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# Circular Economy through Resource Recovery and Reuse (RRR) – Opportunities and Global perspectives

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Innovative water solutions for sustainable development

Food · Climate · Growth

# Urbanization - a driver for changing traditional flows of food and resources

- Increased urbanization coupled with increased consumptions levels  
→ **Significant liquid and solid waste generation**
- Waste generated ends up in open dumps and natural water bodies  
→ **Environmental and health challenges**
- Cities are becoming vast nutrient sinks
- Regional freshwater scarcity in cities of developing countries



Necessitated the need for innovative solutions through **circular economy** approach

# Paradigm shift – from wastewater treatment to resource recovery

- RRR goes beyond water reuse and can support cost recovery depending on (i) the treatment system and (ii) value proposition.
- In low income countries a range of options exist that support the use of reclaimed water and treated sludge for productive purposes
- Water reuse solutions are key components of:
  - *Integrated Urban Water Management*
  - *Overall sanitation service chain*



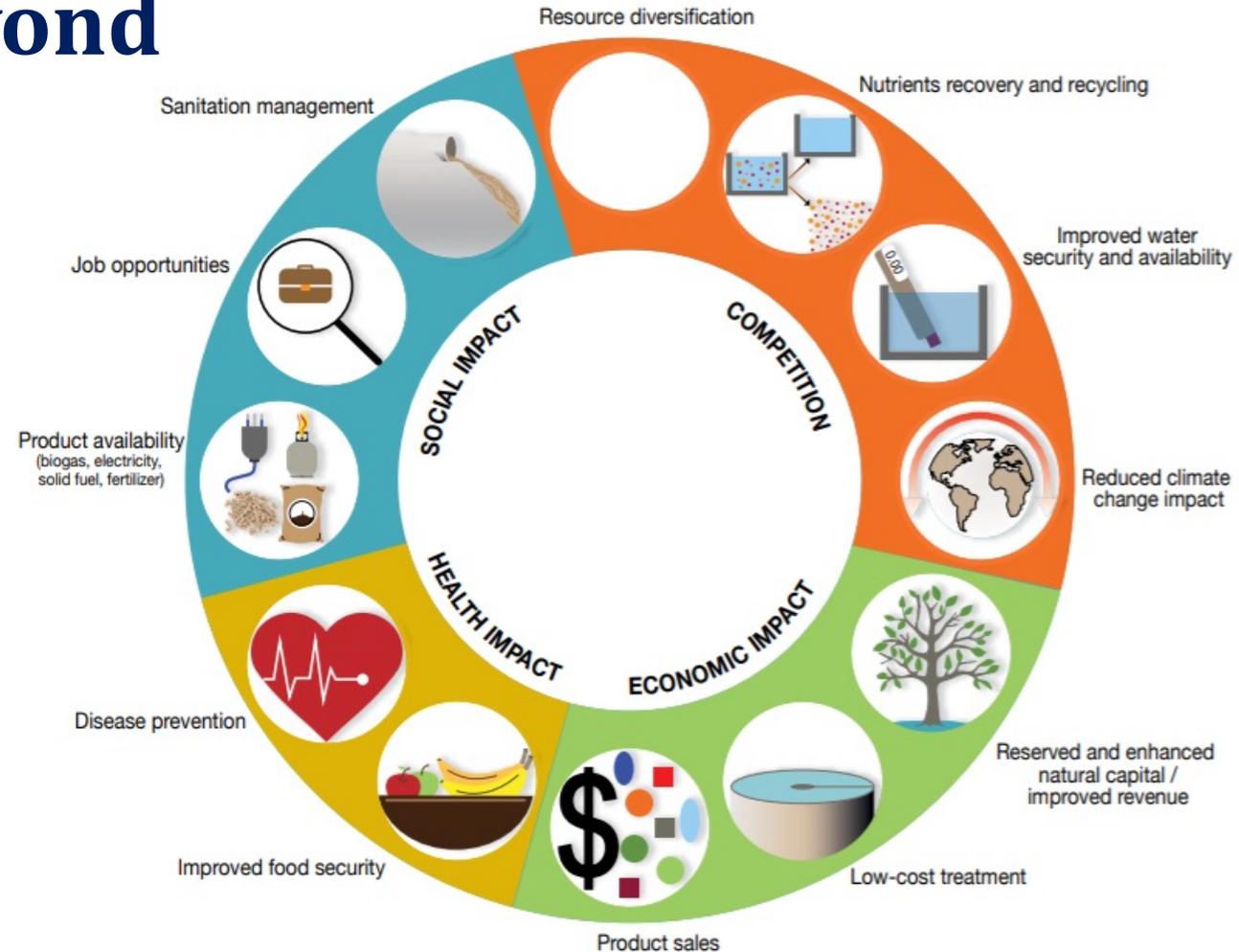
# Effects on water and beyond

## Direct Effects:

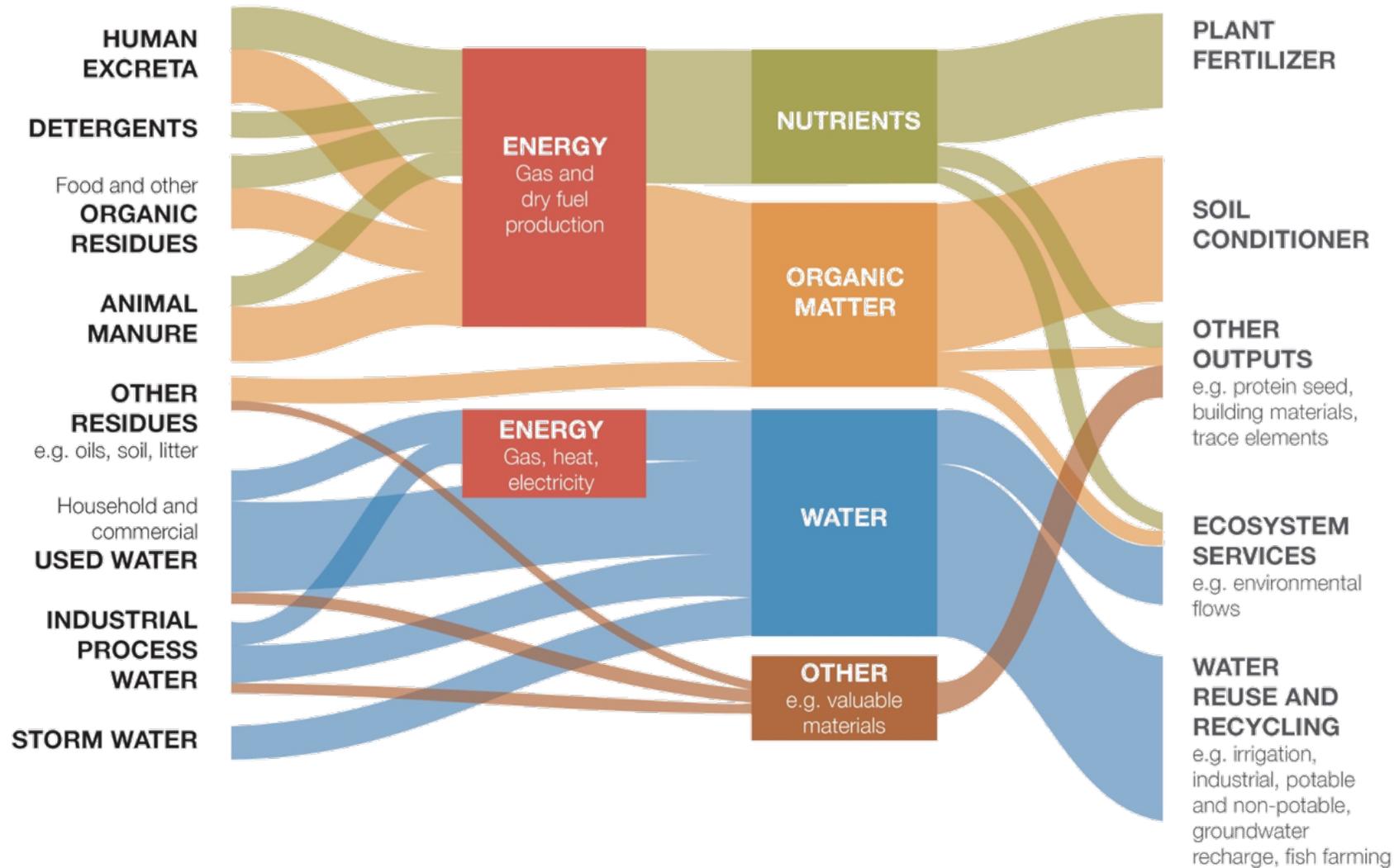
- Water availability in urban and peri-urban / rural areas

