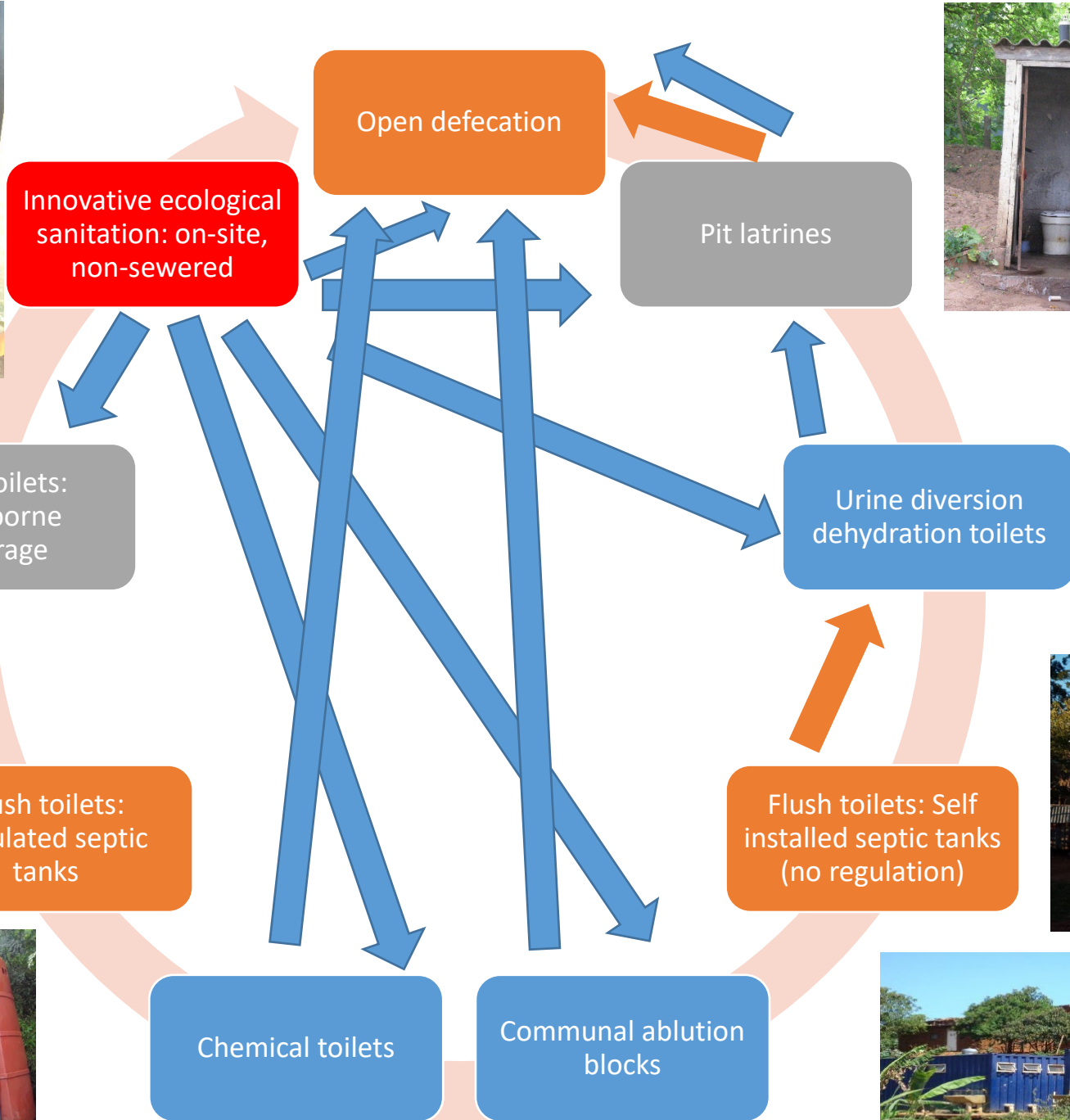


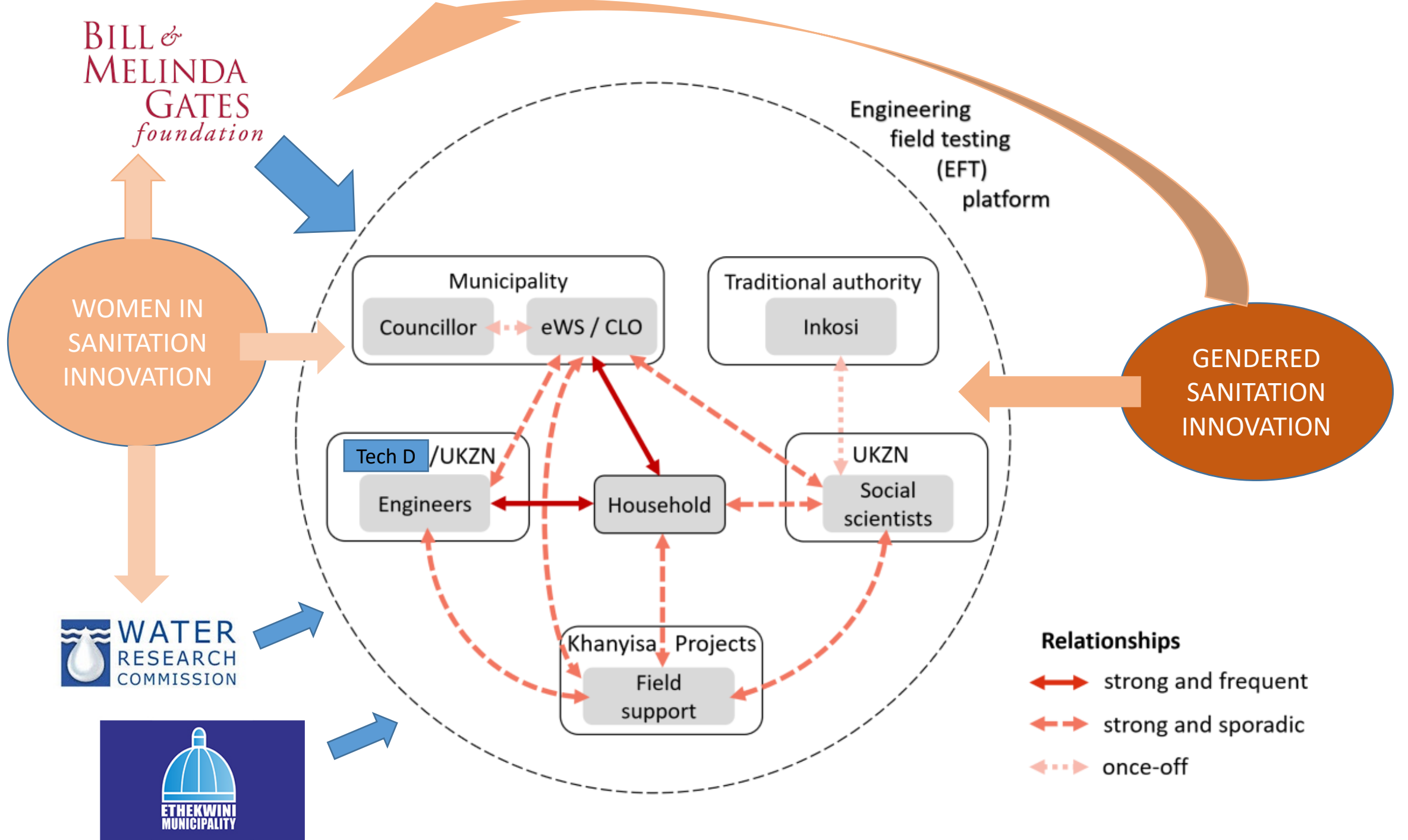
88 000 UDDTs installed, TA  
areas 43% of municipal area

