Increase the efficiency of services–new technologies, products & approaches

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World Toilet Summit
November 19, 2019 • São Paulo, Brazil

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Outline

- Water Challenges in the Latin America and Caribbean (LAC) Region
- World Bank Initiatives and Innovation
  - ❖ Citywide Inclusive Sanitation (CWIS)
  - ❖ Waste to Resource: Shifting paradigms for smarter wastewater interventions (WtR)
  - ❖ Smart Water Management and Utility of the Future (UoF)
- Examples of Uruguay and Brazil
- A few takeaways

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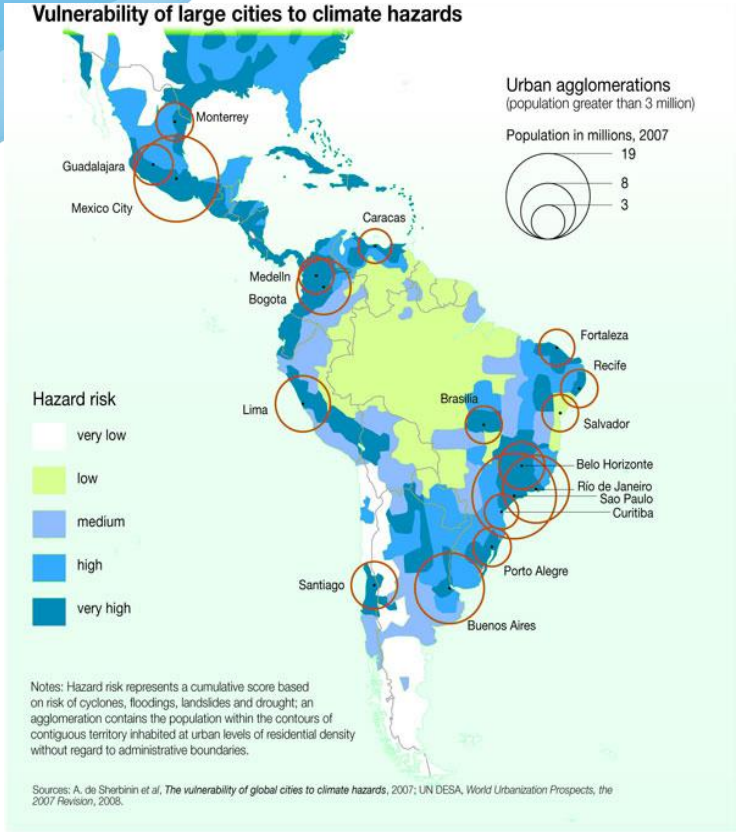
LAC a region with important water challenges …



- By 2050, 80% will be living in urban areas → urbanization is taking place in area exposed to hydrological hazards
- A region with 1/3 of the planet's freshwater resources and, still, 34 million people don't have access to drinking water
- 95 million lack access to sanitation; of which 80% live in rural areas; and 20 million practice open defecation

→ less than 30% of wastewater is treated


Too much
Too polluted
Too little

Tackling these challenges: *status quo* is not an option

1

Water and sanitation companies need to be more efficient and effective, in order to be **creditworthy**. Governments must provide incentives through **modern policies and regulatory frameworks**.

2

The financing schemes must change. Achieving SDGs 6.1 and 6.2 requires significant funding, and for a prolonged period.

Mobilizing traditional and non-traditional financing sources is an unavoidable necessity.

3

Water stress and competition for resources will increase water pollution and inadequate sanitation will further deplete water sources. **It is necessary to address the integral water and sanitation cycles with a circular economy lens.**

4

Knowledge and **innovation** are key drivers for change: research and dissemination of **new technologies and approaches** are necessary. There is a need to **deepen the use of disruptive technologies and "smart" approaches.**

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Globally equal numbers of people use sewer connections and on-site sanitation, but large regional variations exist