## Indirect Effects:

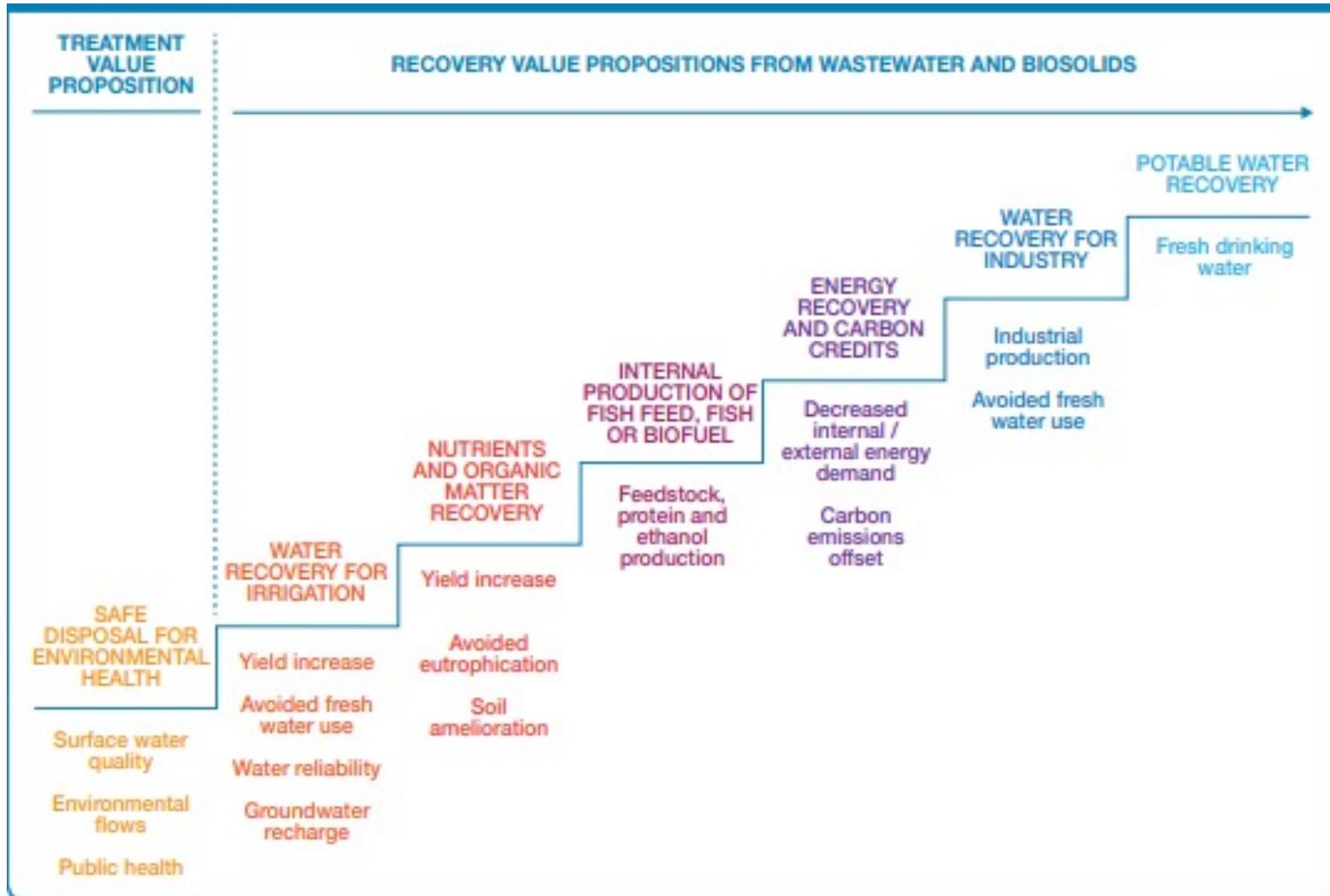
- Impact of solid and liquid waste management on water quality



