Effective governance for the successful long-term operation of community scale air limbah systems

Mid-term Observations Report

May 2015

FOR CIRCULATION AND DISTRIBUTION

UTS:ISF
INSTITUTE FOR SUSTAINABLE FUTURES

Australian Aid

Funded by the Australian Aid Development Research Awards Scheme (ADRAS)

Please cite this report as:

Mitchell, C., Ross, K., Abeysuriya, K., Puspowardoyo, P., Wedahuditama, F. 2015, *Effective governance for the successful long-term operation of community scale air limbah systems: Mid-term Observations Report*. Prepared by the Institute for Sustainable Futures, University of Technology Sydney, as part of the Australian Development Research Award Scheme.

This document is a synthesis of observations and recommendations distilled from the first phase of our research. The validity and representation of these observations and recommendations has been tested with key stakeholders in the sector, including six Ministries across the Government of Indonesia, major donors, programs, and NGOs. In order to further consolidate our findings and inform future sector policy and research, we are keen to continue to gather input and feedback from a broader audience on what resonates and what is missing from our study so far. If you have comments, criticisms, or suggestions, please contact us (see the last slide for details).

Introduction

Project Details

Duration	May 2013 – March 2016
Funding	Australian Aid Development Research Awards Scheme Contributors: UTS, ISF, BORDA
GoI Partners	BAPPENAS (Partnership Agreement)
Methodology	Transdisciplinary Participatory Action Research
Collaborators	Local Partner: AKSANSI International Partners: BORDA Germany, ODI Expert Advisors: Kathy Eales, Jeff Moeller, Chris Buckley

Our focus is on governance. We have identified four complementary aspects for community-scale sewerage services.

Functioning technology: Ensuring the physical system delivers the service	**Sustainable financing:** Sufficient ongoing revenue to cover all short and long-term operational cost elements
Effective management: Accountable and equitable administration and decision making system	**Sustaining demand:** Maintaining effective community demand for the service over time

Together with our partners, we have identified four areas of inquiry.

Performance monitoring:

What is the volume and and quality of available data on community-based sanitation performance?

Legal arrangements:

What are the legal and informal arrangements for ownership?

Scale and distribution of costs:

For a range of sanitation service delivery models, what are the scale and distributions of cost?

Management partnerships:

What are the range of structures and institutional arrangements that could deliver the responsibilities for managing community-scale systems?

Our research uses a life-cycle and system-wide view.

Arrangements for all excreta from all people

Arrangements for full *asset* lifecycle

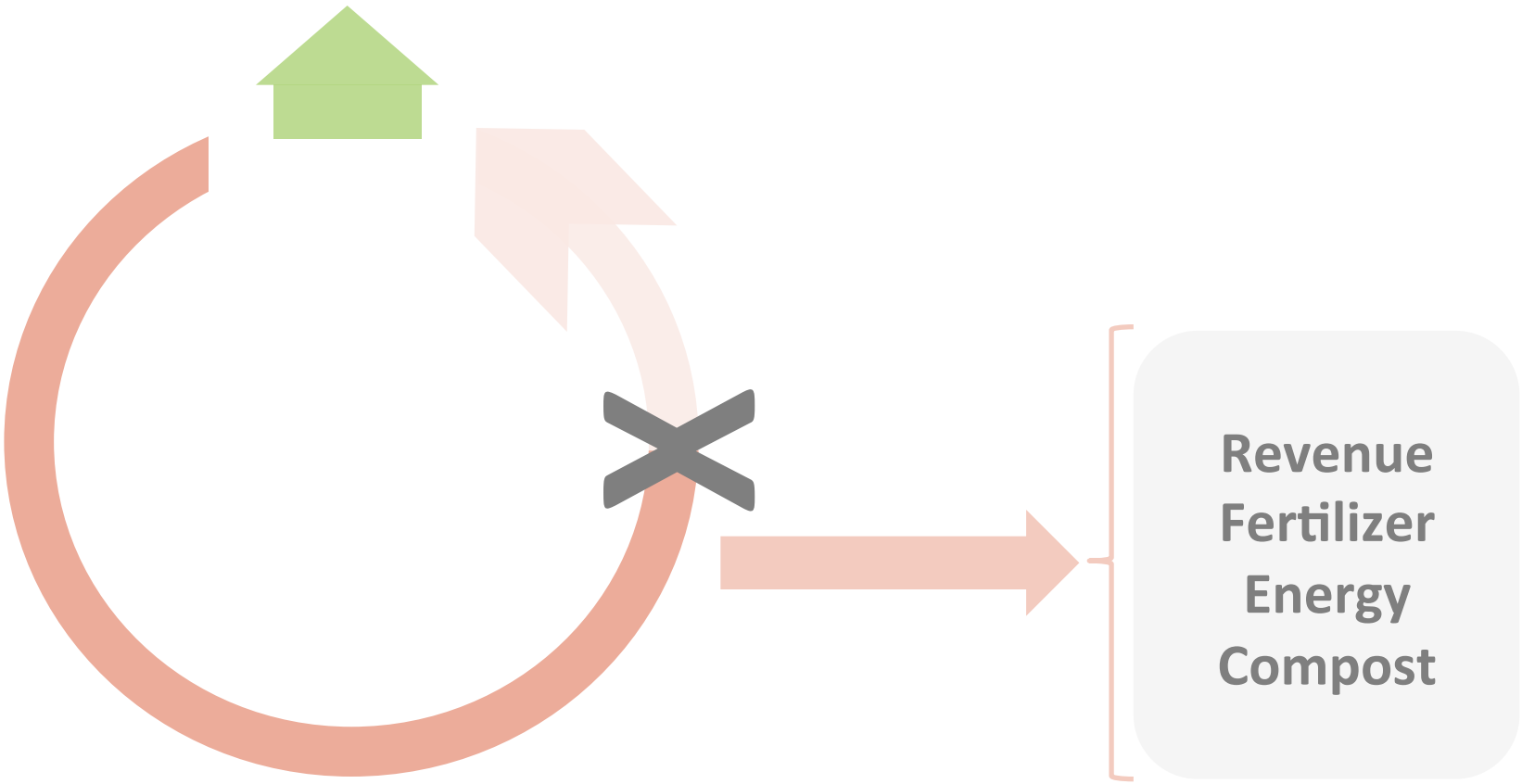
Demand creation	**Construction**	**O & M**	**Repurposing/ decommission**

Arrangements for full *excreta* lifecycle

User interface	**Collection**	**Treatment**	**Reuse/ dispose**

Sanitation service requires arrangements for full service chain to maintain a safe barrier between human excreta, other humans and their water sources. A life cycle and system-wide view is essential to ensure investments deliver outcomes.

The fundamental outcome of sewage management is to separate people from excreta, and protect the environment.



Increasingly, it also seeks to capture the value of the nutrients.

Project methodology

Our mixed method approach includes qualitative and quantitative data collection, analysis and synthesis. This involves:

- Semi-structured interviews and focus group discussions with diverse groups including:
    - communities and village leaders,
    - local NGOs,
    - national and local government staff and leaders,
    - representatives from the main funding programs of community scale air limbah systems (GoI and donor), and
    - the Jakarta-based national Project Advisory Group
- Evaluative inquiries of the principal databases (AKSANSI and NAWASIS) and other datasets,
- Observations during study site visits, and
- Document review.

Our understanding of the situation

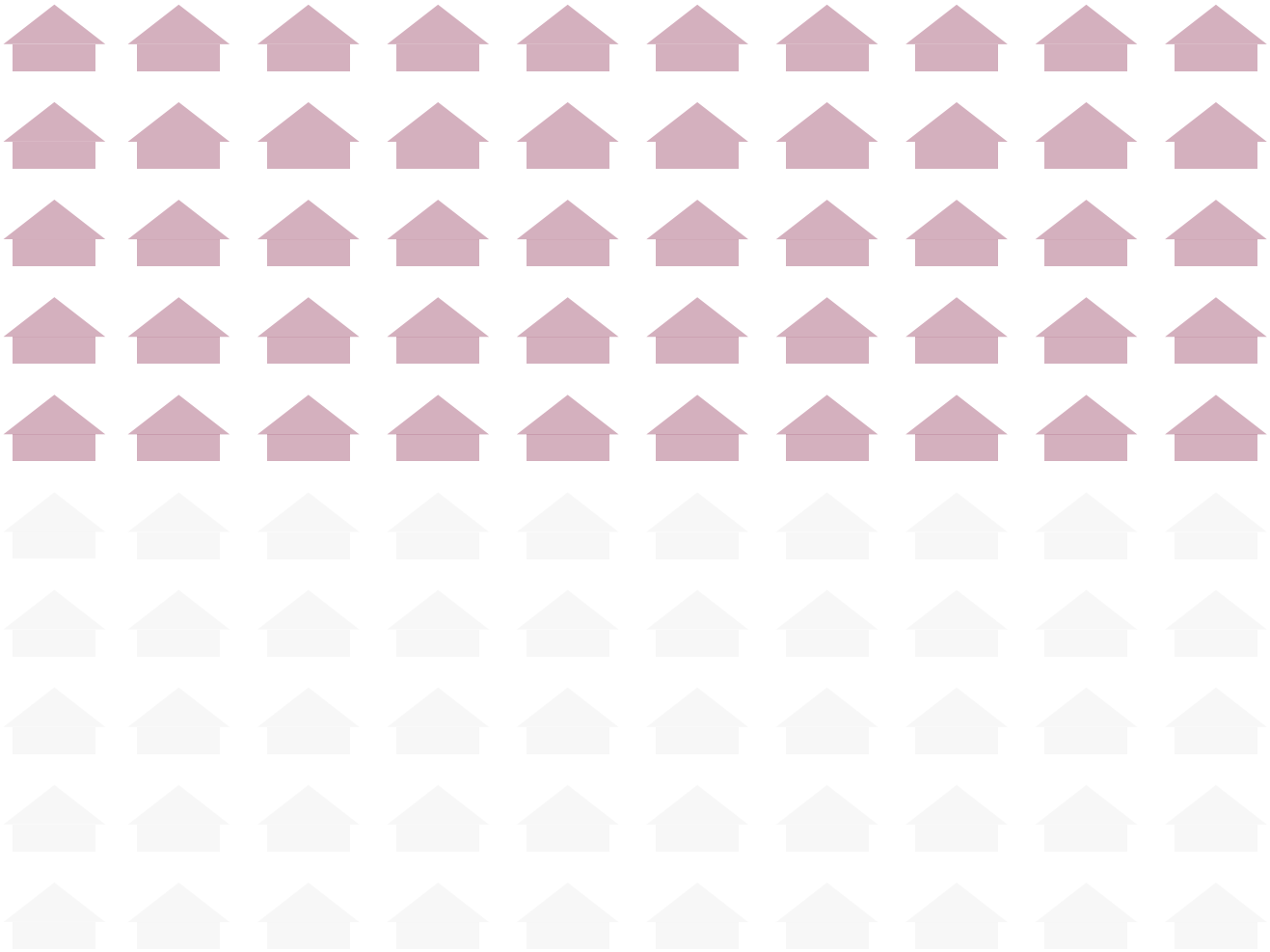
The risk of effluent contaminating drinking water in Indonesia appears to be high.

The risk of effluent contaminating drinking water in Indonesia appears to be high.

The predominant form of sanitation is water-based.

(WSP,2012)

The risk of effluent contaminating drinking water in Indonesia appears to be high.



Over 50% of urban and peri-urban Indonesians take household water from groundwater.

(WHO , 2012)

PDAMs can also take water from rivers that may be contaminated.

The risk of effluent contaminating drinking water in Indonesia appears to be high.

80% of septic tanks fail.

