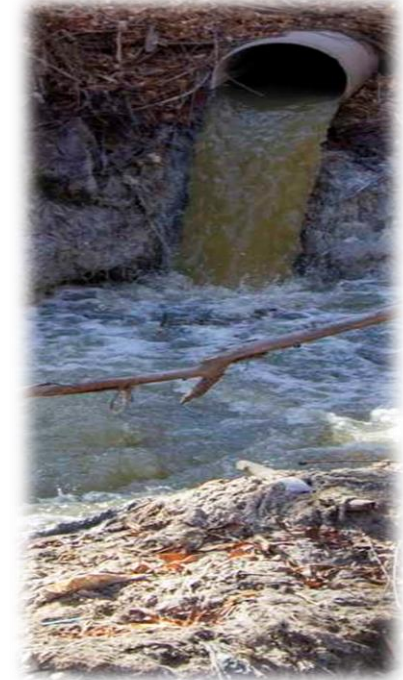



Opportunities for the Circular Economy in Wastewater Treatment in Latin America and the Caribbean

The Issue

- 1 Very high energy expenditures in the WASH sector**
In LAC, 40% of the expenditures to cover energy costs.
Only 42% of wastewater is treated, with wide differences between countries.
Treatment is concentrated in high-density urban areas (megacities).
- 2 Methane emissions from wastewater account for 10% of total methane emissions**
Methane is the second largest greenhouse gas
Methane emissions in LAC have grown by almost 40% since 1990 (CAIT WRI 2021).
According to the IPCC, these emissions need to be reduced by one third.
- 3 High vulnerability of supply due to climate change**
Supply shortages due to drought inoperability/pollution due to flooding, etc.



The Study

-  **Database of more than 3,000 WWTPs from 5 countries (Mexico, Colombia, Costa Rica, Peru and Bolivia)**
Selection of 75 WWTPs according to size and technology criterio.

Technical capacity and financial limitations prevent wider circular wastewater treatment in LAC, despite socioeconomic and environmental benefits

Methane recoverable from selected WWTPs



The 75 WWTPs would generate:

- ✓ 107.9 millions m³/year of recoverable methane .
- ✓ 360,725 MWh/year, which represents the annual electricity consumption of 202,000 inhabitants.

Investment and revenues from methane utilisation



- ✓ An investment of USD 250 million is required.
- ✓ Annual revenues (electricity cost savings) of USD 46.6 million will be generated.
- ✓ Over a 20-year horizon the Benefit/Cost Ratio is 1,36.

Benefits derived from the use of methane



Environmental benefits
1.3 million tonnes/year of CO₂ reduction
(26% of Nicaragua's annual emissions)



Macroeconomic benefits
GDP of the 5 countries would increase by 1.3 dollars for every dollar invested.



Social benefits
38 green jobs would be generated for every US\$ million invested.

Policy recommendations and call for action

1 Develop and strengthen the **generation of economies of scale** in wastewater treatment. 34% of the installed capacity in the 5 selected countries corresponds to 3,243 treatment plants with capacities of less than 500 l/s.

Promote a higher level of utilization of installed capacity in WWTPs, which would improve the economic viability of these projects.

2 Prioritize **aerobic or anaerobic lagoon systems** due to their higher: 3.81 over a 10-year horizon, and 5 over a 20-year horizon. The predominance of these systems in Bolivia would translate into a broader financial viability.

3 Reduce **main barriers** for the adoption of these systems by:

- Technological access & training of staff
- Increasing the availability of funding sources
- Undertake additional investment in sewerage systems and circular technologies



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