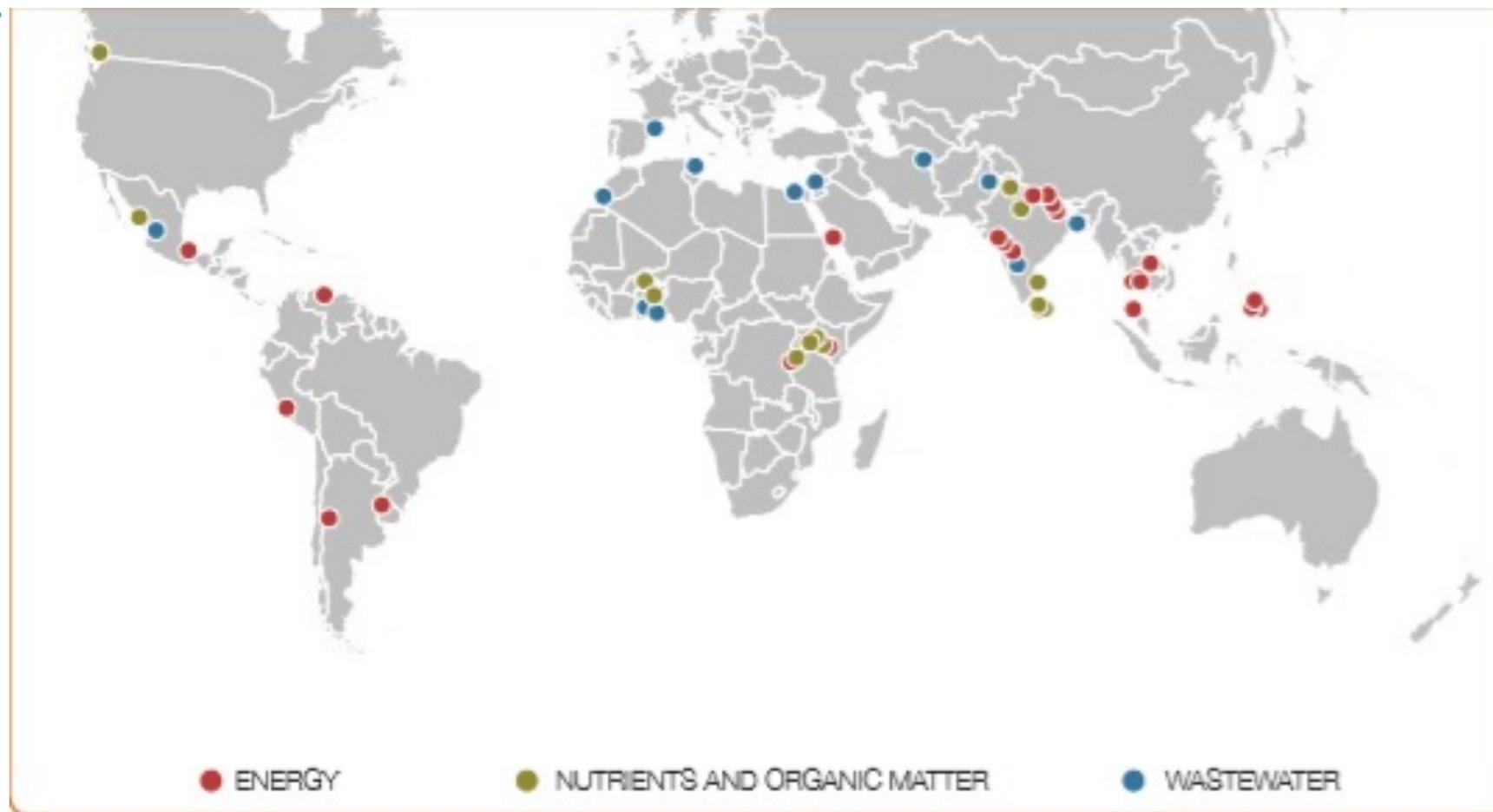
# Waste to resource options



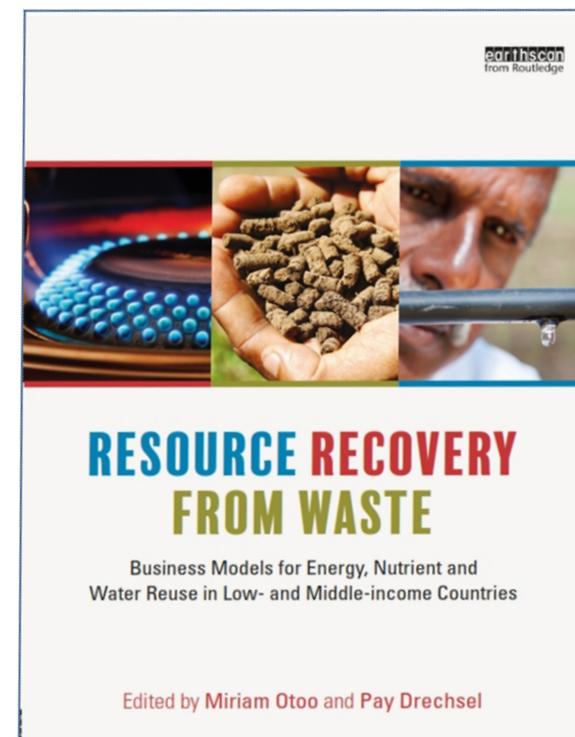
# Ladder of increasing value proposition related to wastewater treatment



# Global assessment of