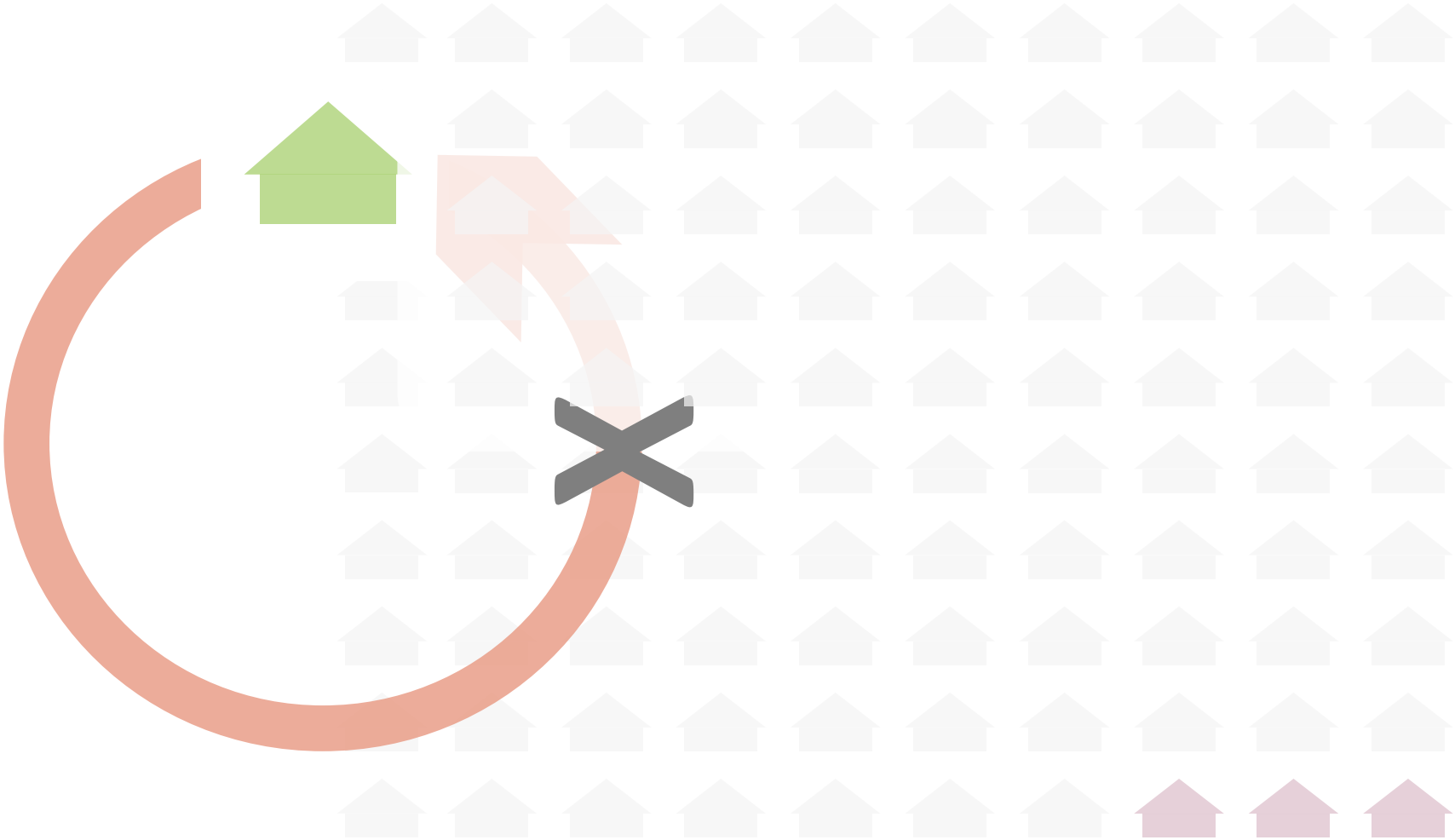
(GOI , WSP)

The risk of effluent contaminating drinking water in Indonesia appears to be high.

Only 3% are connected to sewerage.

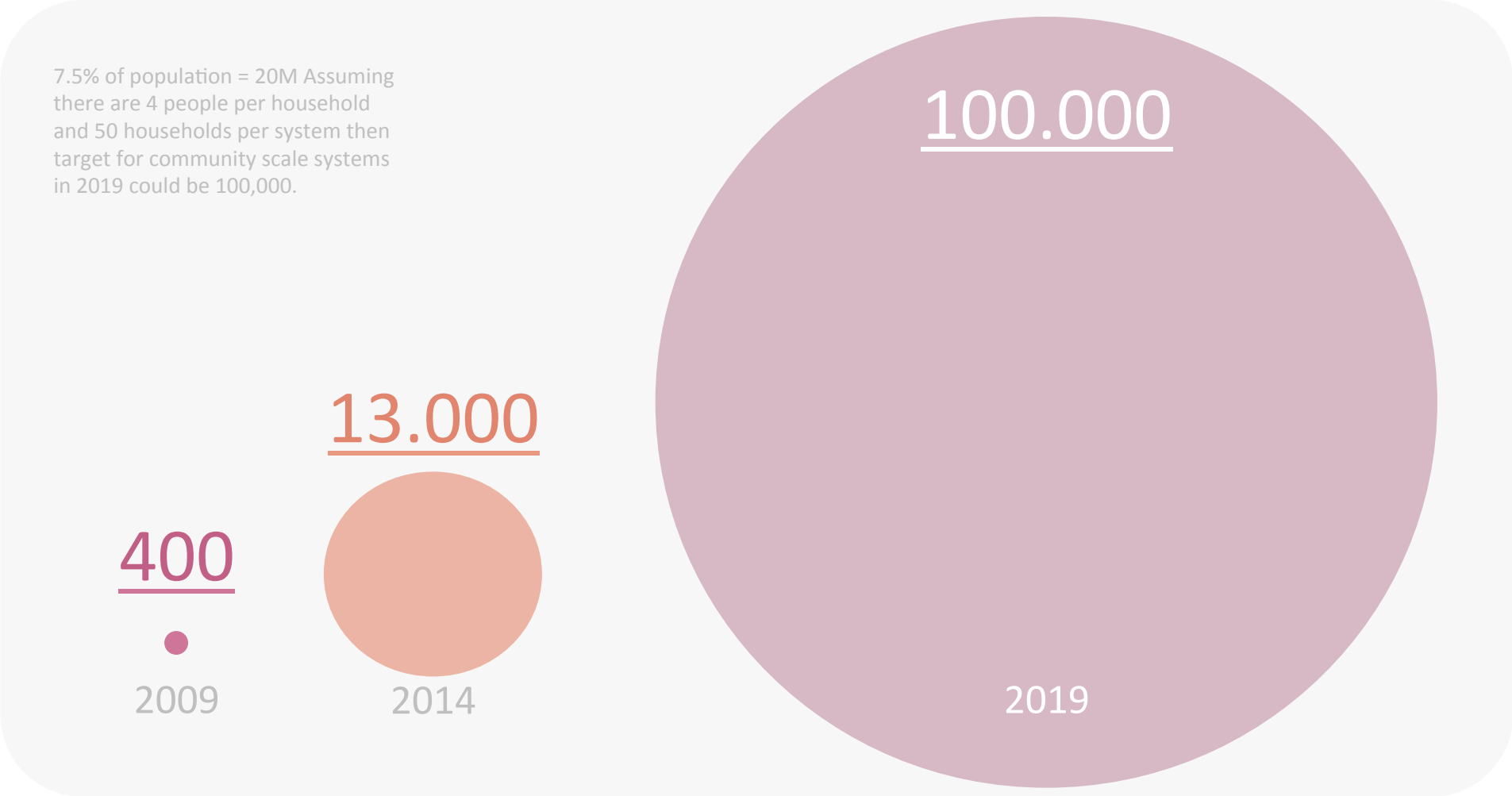
(WSP,2012)

The risk of effluent contaminating drinking water in Indonesia appears to be high.



So we need to focus on separation.

Indonesia's target for 100% sanitation coverage by 2019 is ambitious and so is the target for community scale systems (7.5%).



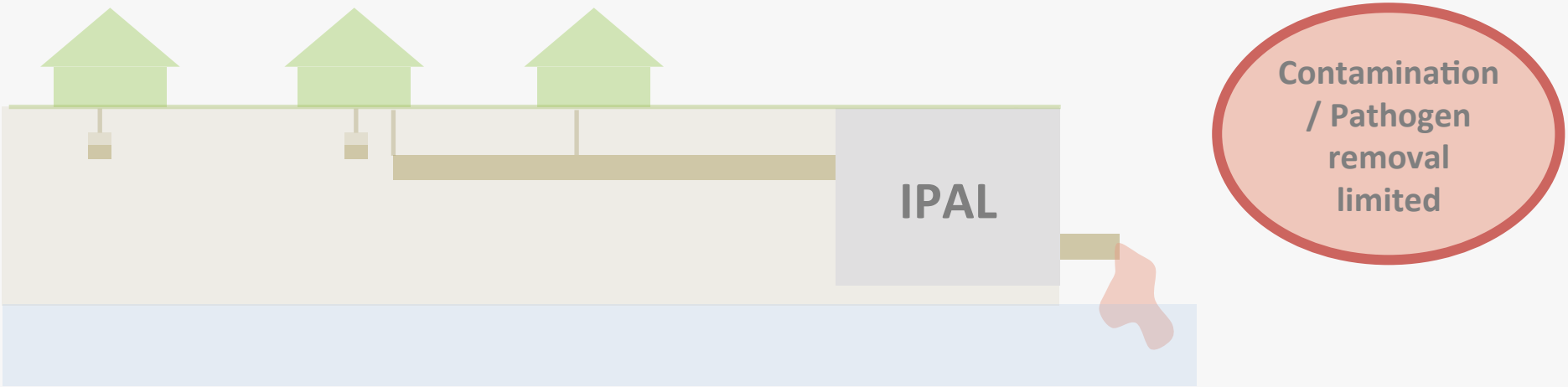
To have 100,000 effective community scale systems by 2019, we need to learn from installed systems so that new systems achieve separation and enable reuse.

Observations from community scale systems

Summary of observations

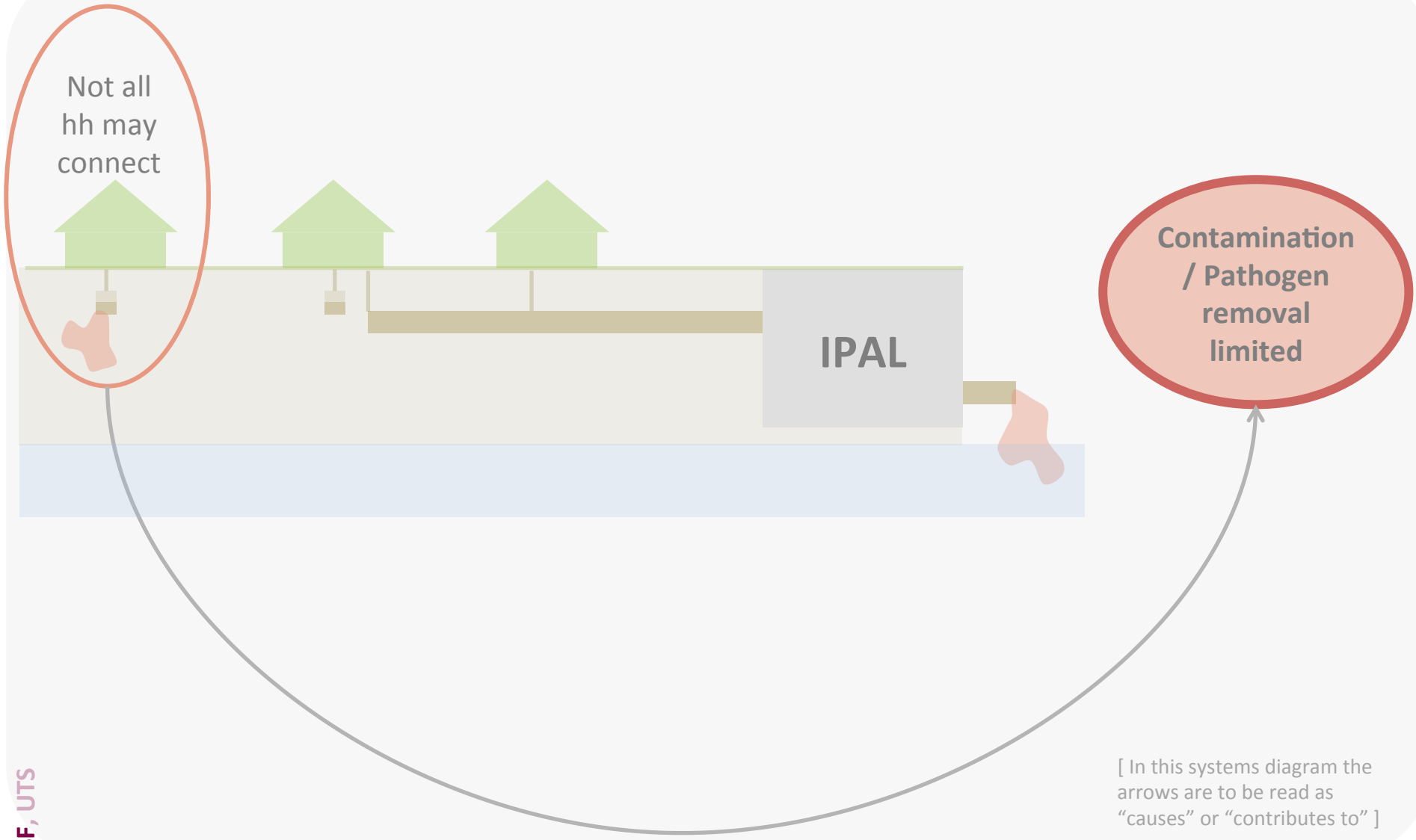
- Program design is central but varies – it influences whether monitoring happens, it seems to influence performance, and in some cases, a program's financial arrangements may accidentally prevent good health and environmental outcomes.
- Only a small proportion of systems are monitored, and that is usually a single post-construction functional check. The technical treatment performance is monitored for a very small proportion of systems.
- The fundamental purpose of sanitation is to separate people and their excreta. We are not yet monitoring separation through human health indicators (e.g. groundwater quality where it is principal drinking water source) or environmental health indicators.
- Post construction surveys suggest that on average, systems have 50% spare capacity – the number of people served could be doubled, without installing any new IPALs.
- Most KSMs have trouble with a similar subset of tasks.

Installing systems doesn’t always deliver separation outcomes.



