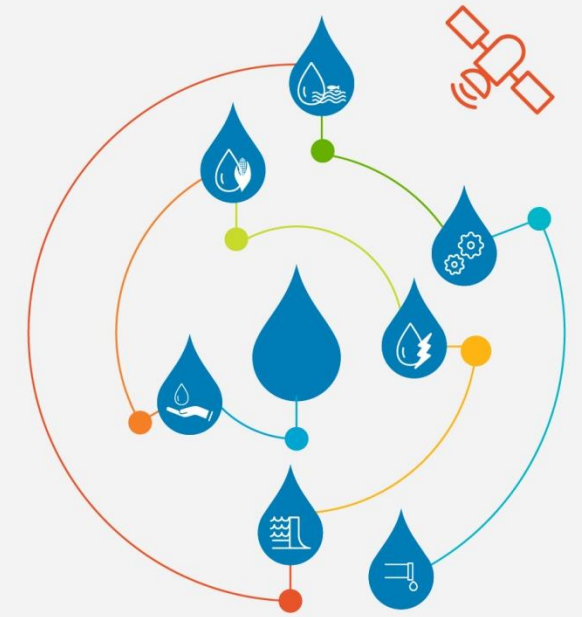


# Sustainable implementation of fecal sludge businesses in developing countries



Miriam Otoo

International Water Management Institute

3<sup>rd</sup> October, 2018



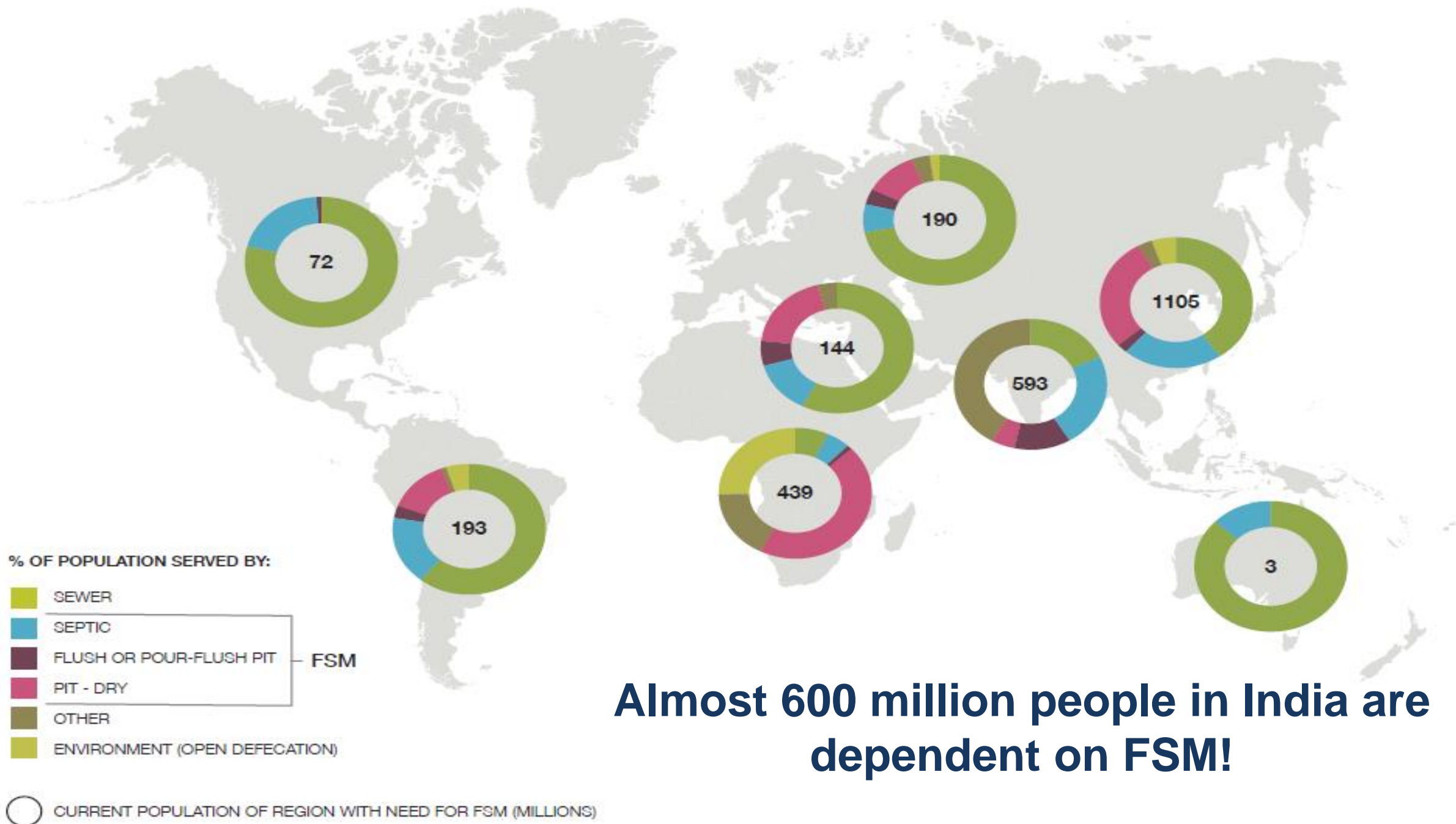
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Water, Land and  
Ecosystems