circular economy business models



Otoo and Drecshel, 2018



Available for free download:

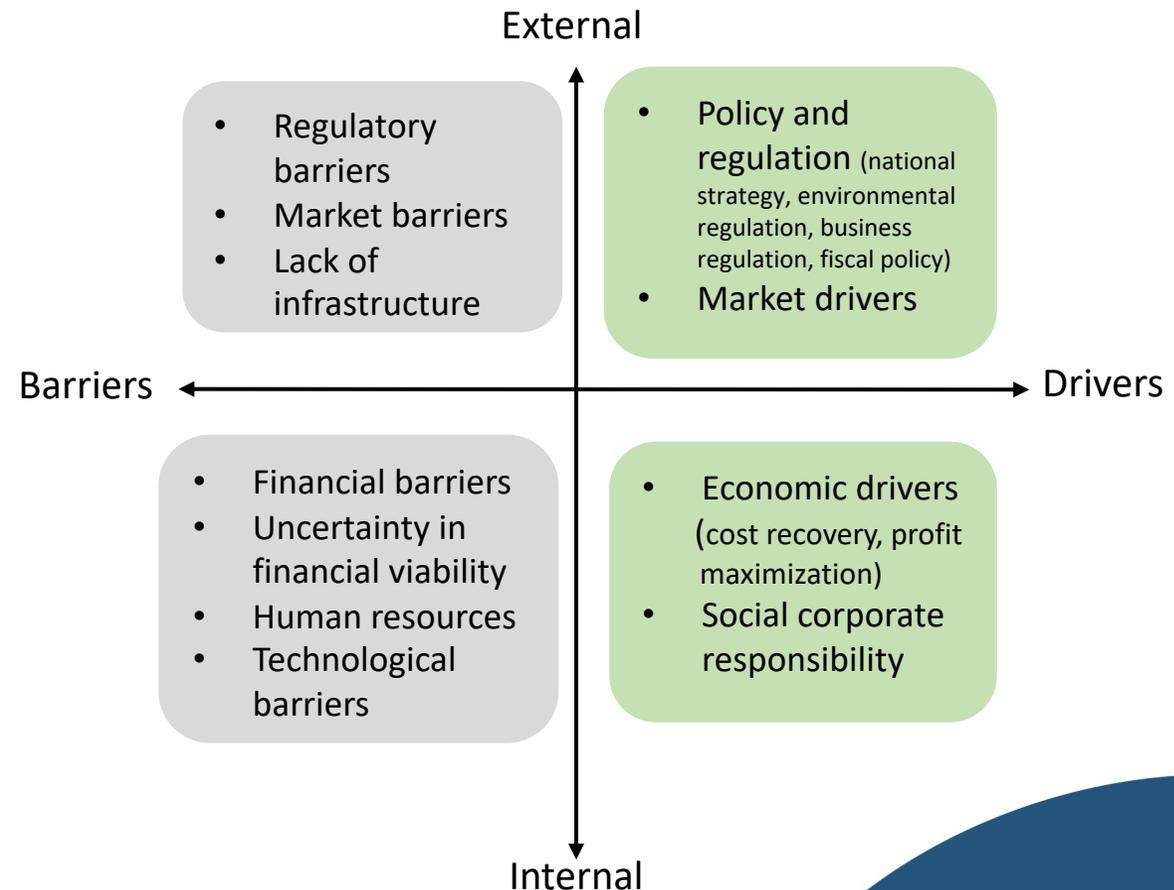
<http://www.iwmi.cgiar.org/Publications/Books/PDF/resource-recovery-from-waste.pdf>