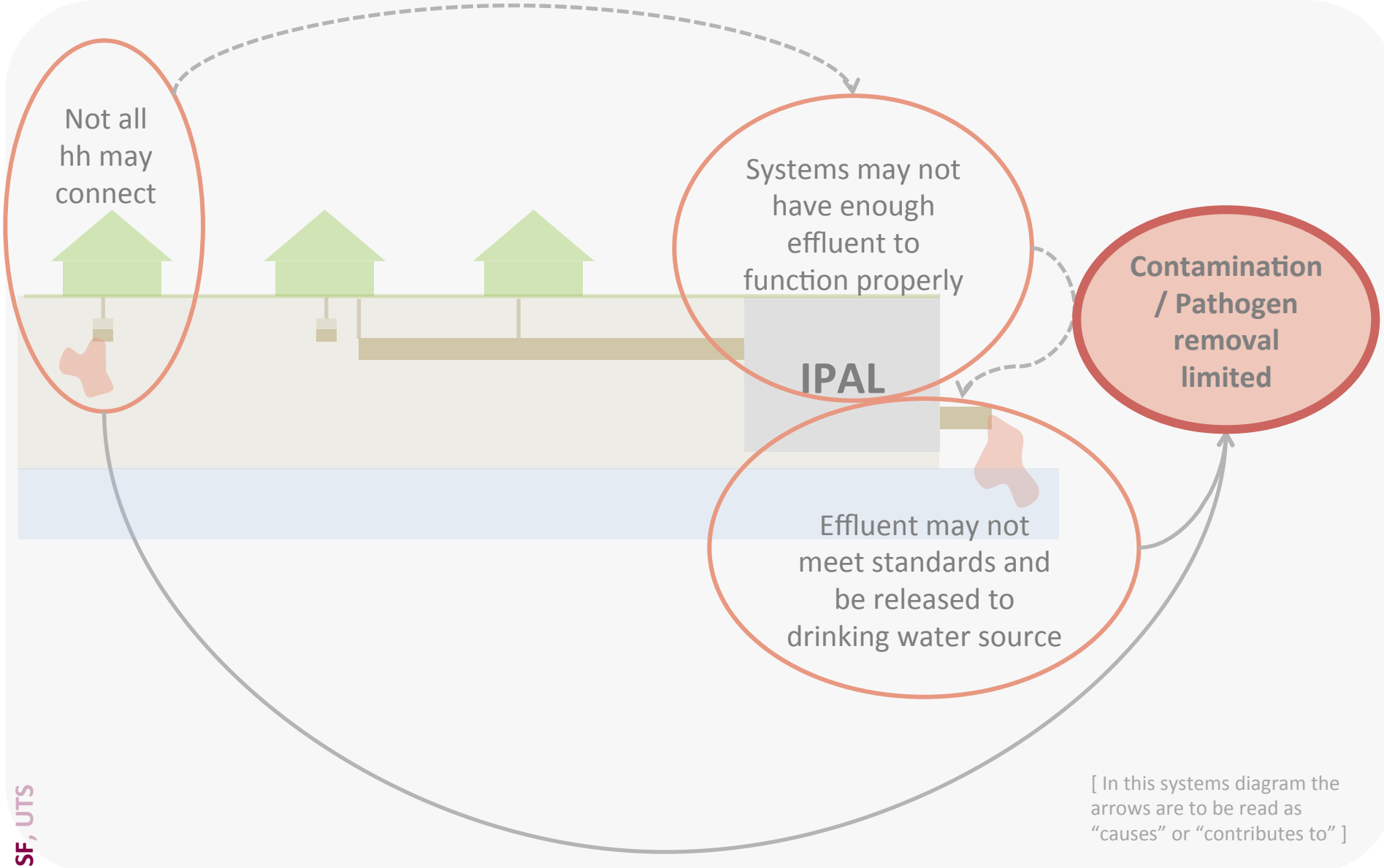
[In this systems diagram the arrows are to be read as “causes” or “contributes to”]

Installing systems doesn't always deliver separation outcomes.

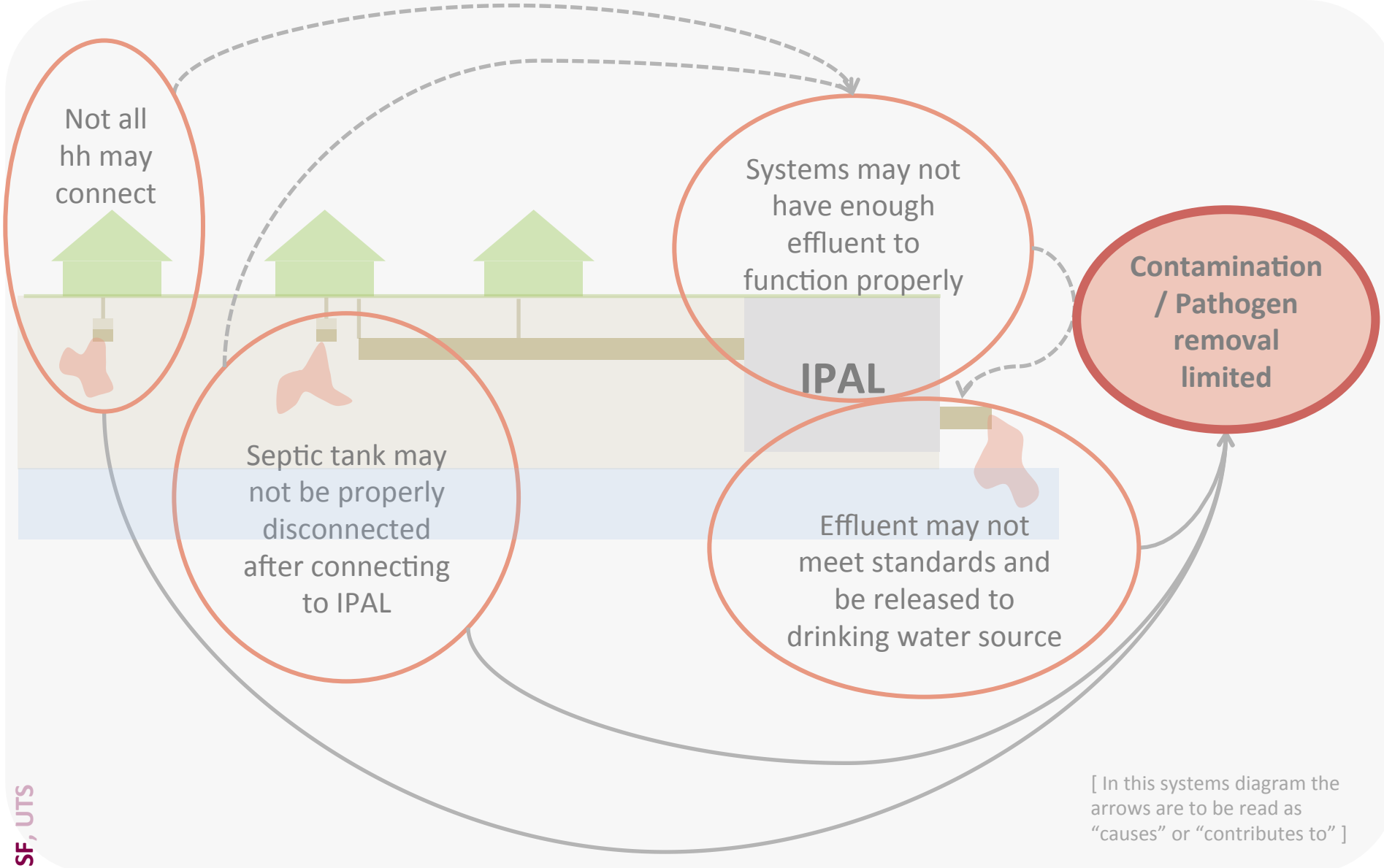


[In this systems diagram the arrows are to be read as "causes" or "contributes to"]

Installing systems doesn't always deliver separation outcomes.

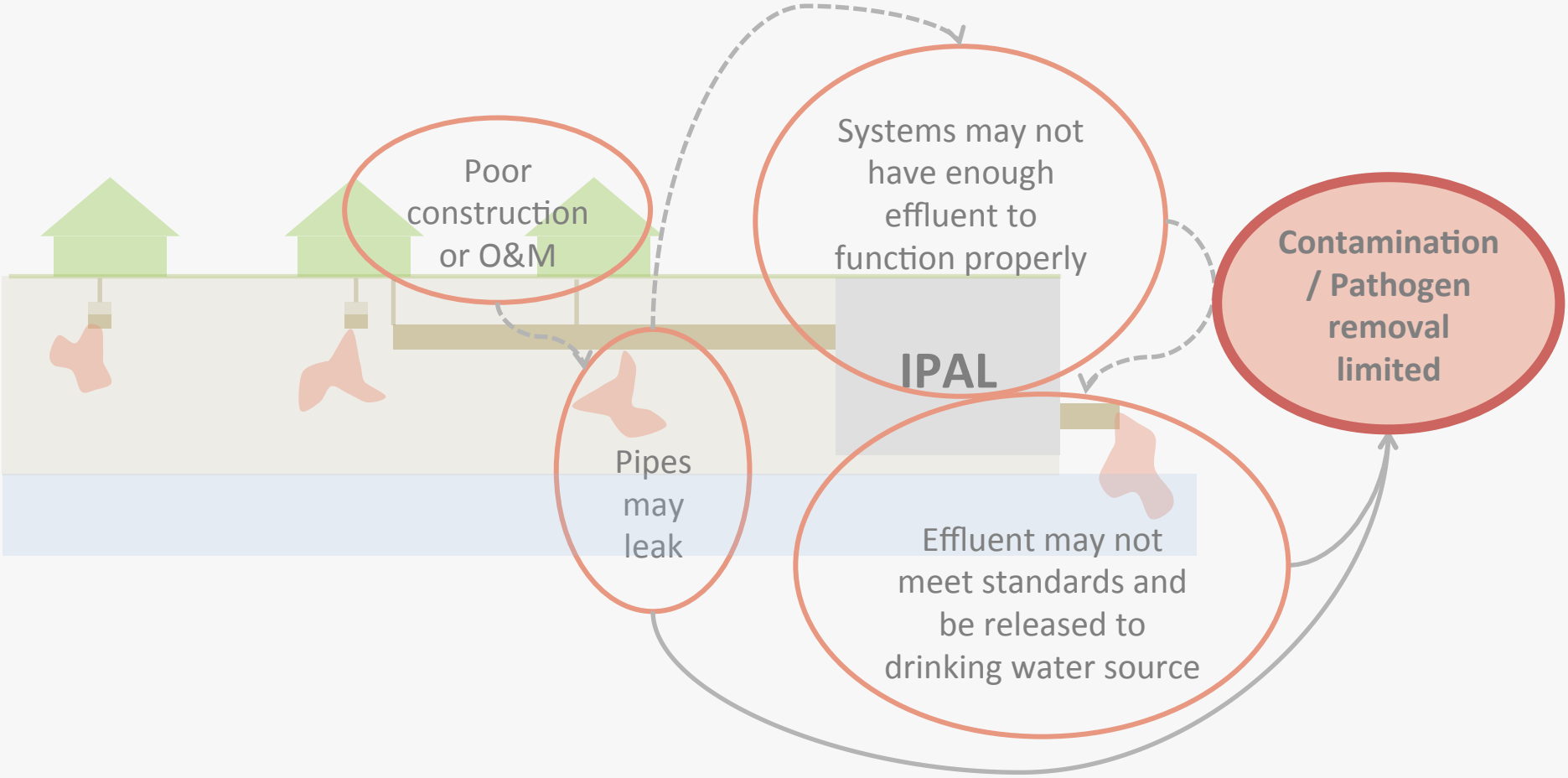


Installing systems doesn't always deliver separation outcomes.



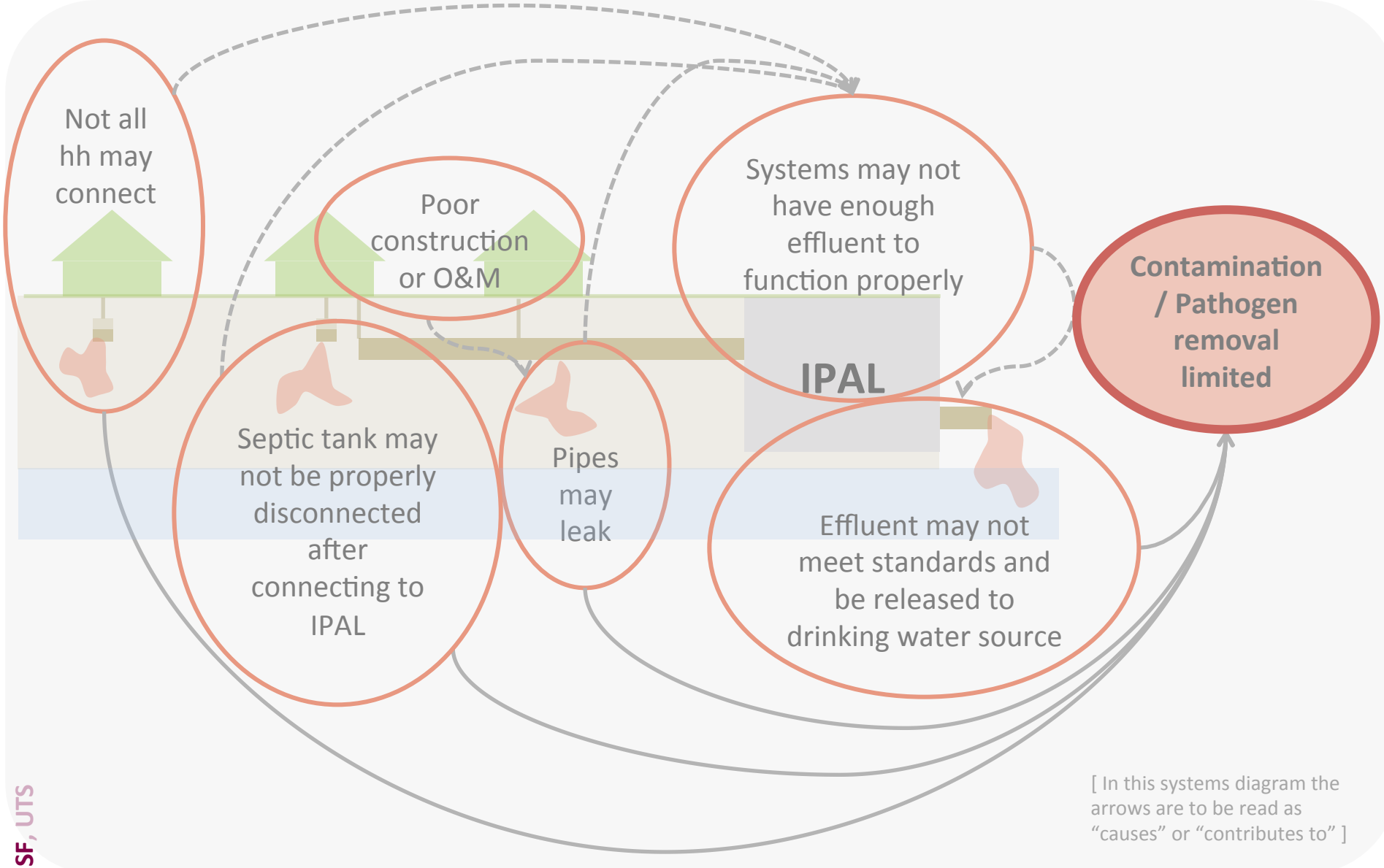
[In this systems diagram the arrows are to be read as "causes" or "contributes to"]

Installing systems doesn't always deliver separation outcomes.