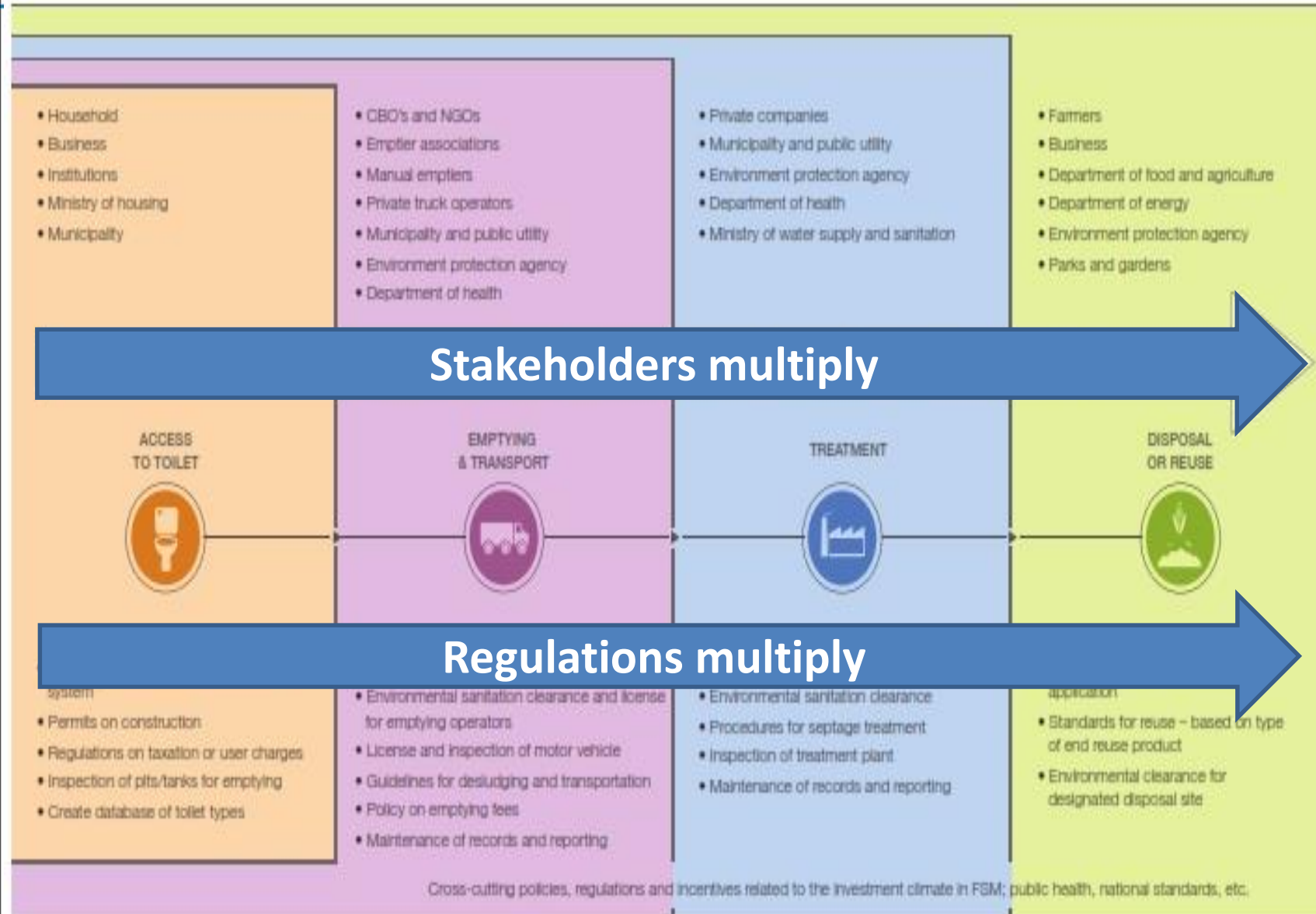
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ADB



**Almost 600 million people in India are dependent on FSM!**

# Effective fecal sludge management requires:



- Strong local capacities across the whole sanitation service delivery chain.
- Effective regulations and supportive policies.
- Institutional linkages across P&P sectors supported by viable business models.