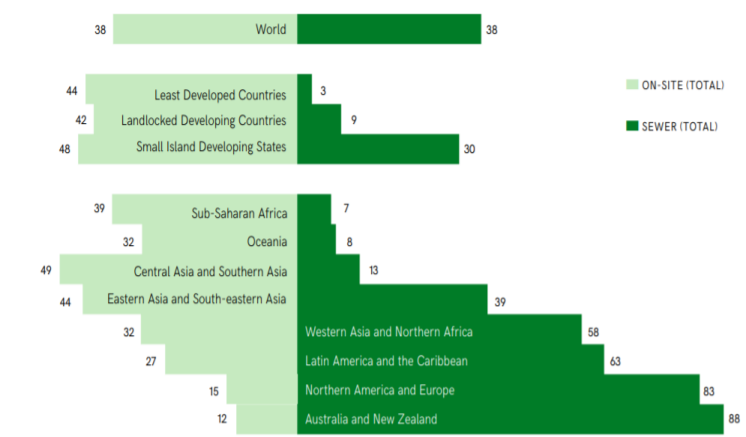
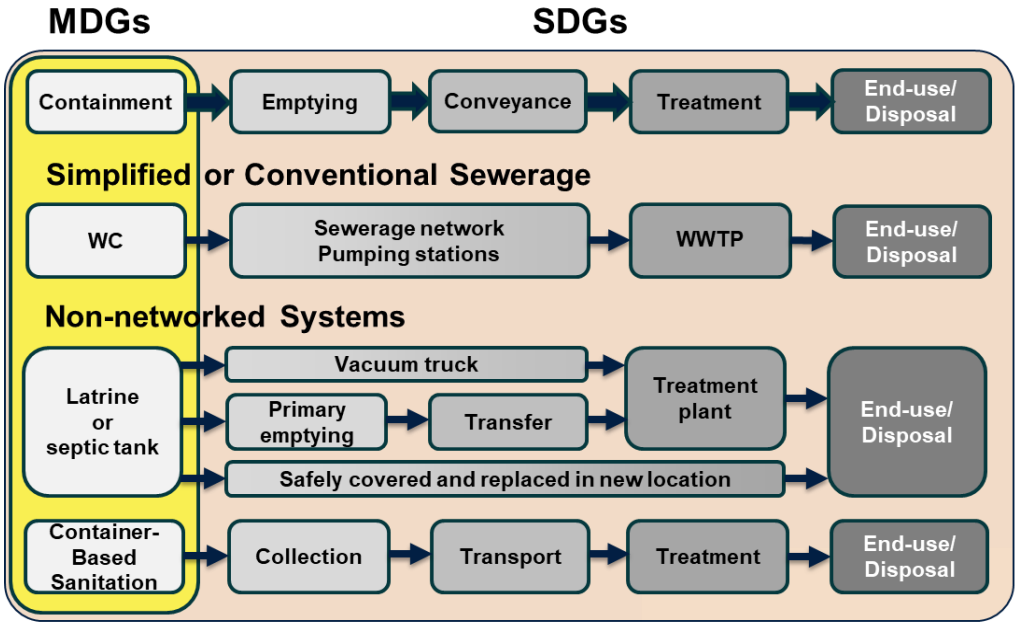


Fig. 43 Population using on-site and sewered sanitation systems, by region, 2015 (%).

Safely Managed Sanitation along the whole Sanitation Service Chain



Defining Citywide Inclusive Sanitation (CWIS)

- **Everybody benefits** from adequate sanitation service delivery outcomes
- Human waste is **safely managed along the whole sanitation service chain**
- Considers effective **resource recovery and reuse**
- Embraces a **diversity of technical solutions**: adaptive, mixed & incremental
- Cities will need to demonstrate **political will** and technical and managerial **leadership**, and to manage **new and creative ways of funding** sanitation
- Combines **onsite sanitation and sewerage solutions**, in either **centralized or decentralized systems**, to better respond to realities faced in cities
- Considers **complementary services: water supply, drainage, greywater, solid waste**

…so, we need to think differently…

'Business as Unusual'

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Shifting paradigms for smarter wastewater interventions

TREATED WATER for:

- the energy sector: such as cooling water for power plants and process water for mines
- industrial processes, such as in the textile and paper industry
- irrigation (agriculture, urban parks, etc)
- recreational use
- replenishing aquifers
- drinking water

SLUDGE

Anaerobic Digester

Biogas can be used to generate energy (heat and electricity), which can be used at the plant and/or sold.