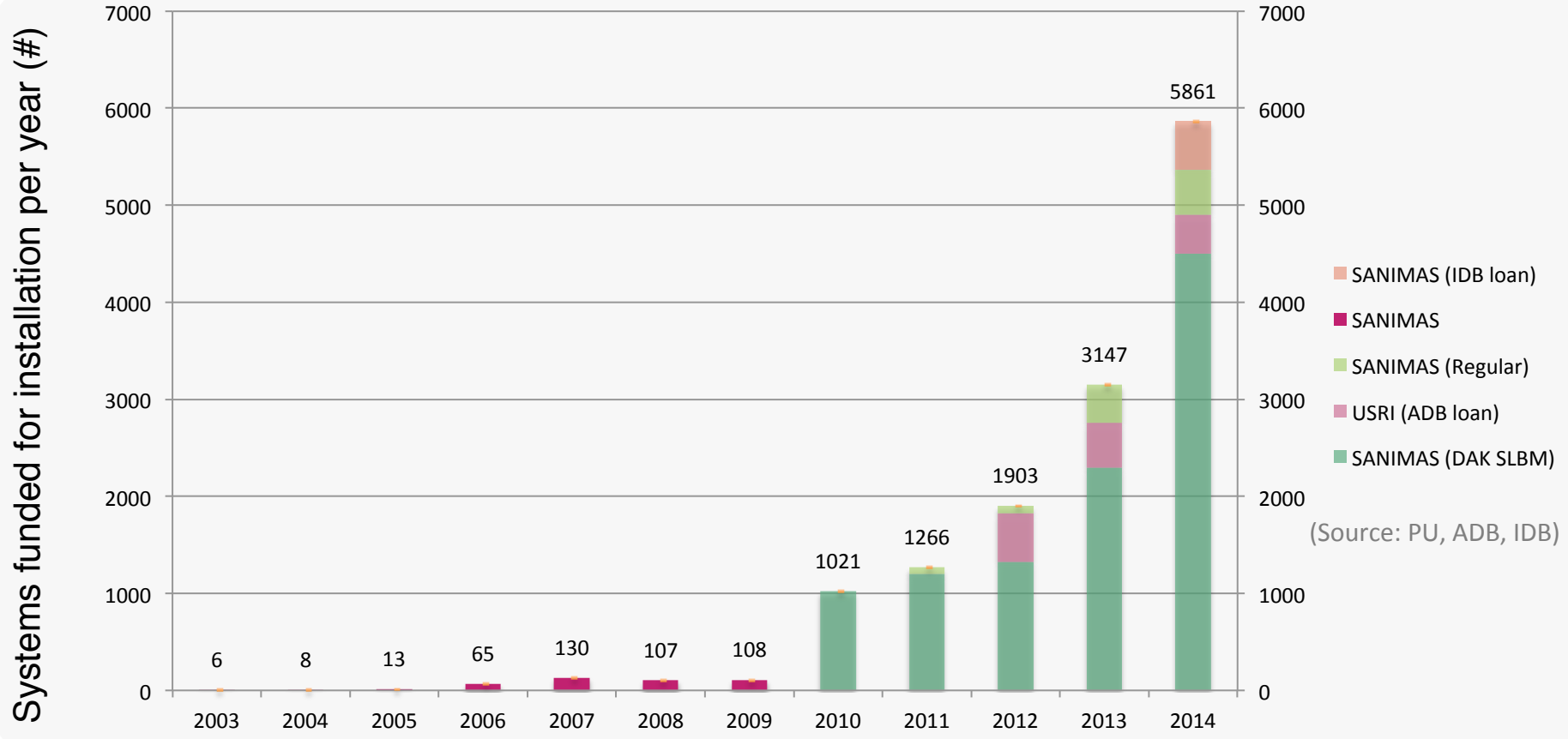


[In this systems diagram the arrows are to be read as "causes" or "contributes to"]

Installing systems doesn't always deliver separation outcomes.

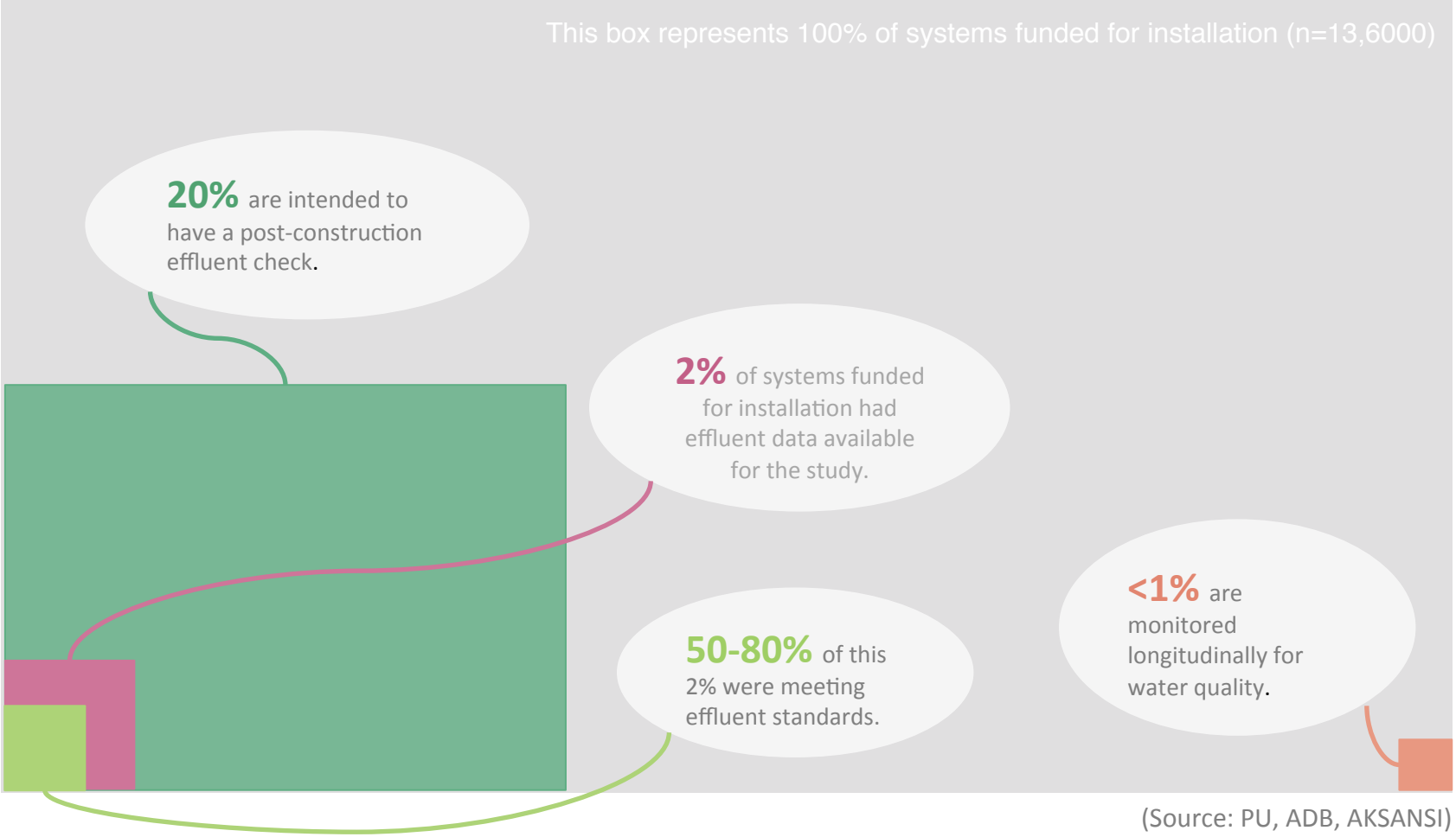


Growth of funding for air limbah systems is exponential.



By 2014 there were over 13,000 systems funded for installation, mostly by SANIMAS DAK SLBM. Available data indicates that the DAK funds the majority of systems for installation (77%), while USRI and the SANIMAS Regular fund similar amounts (10% and 8%, respectively). Anecdotal evidence indicates that the Ministry of Health may also be funding SSS systems.

Of the 13,600 systems funded for installation, about 20% are intended to have a single post construction survey.

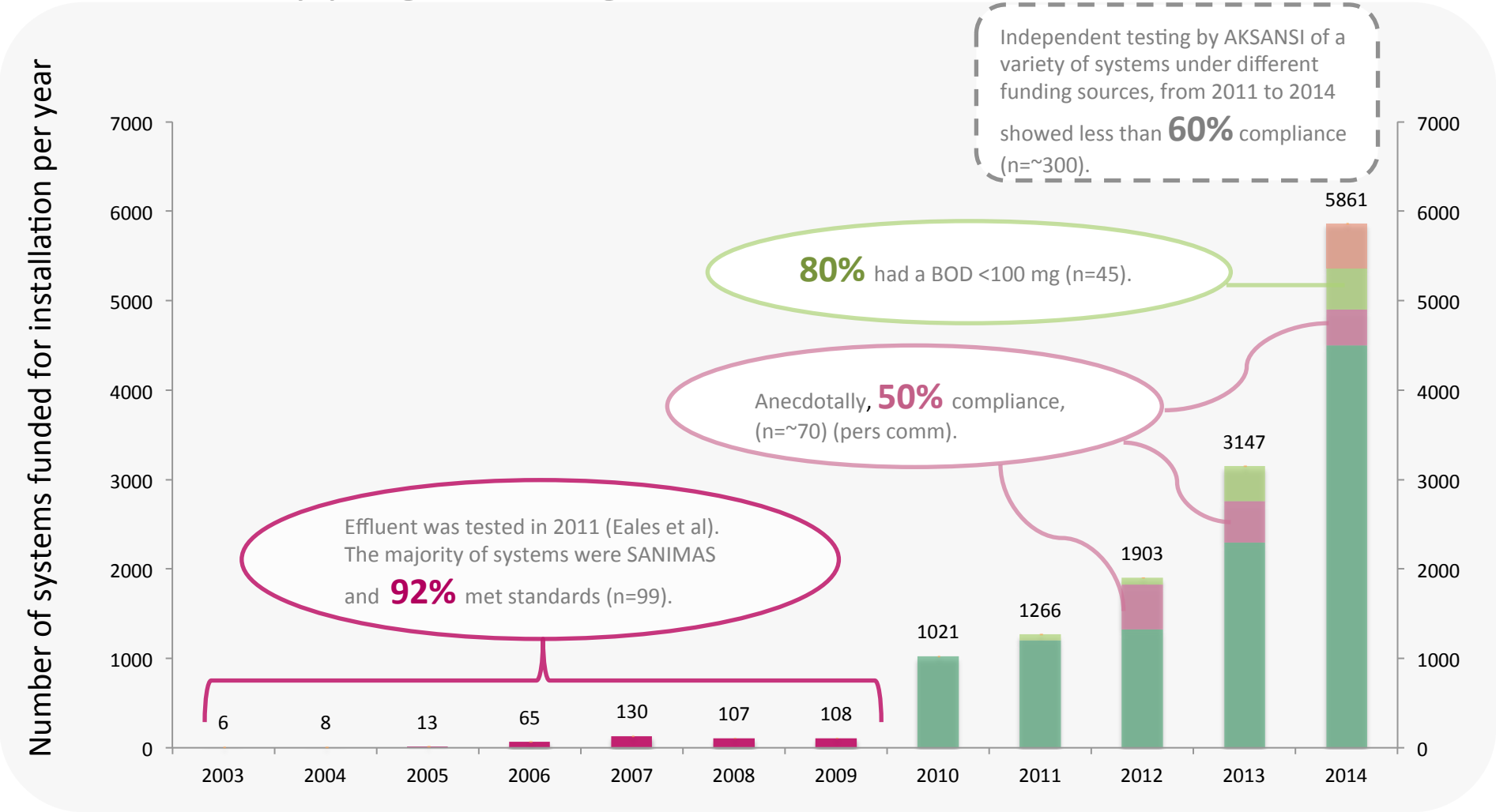


(Source: PU, ADB, AKSANSI)

Almost no systems are monitored longitudinally and it appears that nearly 80% of systems have no monitoring data about the technical, financial, or management performance.