Business model profiles

<https://wle.cgiar.org/rrr-business-model-profiles>

# Driving forces in circular economy business uptake

- Entrepreneurs in waste management and RRR sector are driven by both external and internal factors
- External factors that drive RRR businesses include regulatory and market pressures
- While internal driving factors include new profit opportunities or cost recovery mechanisms and environmental sustainability



# Effective wastewater management requires

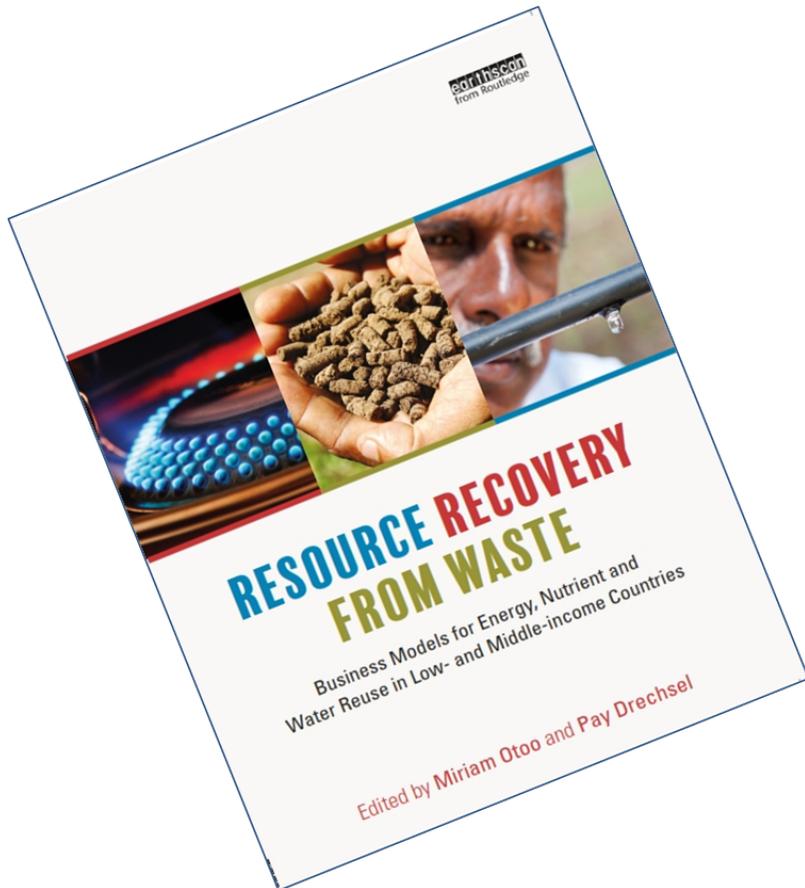
- Strong local capacities and collaboration across the whole sanitation service chain
- Effective regulations and supportive policies
- Institutional linkages across private and public sectors supported by viable business models



# Conclusions and way forward

- RRR: Key pathway towards water security in a rapidly urbanizing world.
- Water reuse is more than irrigation: more business thinking is required.
- Need for capacity development and strong incentive systems for inter-sectoral collaboration.
- Complex governance issues involved: covering rights, legal frameworks and responsibilities.

# Thank you!



**Available for free download:**

<http://www.iwmi.cgiar.org/Publications/Books/PDF/resource-recovery-from-waste.pdf>

Business model profiles

<https://wle.cgiar.org/rrr-business-model-profiles>

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