Biosolids are nutrient rich and can be used as fertilizer in agriculture, to recover degraded areas or as fuel, among others.

CO_2 **Carbon Credits:** waste water treatment plants can get carbon credits for generating renewable energy.

PHOSPHORUS
Can be recovered and used as fertilizer

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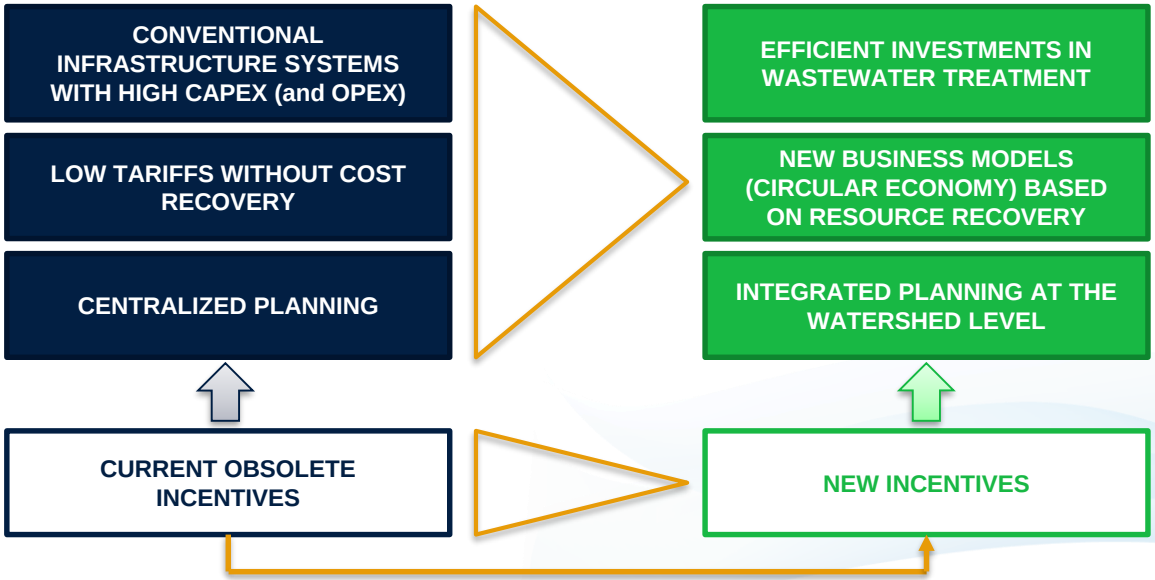
How to embrace the new waste to resource paradigm?



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“Smart” Water and the Utility of the Future

Water and Energy Efficiency
Reduces water and energy losses

Fit-for-Purpose Corporate Governance
Is accountable, transparent and managed in an effective manner

Resilience/Circular Economy

Technology
Embraces technological change and innovation

Enabling Environment
Operates in a realistic and conducive PIR environment

→ **Challenge**: difficult task for utilities to **stay abreast** of new technological developments