The need to monitor effluent is recognised, but is challenging in practice, because of e.g., lack of funds, uncertainty about responsibility, access to labs and the quality of the lab testing.

The available data indicates that system performance could be influenced by program design.



The systems under the original SANIMAS program had very good performance.

Longitudinal monitoring appears to not be undertaken.

	Post-construct audit	Planned longitudinal monitoring		
Infrastructure life (years):	**1 yr**	**5 yrs**	**10 yrs**	**20 yr**
Systems funded by: DAK SLBM	?			
APBN PU	✔			
ADB USRI	✔			
Systems monitored by: AKSANSI	✔			
Systems report in: NAWASIS	✔			

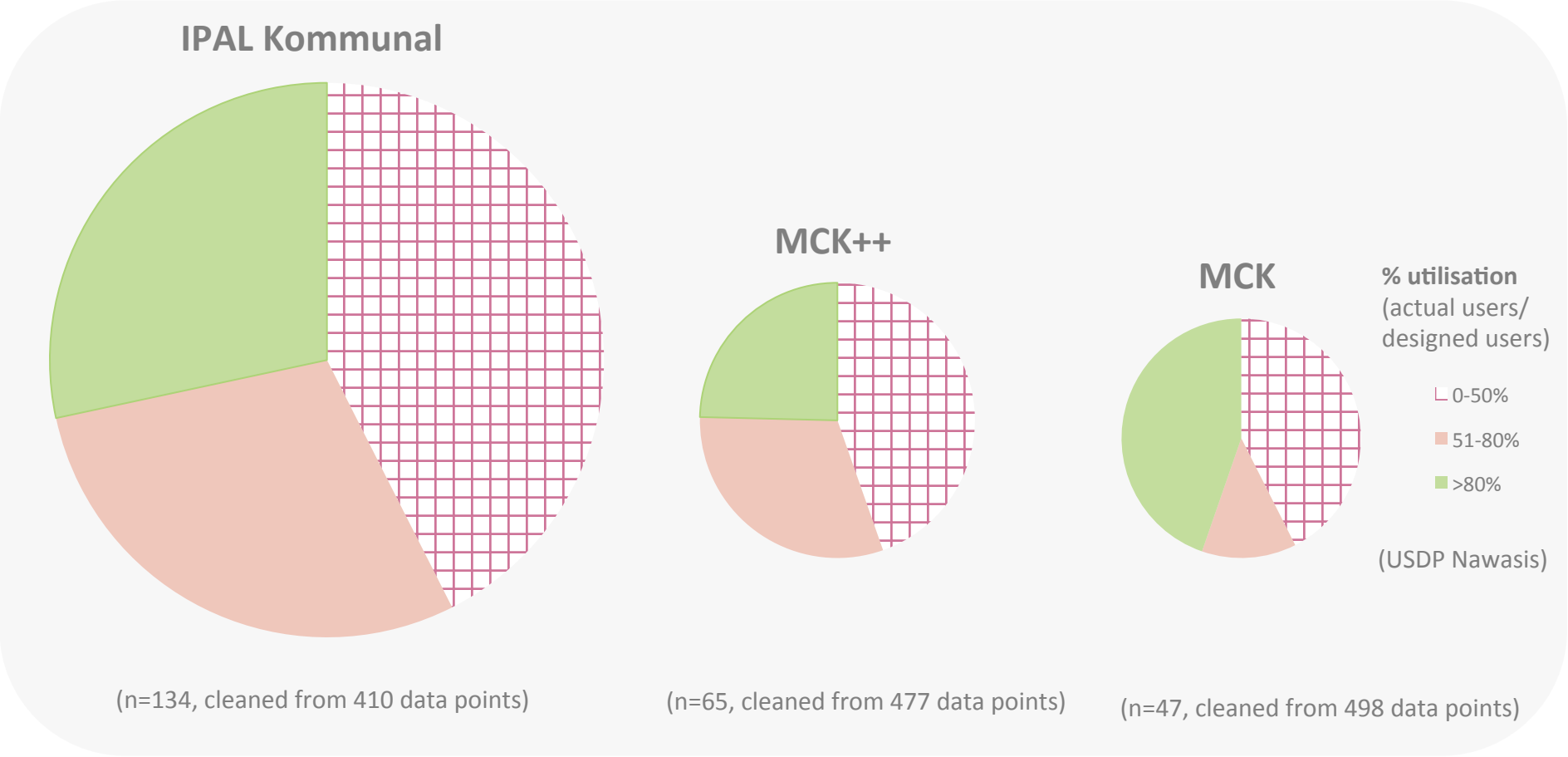
Some programs require a post-construction assessment. Usually the assessment is conducted within one year after construction, when systems are likely to perform well. The assessment does not monitor separation. Planning for on-going monitoring over the asset lifecycle appears not to be implemented, and we were unable to ascertain if on-going separation is achieved.

Monitoring human health and water quality impacts can demonstrate separation, and does not seem to occur.

Components of post construction check:	Governance aspects				Required impacts	
	Financial sustainability	Functioning technology	Sustaining demand	Effective management	Human health	Water quality
Systems funded by: DAK SLBM (77% of systems)					?	
APBN PU (11% of systems)	✔	✔				
ADB USRI (10% of systems)	✔	✔	✔			
Systems monitored by : AKSANSI	✔	✔	✔	✔		
Systems reported in: NAWASIS	✔	✔				

AKSANSI's monitoring appears to be the most comprehensive. It is unconfirmed if any post-construction checks or on-going monitoring is undertaken for the DAK funding.

Post construction surveys suggest a very wide range of actual use of air limbah systems.



Available data suggests that actual use of air limbah systems is about half of system design, suggesting a large opportunity to increase use of existing systems to, a maximum, double existing coverage.

Most KSMs could benefit from support.

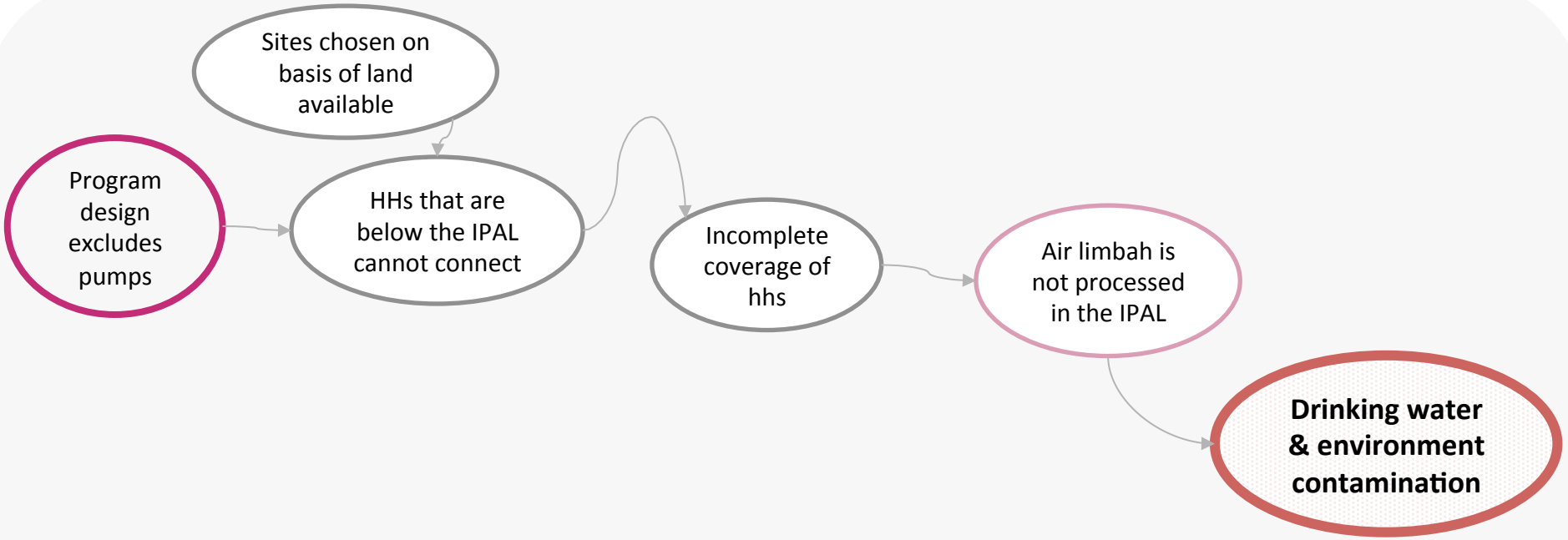
	Manageable tasks for the KSM	Challenging tasks for the KSM
Successful operation	✓ Flushing the system ✓ Checking pipes for cracks ✓ Planning and tracking completed O+M tasks ✓ Fixing blockages	❑ Monitoring of effluent ❑ Repairing facilities (MCK) ❑ Conducting biogas maintenance ❑ Deodorising the methane ❑ Unused facilities (MCK & unconnected SSS) ❑ De-scumming monthly ❑ De-sludging every 2-4 years
Sustainable financing	✓ Keeping records of group assets	❑ Managing the treasury book & bank account ❑ Preparing financial accountability report ❑ Collecting user fees ❑ Forecasting recurrent costs ❑ Planning & budgeting for major expenses, uncertainty, emergencies ❑ Sourcing supplementary income streams
Sustaining demand	✓ Conducting health campaign ✓ Reminding users of their responsibilities & providing support ✓ Conducting monthly users meetings ✓ Cleaning the MCK	❑ Educating about the benefits of the system
Effective management	✓ Paying KSM ✓ Keeping complaint recording mechanism ✓ Hosting regular management meetings	❑ Paying operator ❑ Ensuring operator legitimacy in community

(Source: AKSANSI)

Program design may inadvertently prevent health outcomes.

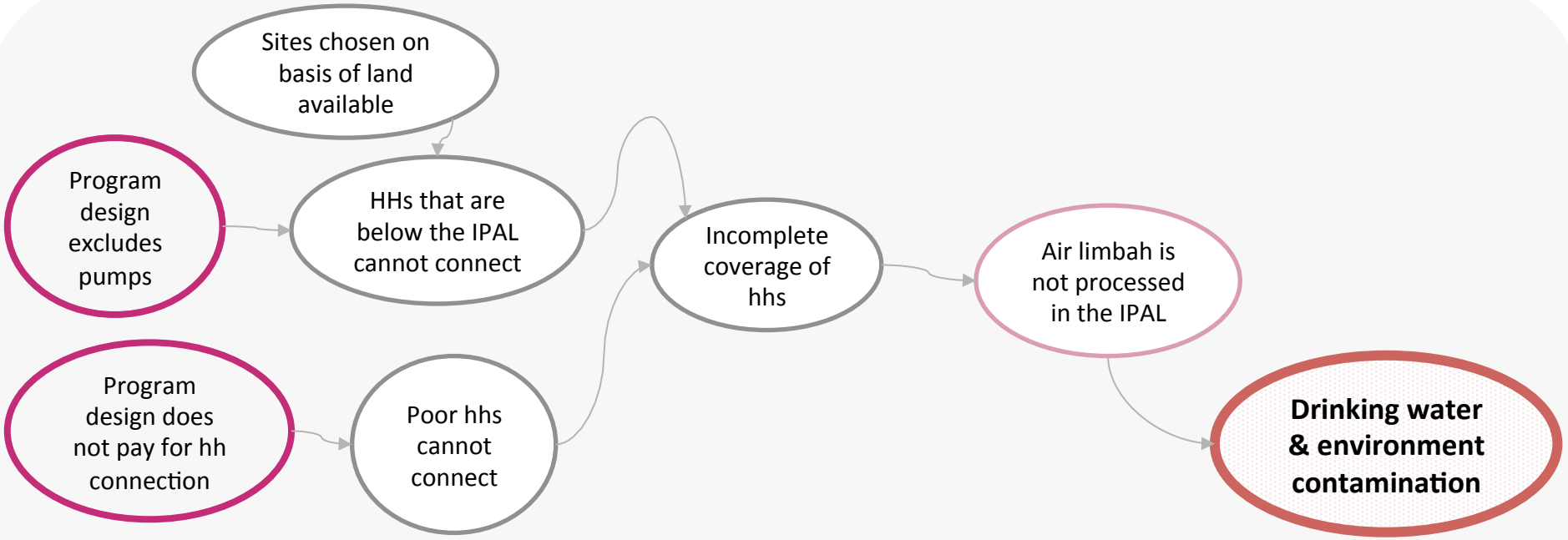
[In this systems diagram the arrows are to be read as “causes” or “contributes to”]

Program design may inadvertently prevent health outcomes.