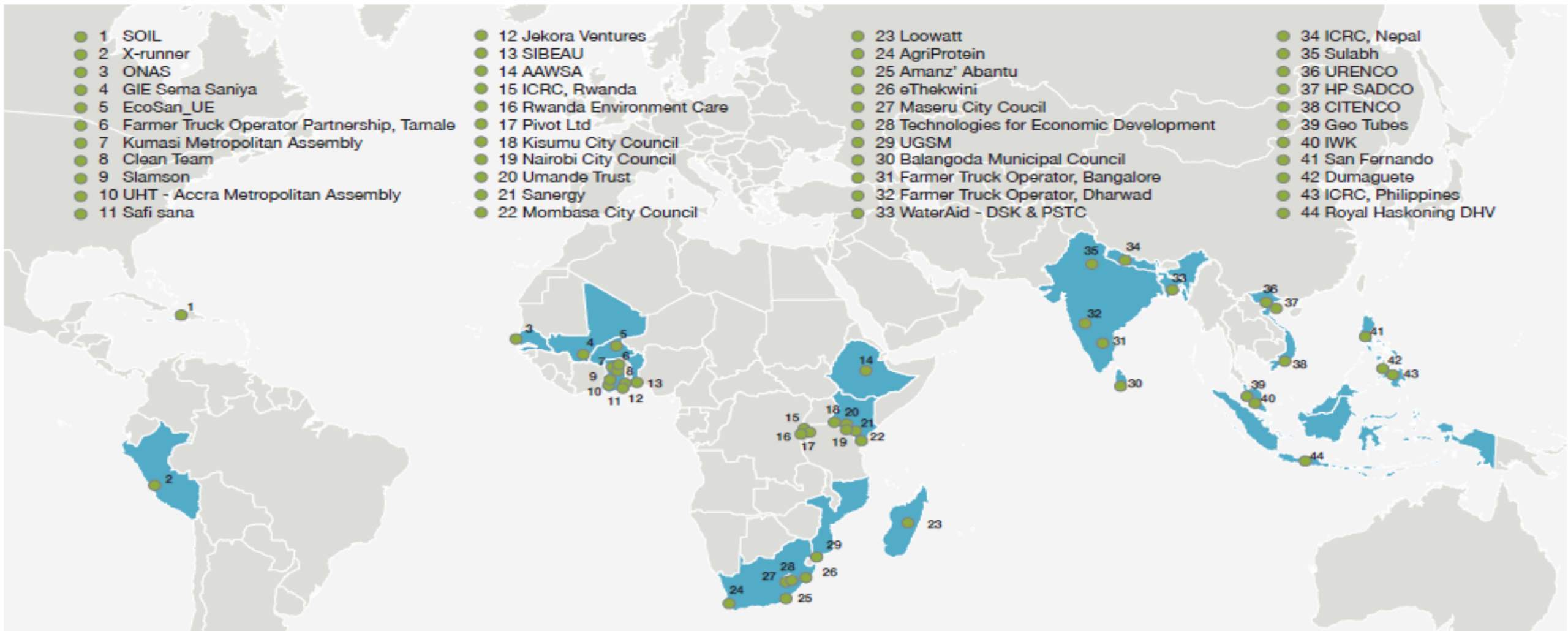
# FSM Business Cases

- 1 SOIL
- 2 X-runner
- 3 ONAS
- 4 GIE Sema Saniya
- 5 EcoSan\_UE
- 6 Farmer Truck Operator Partnership, Tamale
- 7 Kumasi Metropolitan Assembly
- 8 Clean Team
- 9 Slamson
- 10 UHT - Accra Metropolitan Assembly
- 11 Safi sana

- 12 Jekora Ventures
- 13 SIBEAU
- 14 AAWSA
- 15 ICRC, Rwanda
- 16 Rwanda Environment Care
- 17 Pivot Ltd
- 18 Kisumu City Council
- 19 Nairobi City Council
- 20 Umande Trust
- 21 Sanergy
- 22 Mombasa City Council

- 23 Loowatt
- 24 AgriProtein
- 25 Amanz' Abantu
- 26 eThekwin
- 27 Maseru City Council
- 28 Technologies for Economic Development
- 29 UGSM
- 30 Balangoda Municipal Council
- 31 Farmer Truck Operator, Bangalore
- 32 Farmer Truck Operator, Dharwad
- 33 WaterAid - DSK & PSTC