1300 CABs installed,  
566 informal  
settlements in the  
municipality



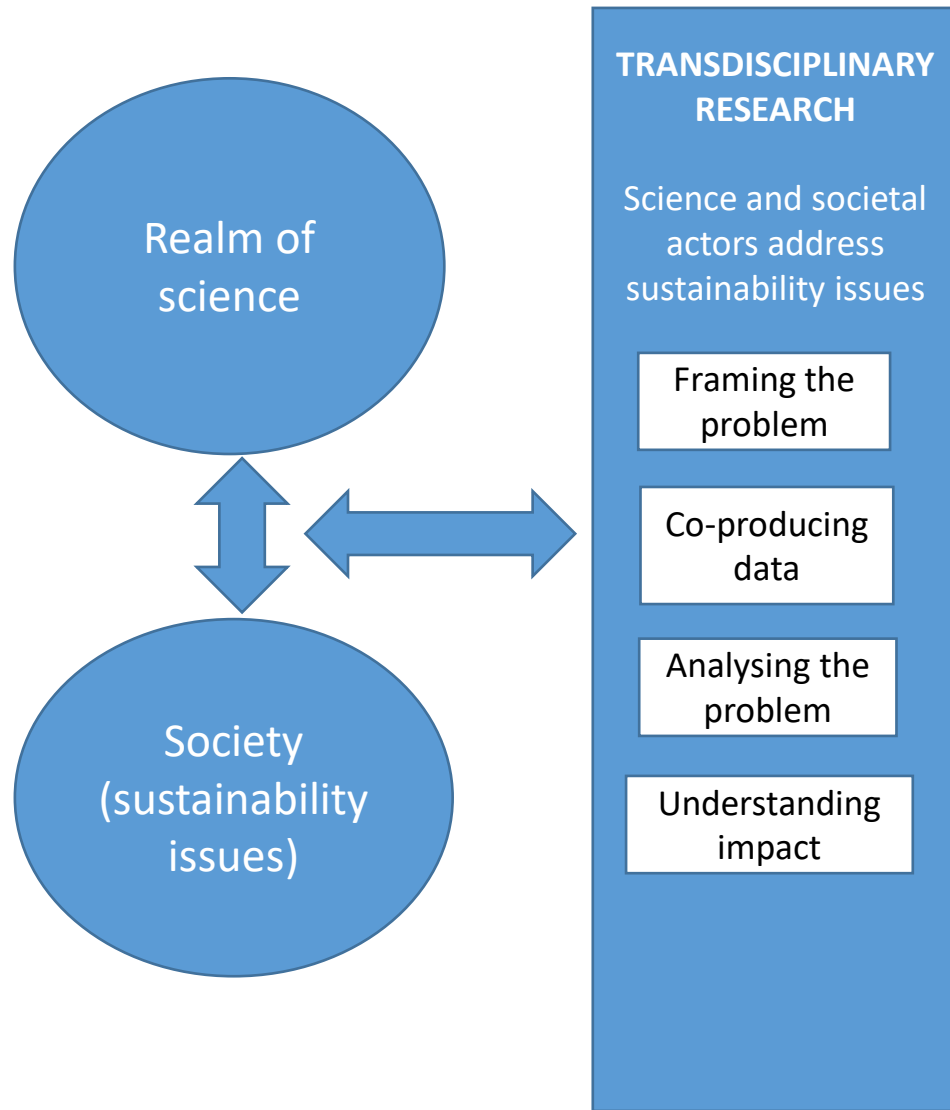








# Transdisciplinary research



Adapted from Pohl et al. 2017

- The Engineering Field Testing Platform (Durban)

EWS, WASH R&D and SoBEDS UKZN, Engineering/project management specialists, international and national technology developers, funders (Bill and Melinda Gates Foundation, WRC), communities)

- Gender and sanitation (Bill and Melinda Gates Foundation and Water Research Commission )

Relational and intersectional









Skills and capacities: Women engineers have been a significant part of operation and maintenance of the prototypes.  
Women social scientists have led social surveys and community engagements on user experience and social acceptance  
Women users in households and communities have contributed towards a more responsive user centred designing of prototypes through their participation in user experience surveys and interviews

Anthony Odili, WASH R&D Centre, UKZN

Woman in sanitation innovation is often seen as the domain of social science researchers.  
Whilst this is extremely important, the multi-disciplinary gender based approach applied in the EFT helped establish a more complete and less biased standpoint from which to understand the technology development process.  
This practical and structured approach highlighted potential risks to technology adoption as prototypes move towards real products

Teddy Gounden, WASH R&D Centre and EWS

Women have an incredible drive and passion for improving sanitation in schools and communities. I can only put this down to their lived experience and through that, the knowledge of how poor sanitation affects women and girls significantly more than men and boys.

Said another way: only women can fully understand the emotional and physical stress of poor sanitation on women and girls in our society and thereby make a huge contribution to improving sanitation for all

Nick Alcock, Khanyisa Projects

Trait of women in business and sanitation is that of compassion and caring

Sanitation innovation has previously been occupied and dominated by men, be it in construction and/or development of technology.

Women in sanitation innovation allows for gender equity where women are able to rethink, shape and change the narrative for sanitation provision.

Having women in the WASH conversation allows for inclusivity which is mandated by policy and the Constitution. This inclusion also helps promote women's empowerment and fills in the existing pipeline gaps in women's leadership in products and services within the sanitation fraternity.

Women engineers and social scientists have channelled ideas (technical and structural), changed perceptions and given a voice on what works well for women for safe, dignified and respectful WASH services.

The benefit of having women contributes greatly in refocusing sanitation to address women's health issues and challenges. Some of the considerations for a good sanitation facility from a woman's perspective includes a facility that has lighting, locks, a female caretaker, or an entrance shielded from the men's side of a toilet block. These are things that a man might not consider but are important for women for their safety and comfort in a sanitation facility.

This is also true for extra provision of services in the facility, such as the sanitary pads bins and mirrors.

Fanele Magwaza, WASH R&D Centre, UKZN



## EAWAG Handwashing Station A niche intervention



Reynaert and  
Reichmann, 2019  
Sutherland et al.,  
2021

**Funding organisations**  
(Bill and Melinda Gates  
Foundation: Water Sanitation  
and Hygiene)

**Engineering Field Testing Platform**  
WASH R&D and SoBEDS University of  
KwaZulu-Natal  
eThekweni Municipality  
International and national technology  
developers

Women in  
sanitation  
innovation

Gendered  
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