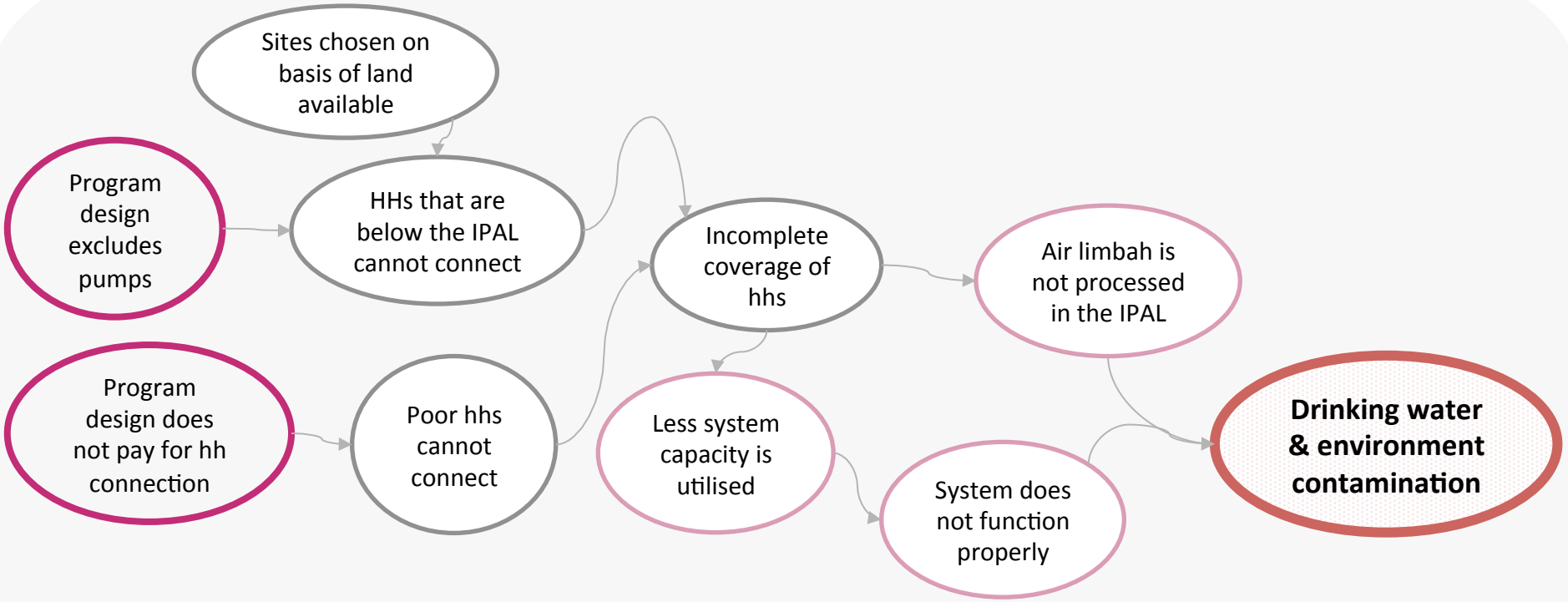
[In this systems diagram the arrows are to be read as “causes” or “contributes to”]

Program design may inadvertently prevent health outcomes.



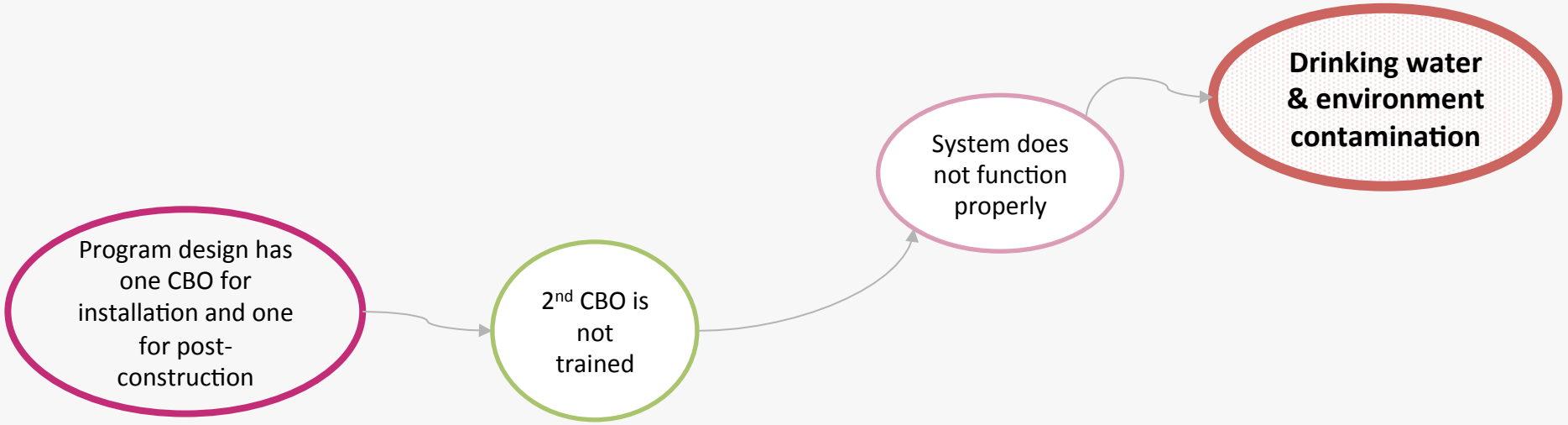
[In this systems diagram the arrows are to be read as “causes” or “contributes to”]

Program design may inadvertently prevent health outcomes.



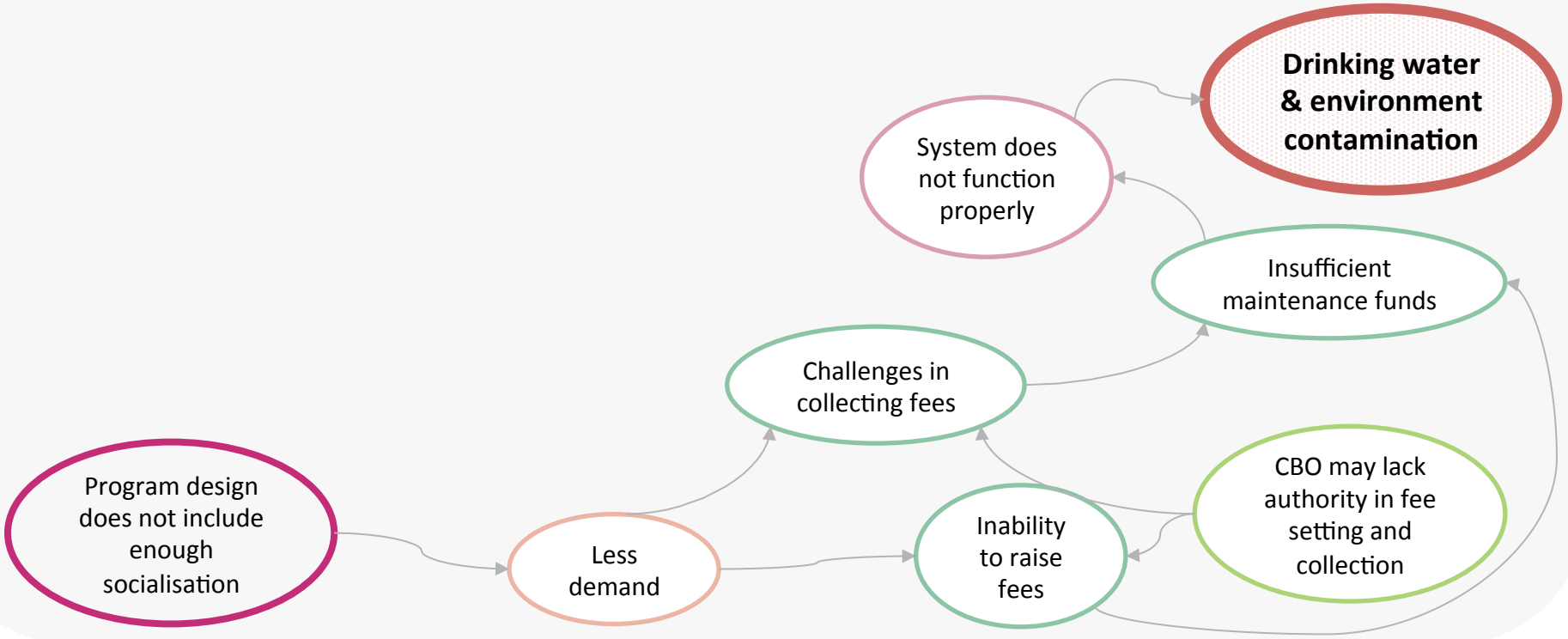
[In this systems diagram the arrows are to be read as “causes” or “contributes to”]

Program design may inadvertently prevent health outcomes.



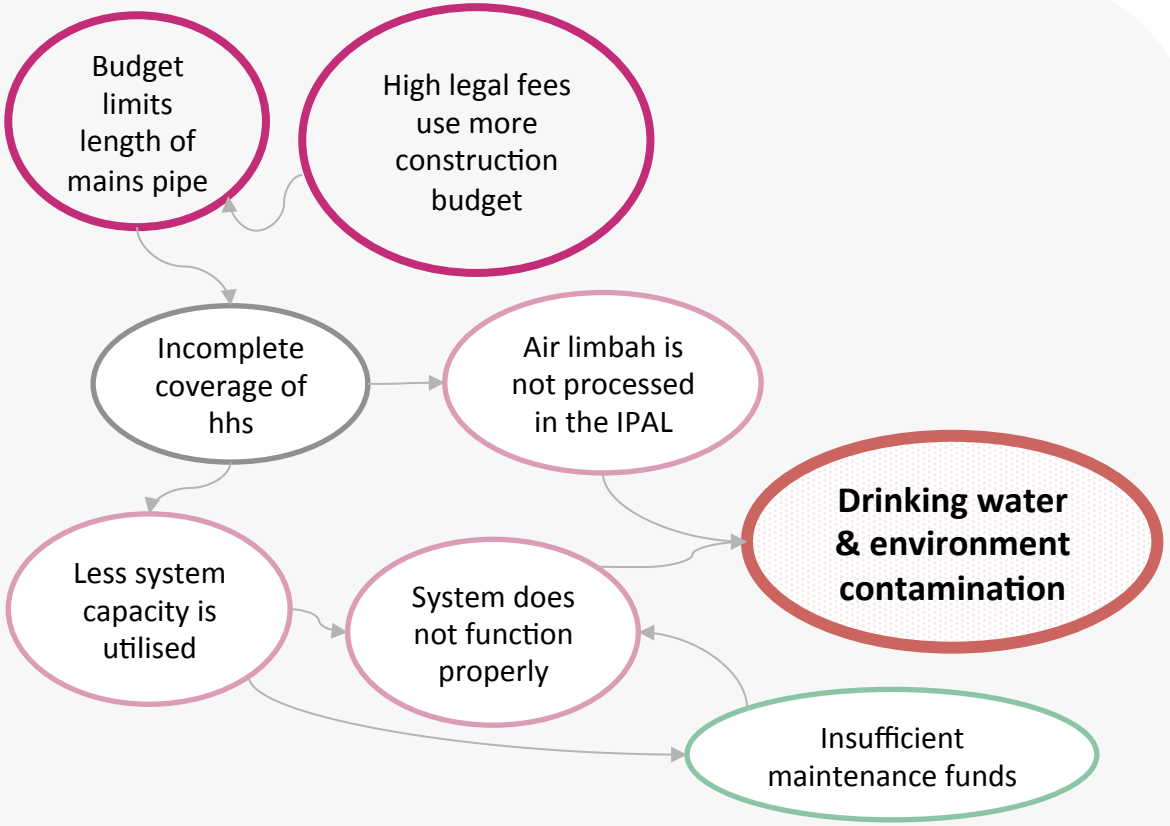
[In this systems diagram the arrows are to be read as “causes” or “contributes to”]

Program design may inadvertently prevent health outcomes.



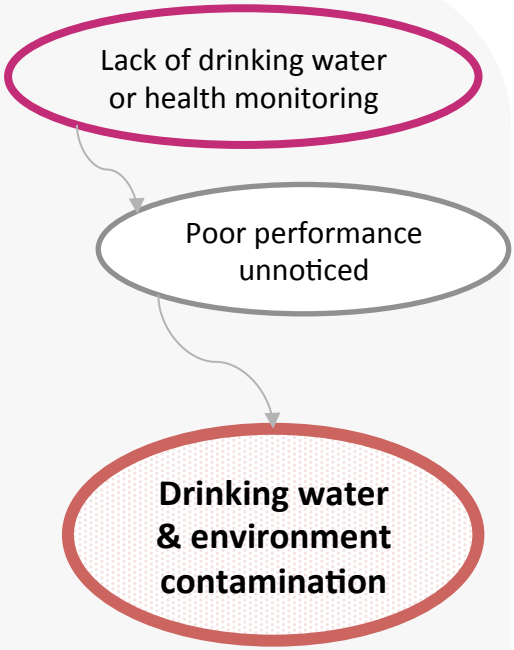
[In this systems diagram the arrows are to be read as “causes” or “contributes to”]

Program design may inadvertently prevent health outcomes.