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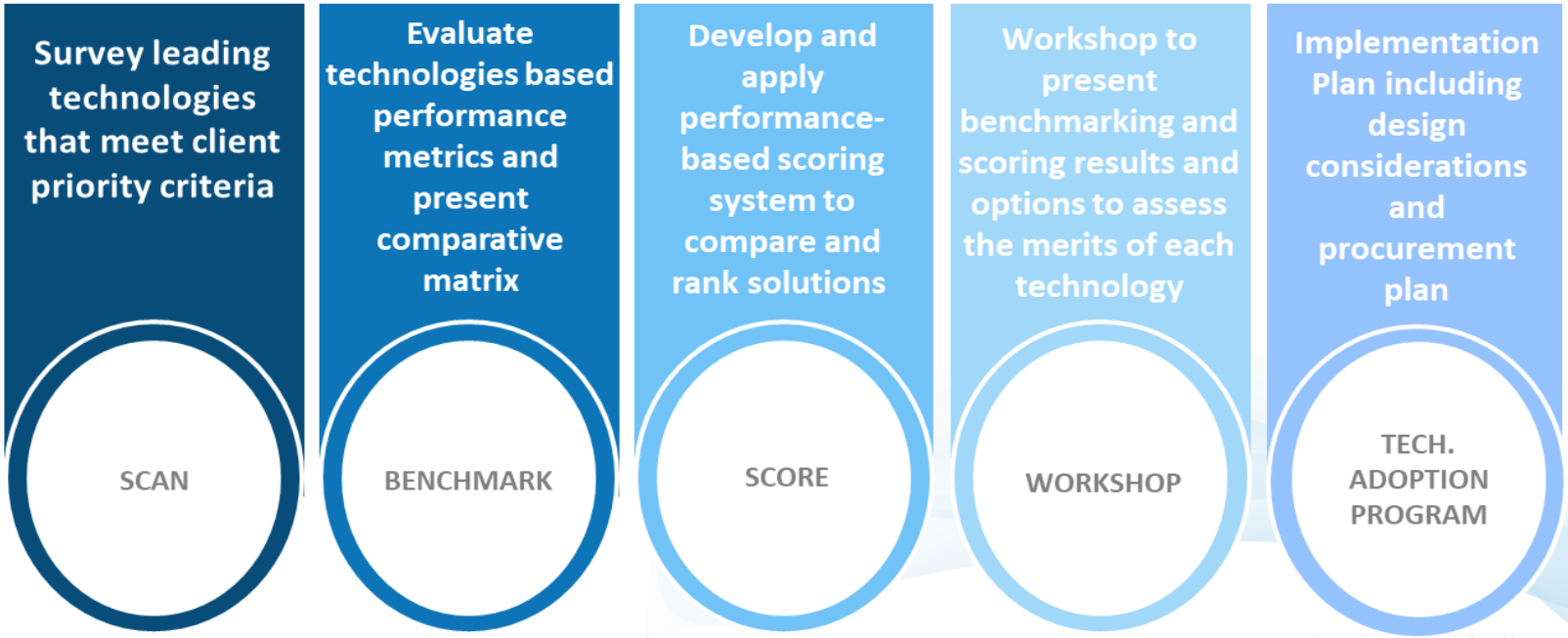
Utility of the Future: Technology and Innovation

Identifying and assessing leading and emerging technology solutions



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Case of Uruguay: Water Efficiency & Technology

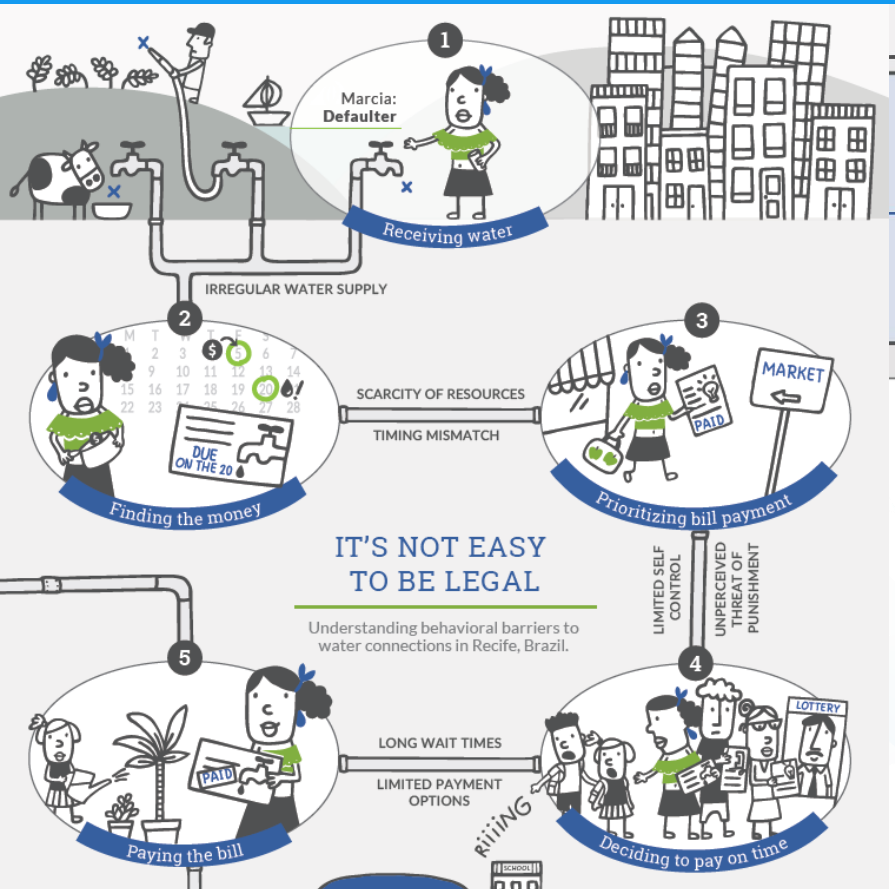
- Population of about 3 million people
- Water and sanitation services provided by public utility OSE, except for sanitation in Montevideo
- Levels of NRW high with 50%, including 20% of apparent losses related to illegal connections
- Our engagement → focus on reducing NRW with performance-based contracts and remote satellite imagery leak detection
- Use of fiber optic cabling alongside water main for detection of tampering with the network in addition to identifying leaks.
- Ozone and biological activated carbon filter