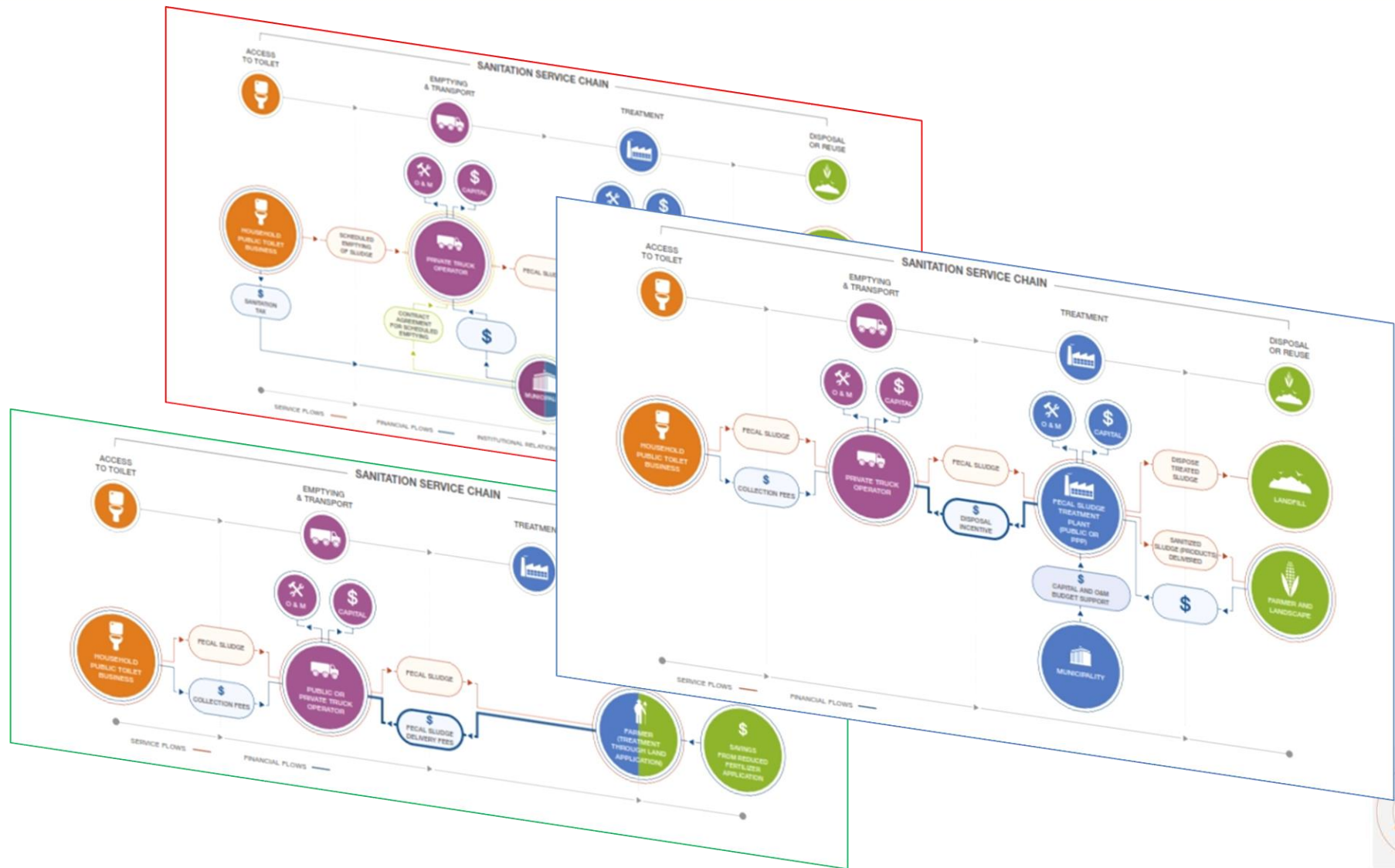
- 34 ICRC, Nepal
- 35 Sulabh
- 36 URENCO
- 37 HP SADCO
- 38 CITENCO
- 39 Geo Tubes
- 40 IWK
- 41 San Fernando
- 42 Dumaguete
- 43 ICRC, Philippines
- 44 Royal Haskoning DHV



- Review of 44+ successful FSM business cases from 21 countries in Asia, Africa and Latin America