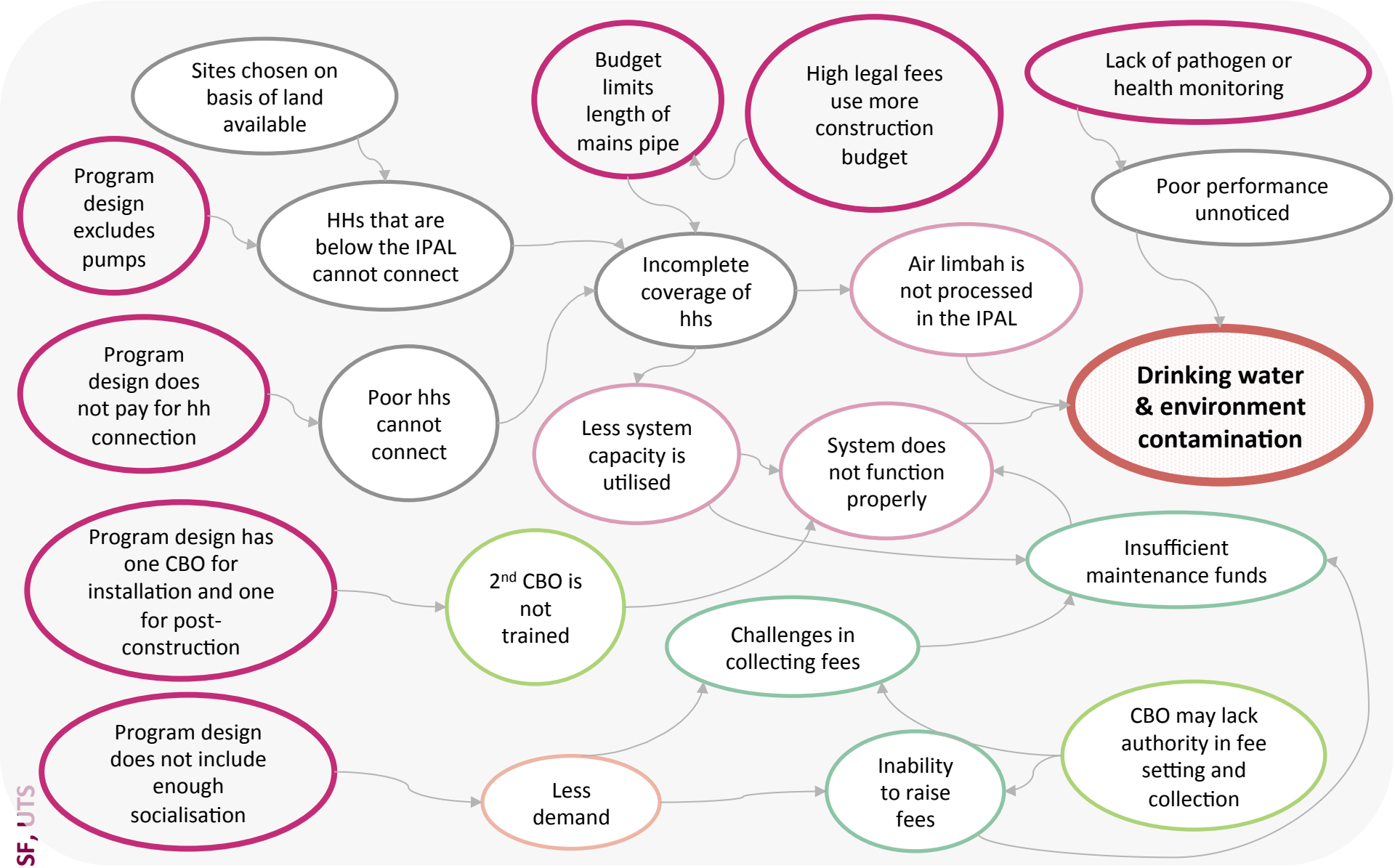
[In this systems diagram the arrows are to be read as “causes” or “contributes to”]

Program design may inadvertently prevent health outcomes.



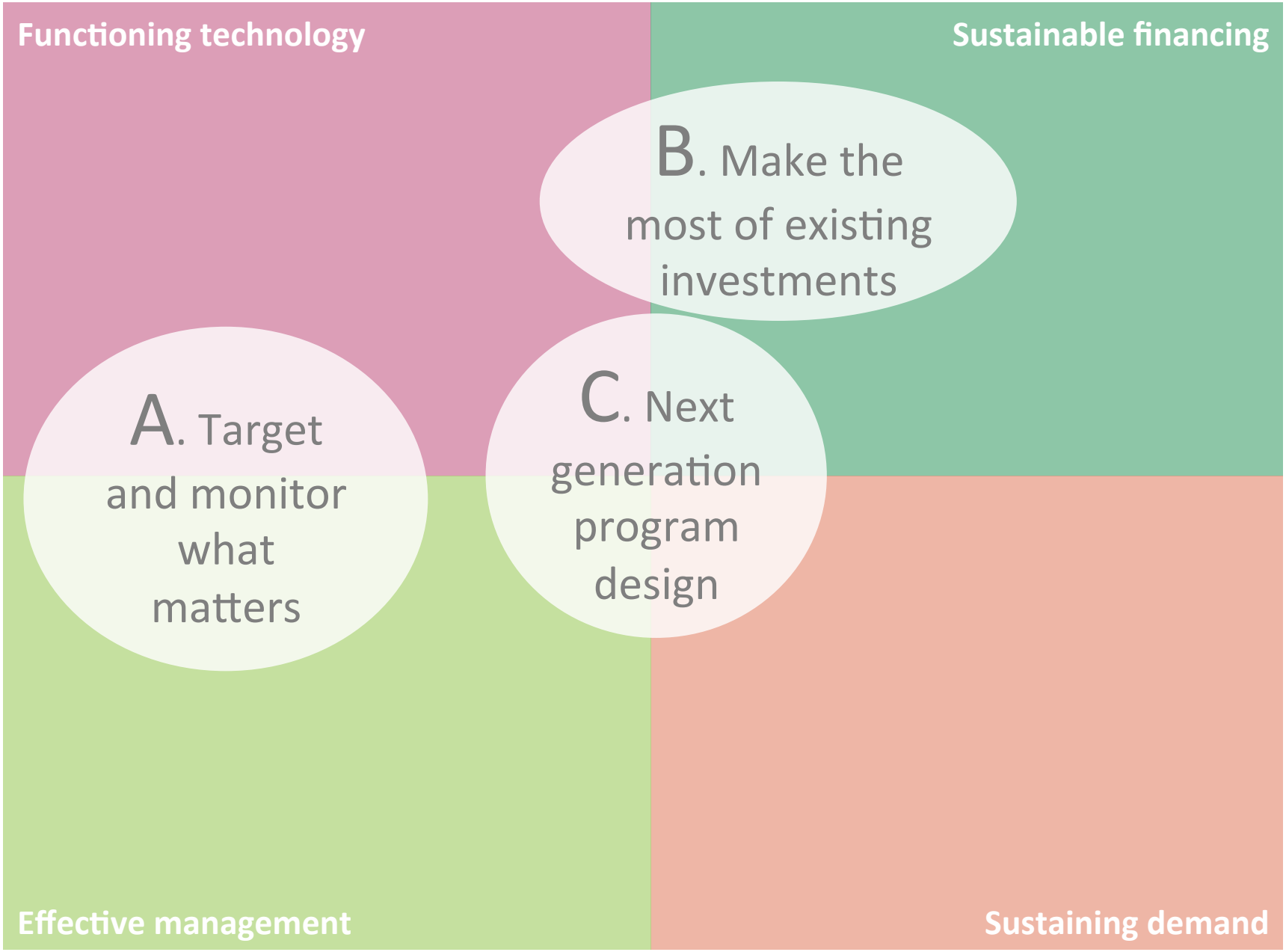
[In this systems diagram the arrows are to be read as “causes” or “contributes to”]

Program design may inadvertently prevent health outcomes.



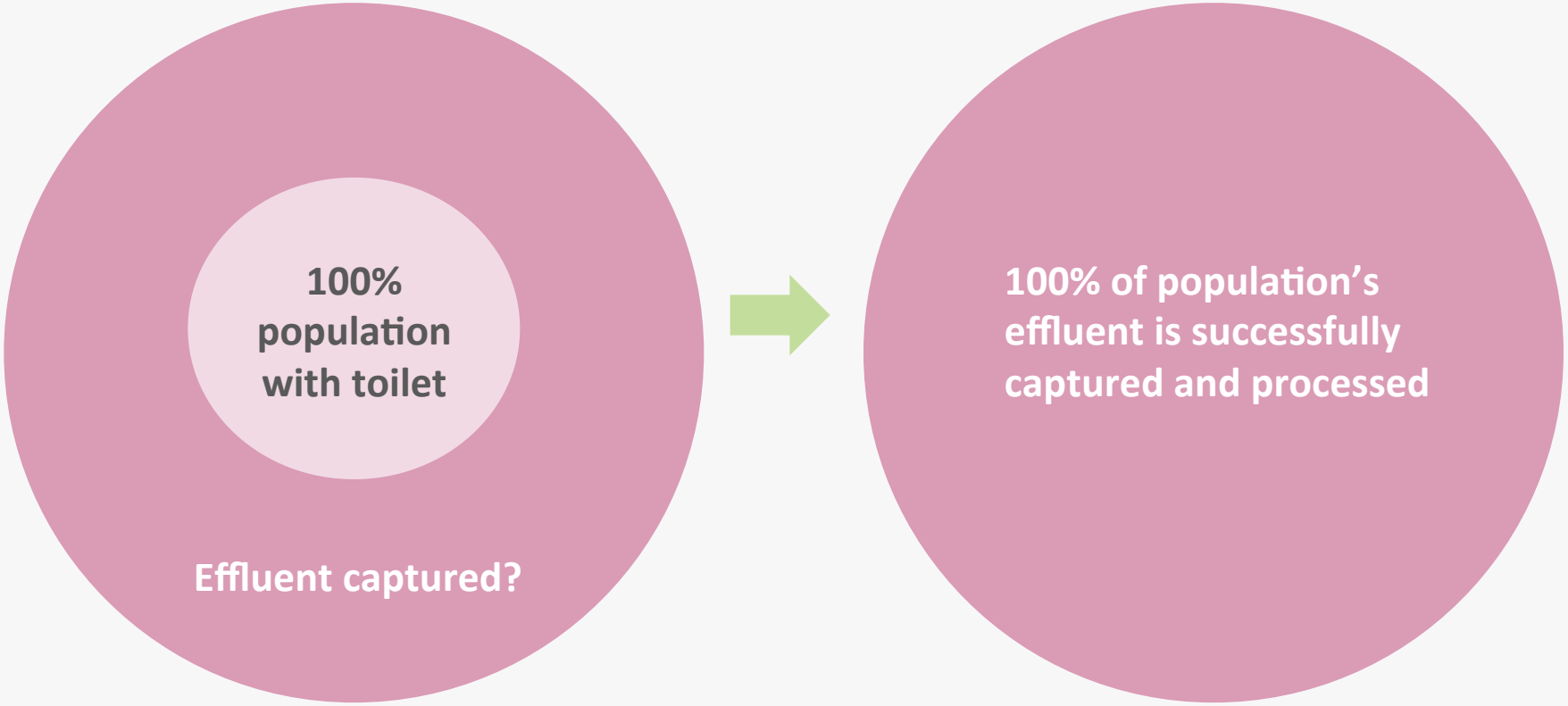
[In this systems diagram the arrows are to be read as “causes” or “contributes to”]

Proposed recommendations


Functioning technology
Sustainable financing
B. Make the most of existing investments
A. Target and monitor what matters
C. Next generation program design
Effective management
Sustaining demand


Functioning technology
A. Target and monitor what matters
Effective management

A. Target and monitor what matters



What matters will shift in the next generation of air limbah management, for example, to treatment and towards resource recovery.

A. Target and monitor what matters

1. All systems get a post-construction audit

2. Monitoring reflects the local situation, e.g:
   - Where groundwater is principal source of drinking water, monitor ground water annually
   - Where PDAM provides water, then monitor receiving water quality

Example monitoring plan	Post-construct audit	Water and environment monitoring		
	1 yr	5 yrs	10 yrs	20 yr
Systems funded by: DAK SLBM	✔	✔	✔	✔
APBN PU	✔	✔	✔	✔
ADB USRI	✔	✔	✔	✔
Systems monitored by: AKSANSI	✔	✔	✔	✔
Systems report in: NAWASIS	✔	✔	✔	✔

How can we create the conditions for monitoring what matters?

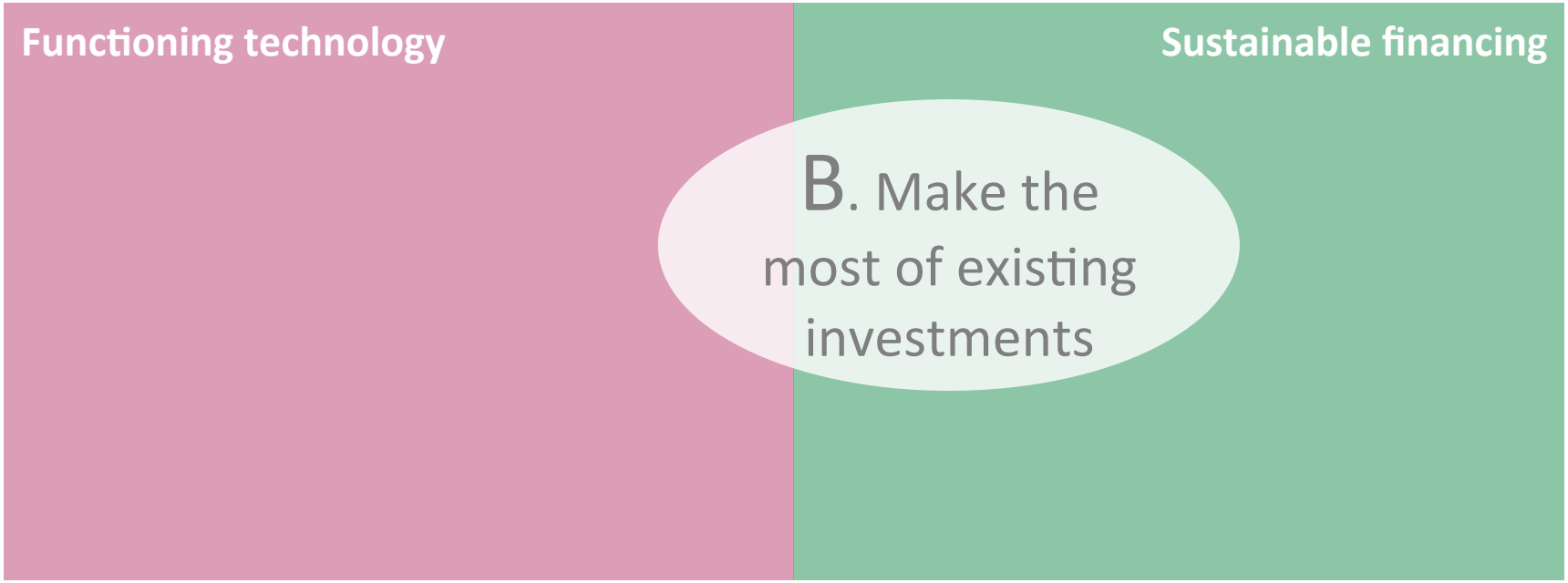
For example:

How could program managers influence long-term appropriate performance monitoring?