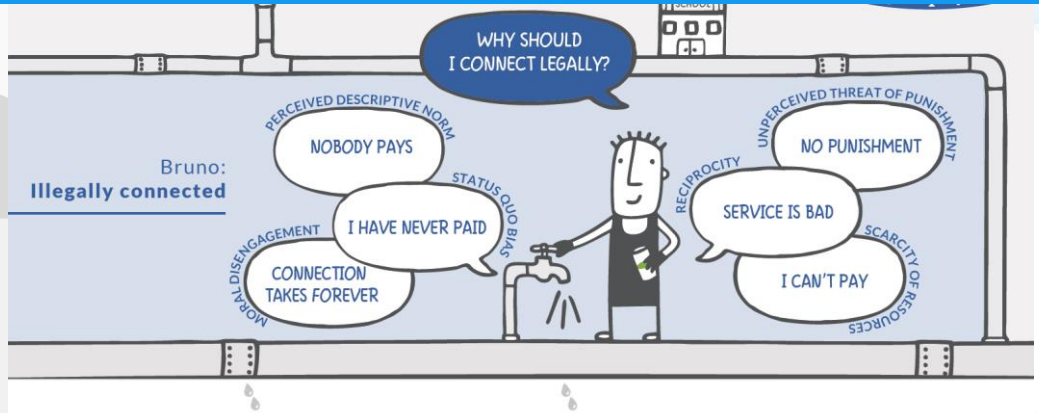
Case of Brazil: Water Efficiency & Technology

- State of Pernambuco with about 9 million people, including the capital Recife with 1.5 million
- Water and sanitation services provided by State utility COMPESA
- Levels of NRW high with 66%, including 25% of apparent losses related to illegal connections and non payment of bills
- Our engagement → focus on reducing NRW with performance-based contracts, smart technology and behavioral science
- Organization of technology fair to pitch smart technology to COMPESA, including smart meters, AI, digital twin, remote sensing, etc.

compesa

Behavior map: illegal connections





Identifying barriers interfering in the decision-making process of consumers:

- Some clients, despite willing to act legally or pay on time, fail to do so
- Other clients are not willing to act legally or pay on time

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A few takeaways

- **There is no single solution that works for everyone**. Whatever works best – build on what you have and know best, not what is best practice.
- **Transformation of the internal utility culture in support of innovation** → utilities need to embrace a shift from:
  - risk aversion to innovation;
  - a siloed data-rich environment to a collaborative knowledge-rich one.
- **Leadership in promoting resource recovery and full (integral) water and sanitation cycles** → engagement in the community and formation of partnerships are necessary for success when operating outside of the traditional span of control of the utility.
- **Technical solutions alone are unsustainable**. Sustainable reforms require that positive incentives be incorporated into the structure of Policies, Institutions and Regulations (PIR).

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Thank you!

Obrigado!

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