# Institutional linkages and partnership models – key to business analysis!



# SANITATION SERVICE CHAIN

ACCESS TO TOILET



EMPTYING & TRANSPORT



TREATMENT



DISPOSAL OR REUSE



## BUSINESS MODELS FOR TOILET ACCESS AND *IN-SITU* ENERGY RECOVERY

- Public toilet with energy recovery

## BUSINESS MODELS FOR TOILET ACCESS AND *IN-SITU* ENERGY RECOVERY (CONT.)

- Residential-institutional biogas

# FSM Business Models

- 18 FSM Business Models extracted/developed

## MODELS FOR EMPTYING AND TRANSPORT OF FECAL SLUDGE

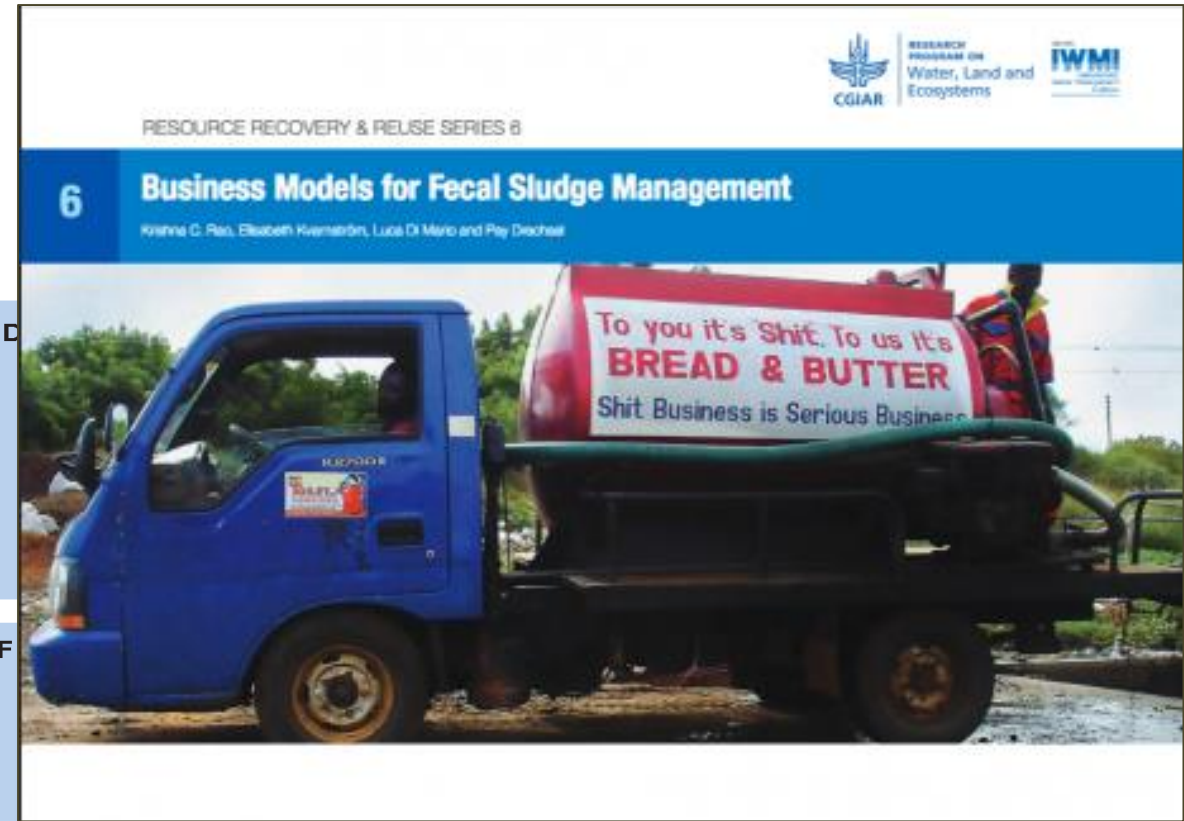
- Commonly occurring private emptying and transportation
- Franchise
- Nonprofit
- Transfer station

## MODELS LINKING EMPTYING, TRANSPORT AND

- Commonly occurring public FSM
- Licensing
- Call center
- Scheduled desludging sanitation tax
- Incentivized disposal
- Full private

## MODELS EMPHASIZING REUSE AT THE END OF

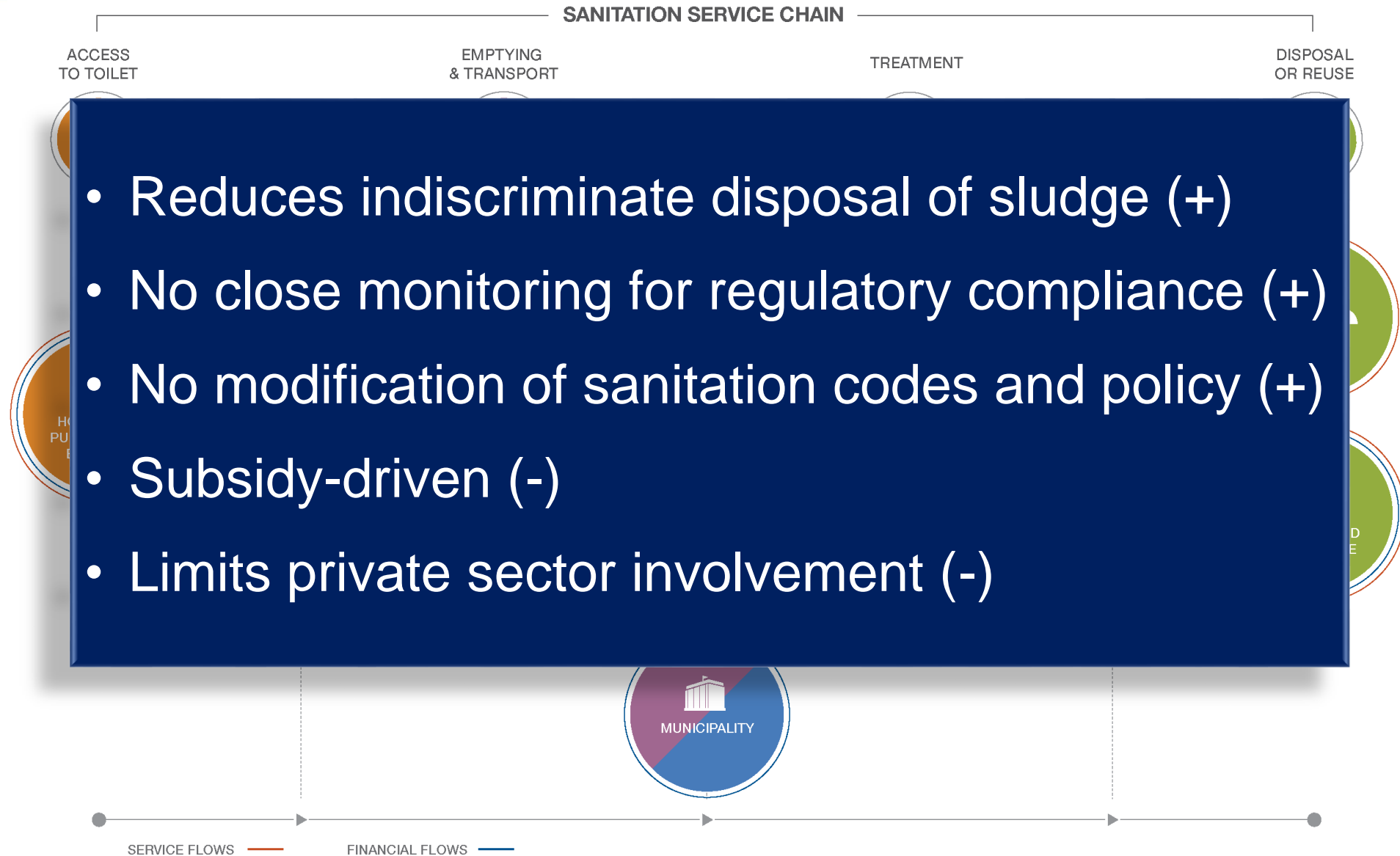
- Farmer-truck operator partnership
- Co-composting
  - Town cluster approach
  - Pull-push