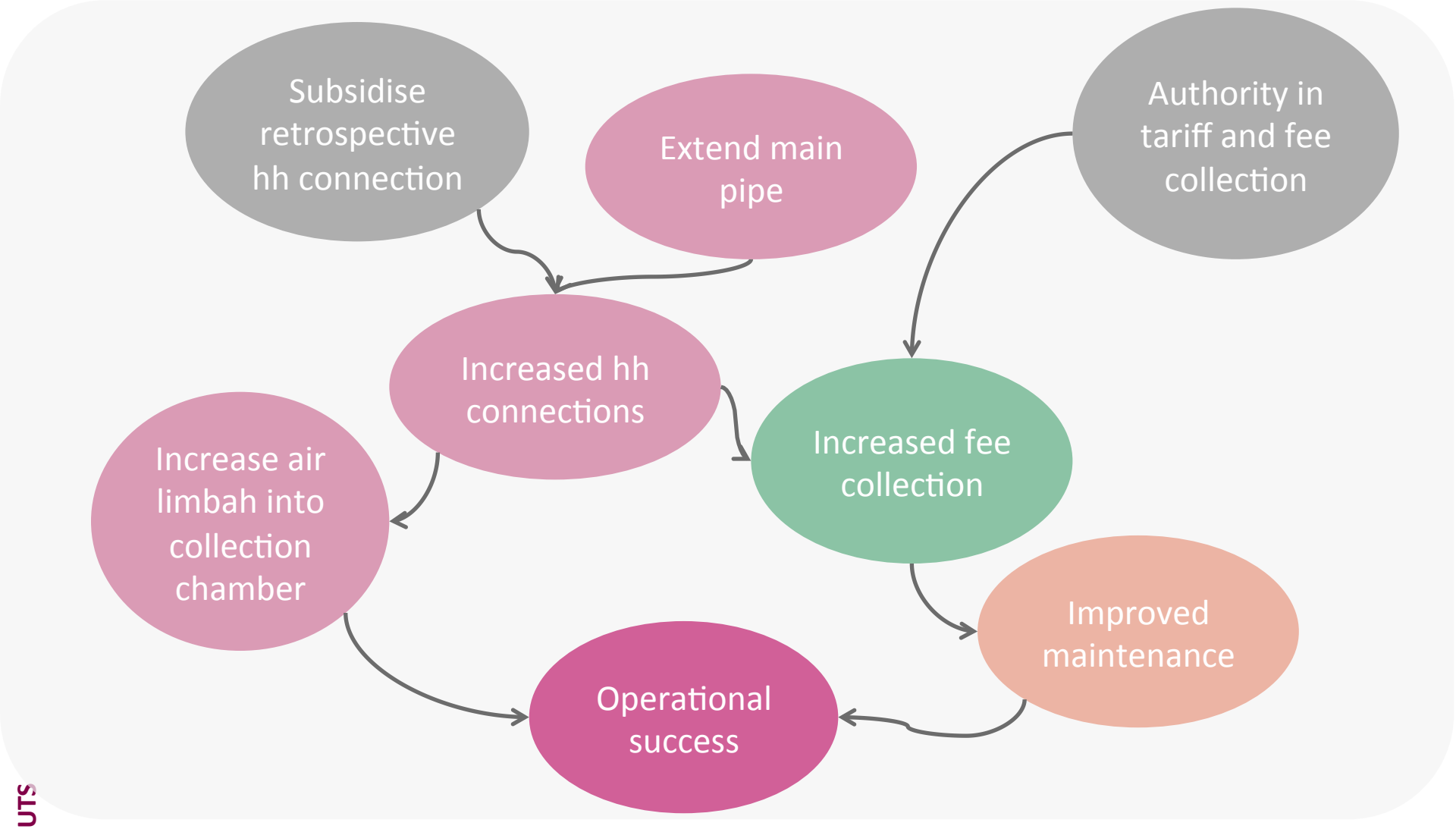
Who could undertake longitudinal performance monitoring and evaluation?

How could programs link with existing monitoring (AKSANSI, NAWASIS, Ministry of Health, Ministry of Environment)?

Who could undertake a cross-programmatic evaluation of the existing systems?


Functioning technology
Sustainable financing
B. Make the most of existing investments

Effectiveness of existing systems can be significantly improved through **simple interventions**.

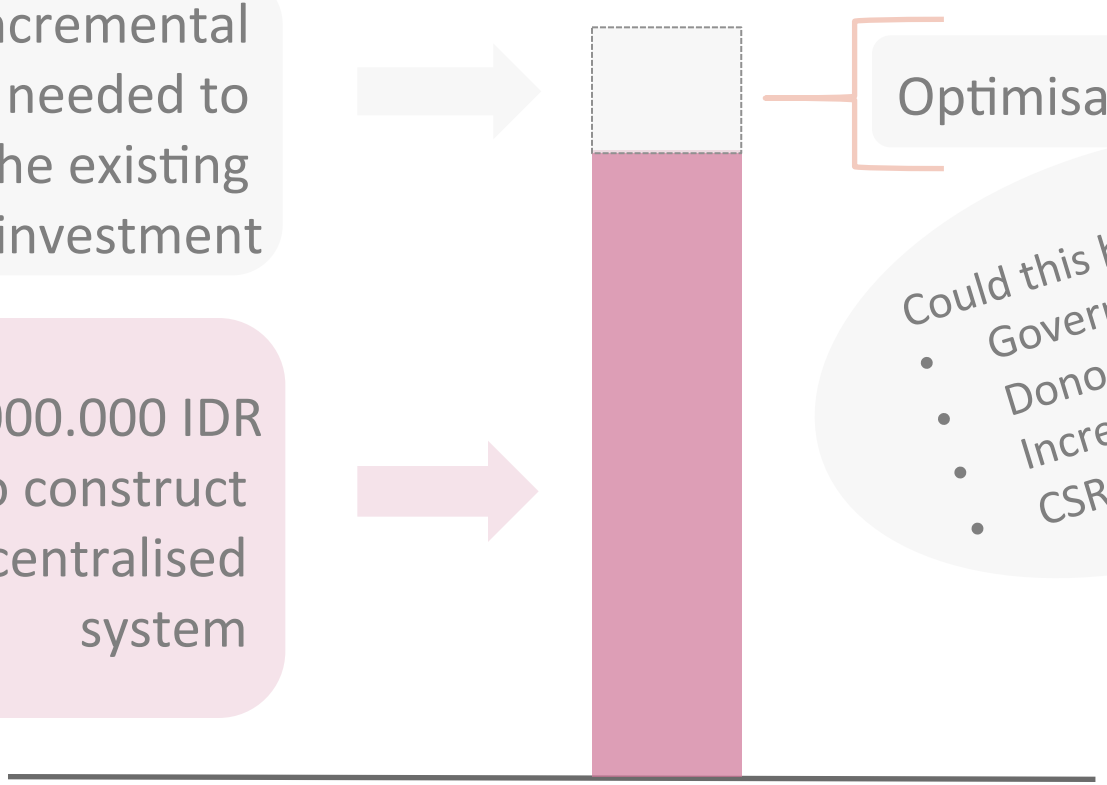


Existing data shows that investing in existing systems could significantly increase coverage.

These **simple interventions** could be funded a variety of ways.

Necessary incremental amount needed to optimise the existing investment

Initial 425.000.000 IDR invested to construct the decentralised system

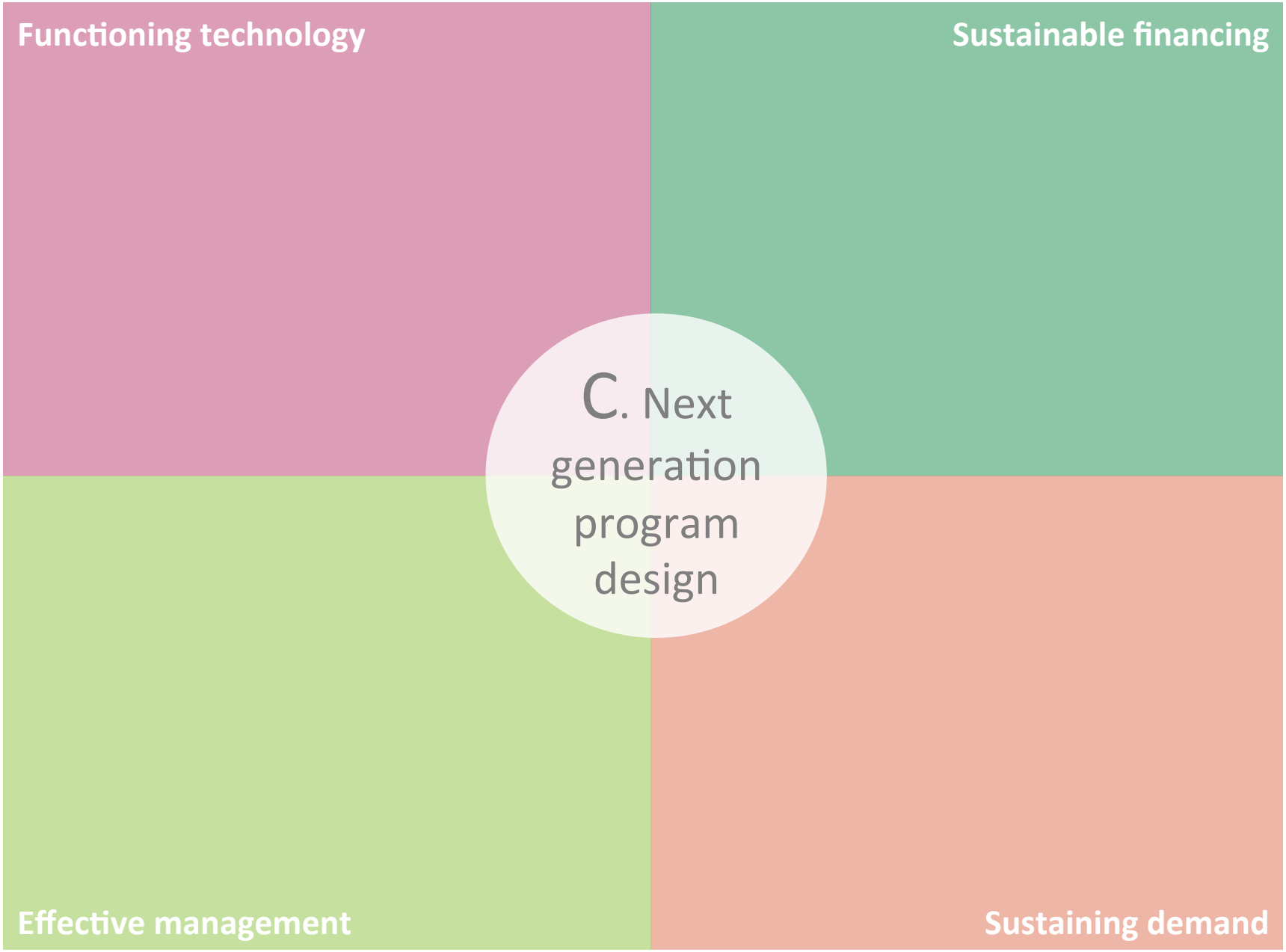


Optimisation gap

Could this be filled by:

- Government
- Donor programs
- Increased user fees
- CSR

What is the value of the optimisation gap and who could pay?


Functioning technology
Sustainable financing
C. Next generation program design
Effective management
Sustaining demand

Initial ideas for improving donor and GoI programs:

- find ways to pay for/connect all households to help ensure design capacity (and therefore system operation) is used and no groups are marginalised or excluded
- formalise tariff setting to improve user approval of fees
- formalise fee collection to improve user payment rates
- maximise KSM capacity to deliver e.g., include powerful local champions to improve standing in community during construction and operation, ensure good handovers when members change
- responsible management partnerships with local government to ensure all operational responsibilities for the system are successfully undertaken

Project Team Details

Institute for Sustainable Futures,
University of Technology Sydney
www.isf.uts.edu.au

Project Director:

Dr Cynthia Mitchell FTSE

Professor of Sustainability

cynthia.mitchell@uts.edu.au

+61 2 9514 4953

Skype: cynthia_mitchell

Project Manager:

Ms Katie Ross

Research Principal

katie.ross@uts.edu.au

+61 2 9514 4798

Skype: katie_e_ross

Dr Kumi Abeysuriya

Senior Research Consultant

kumi.abeysuriya@uts.edu.au

Ms Tanja Rosenqvist

PhD Research Candidate

tanja.rosenqvist@uts.edu.au