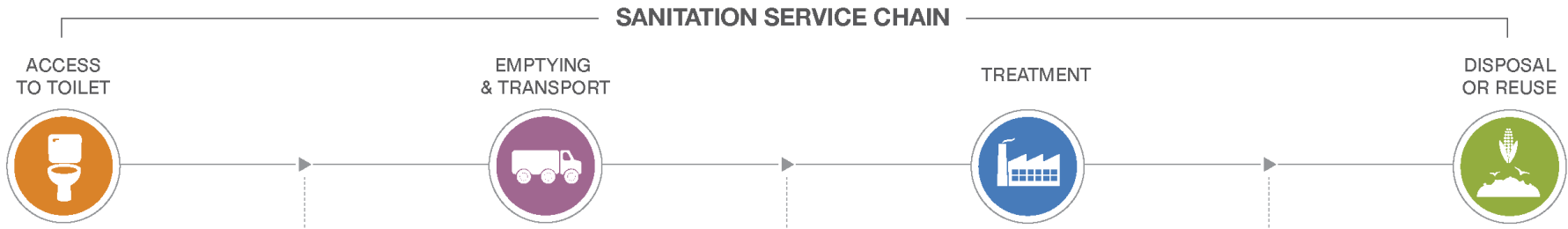


## MODELS COVERING THE ENTIRE SANITATION SERVICE CHAIN FROM TOILET ACCESS TO REUSE

- Non-movable UDDT installation
- Container-based sanitation (CBS)

# Typical Public Sector Emptying Model





- Private sector involvement (+)
- Reduced subsidies for waste collection (+)
- Tipping fees a disincentive for operators (-)
- Potential indiscriminate disposal of sludge (-)
- Close monitoring for regulatory compliance required (-)



# Typical Private Sector Emptying Model

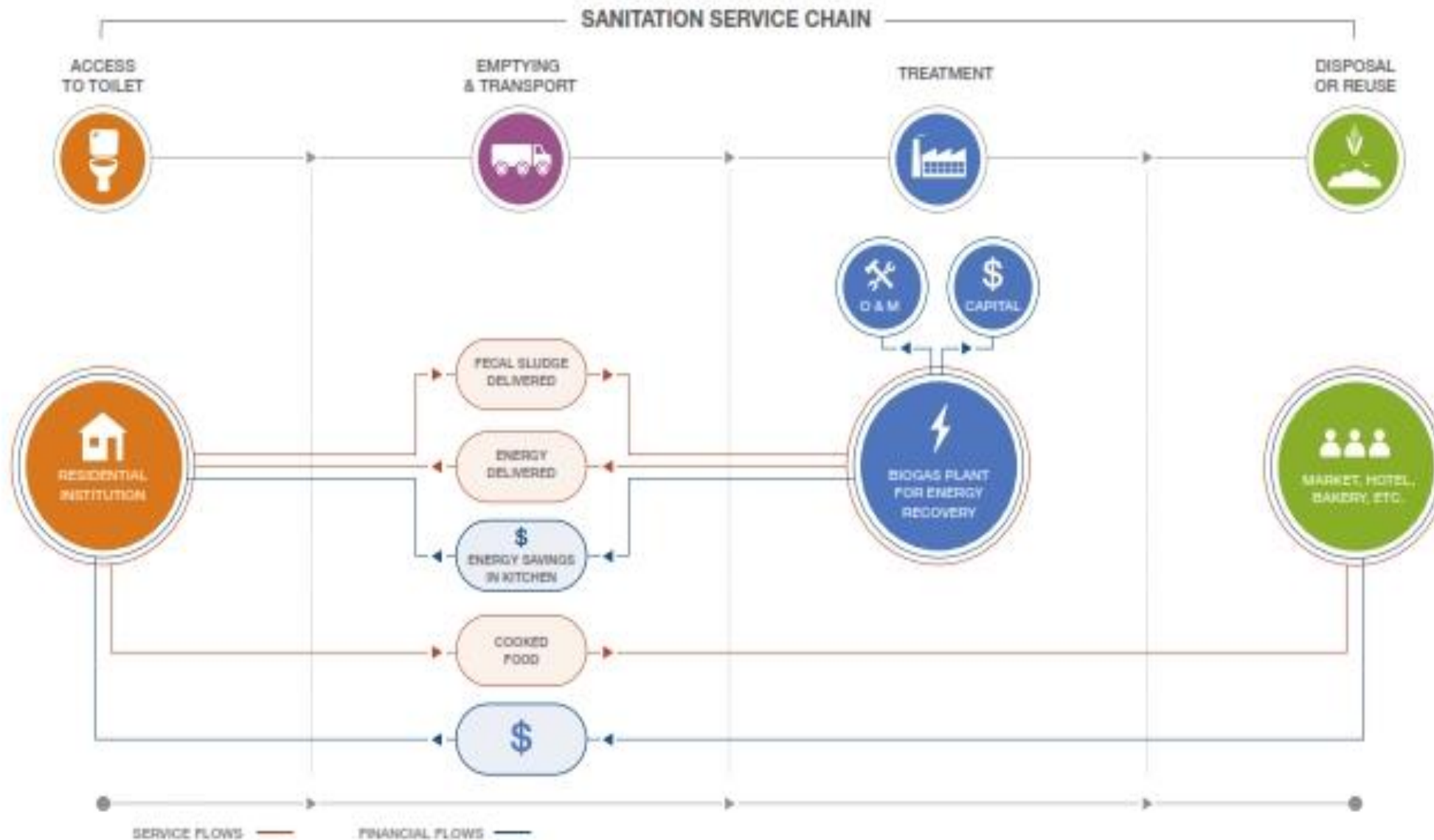




# Scheduled Desludging with Sanitation Tax

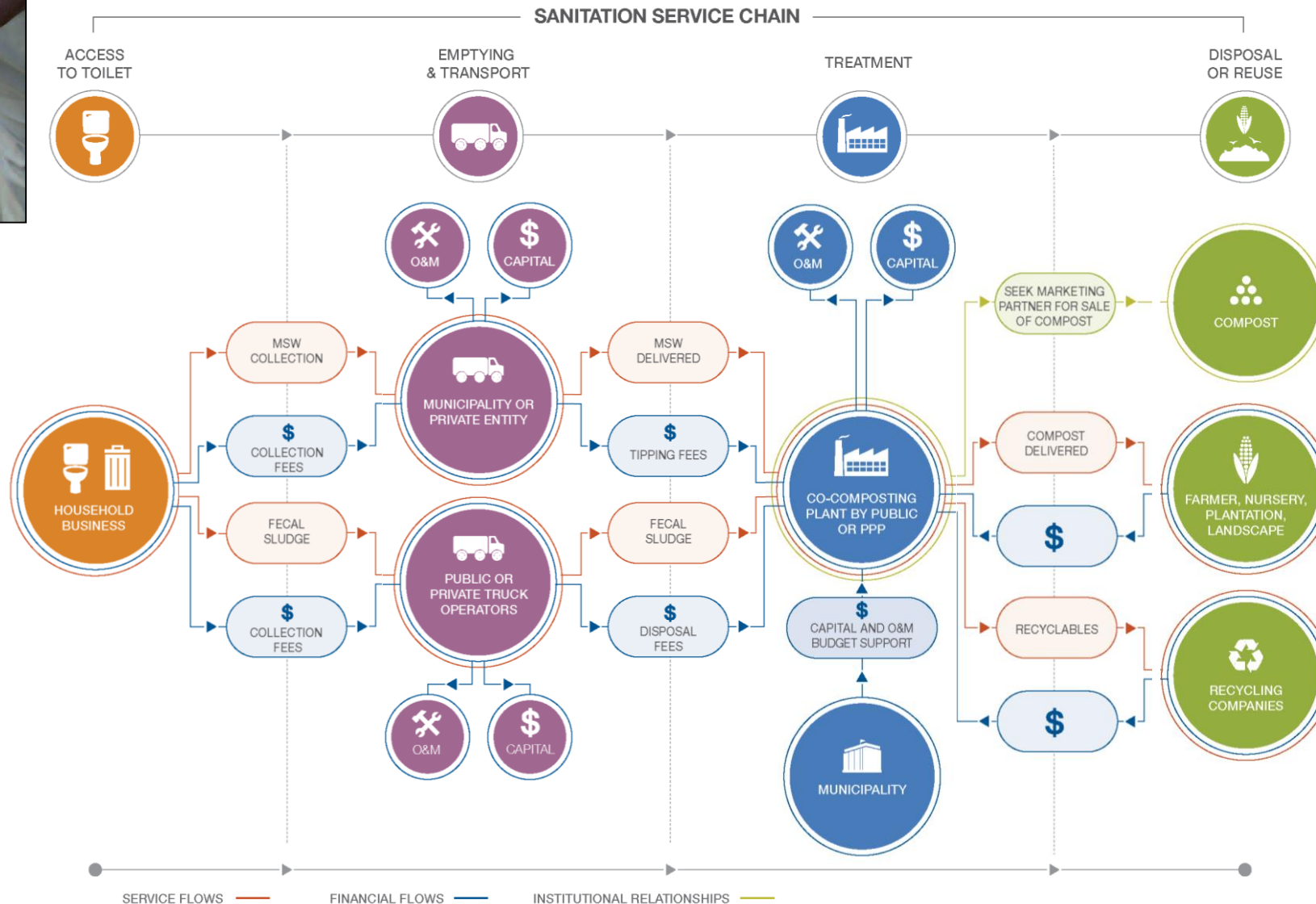


# A range of possible business models which require local feasibility studies and adaptation:



**Residential-  
institutional  
Biogas  
Model**

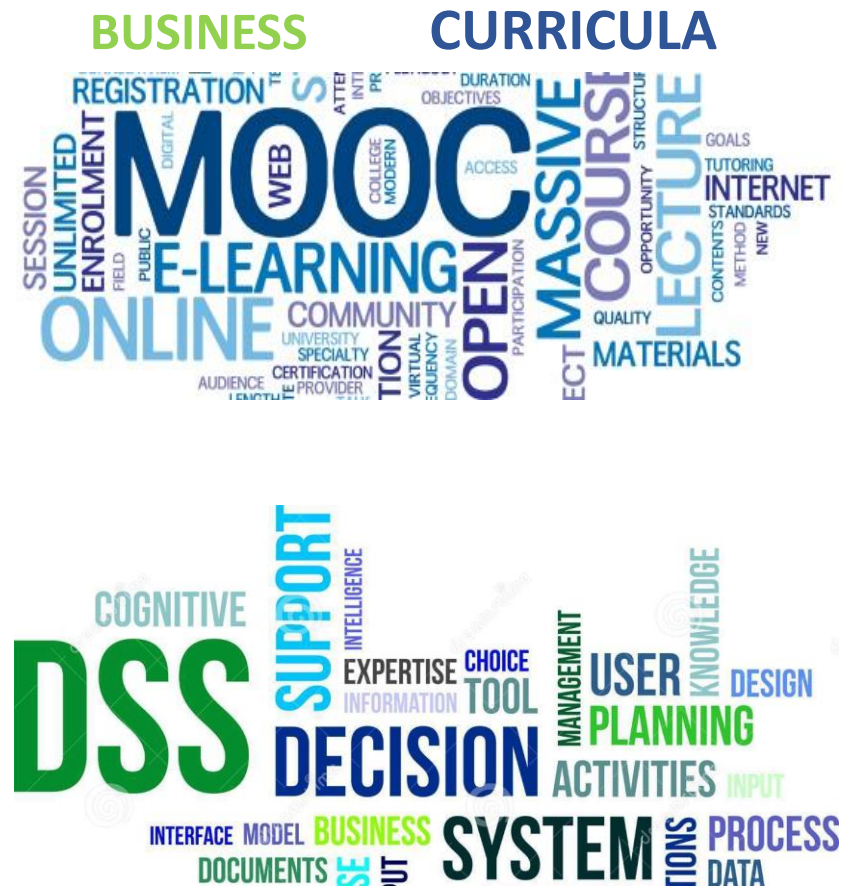
# A range of possible business models which require local feasibility studies and adaptation:



**Fecal  
sludge-  
based  
fertilizer for  
revenue  
generation**

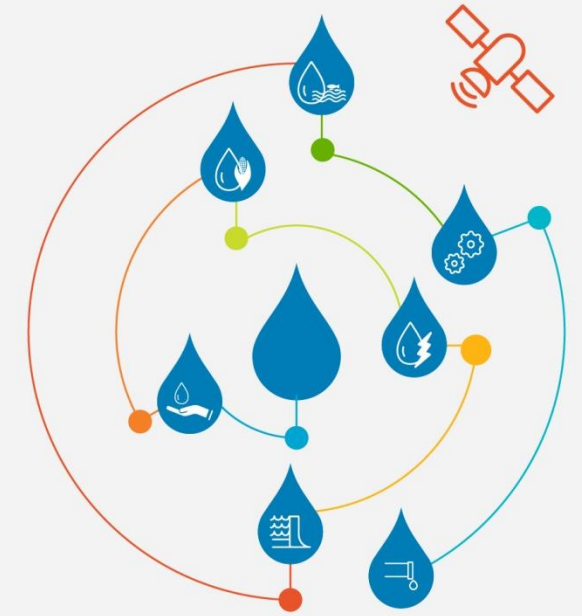
# Next steps: Transformation of knowledge to develop capacities and support decision making

Partnerships welcome!





**Thank you.**



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<http://www.iwmi.cgiar.org/research/rural-urban-linkages/resource-recovery/>