

DRINKING WATER IN BARCELONA THROUGH THE LENSES OF SUSTAINABILITY

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11 SUSTAINABLE CITIES
AND COMMUNITIES



Sustainable
cities and
communities



General Objective

To question the patterns of drinking water consumption in urban settlements

Specific Objectives

To present the case of Barcelona regarding drinking water consumption patterns

To present past and on-going projects and methods

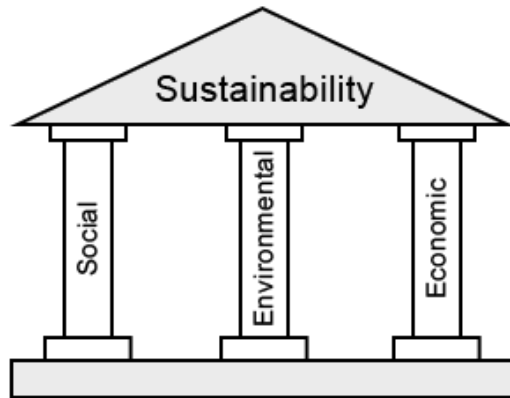
Make cities and human settlements inclusive, safe, resilient and **SUSTAINABLE**

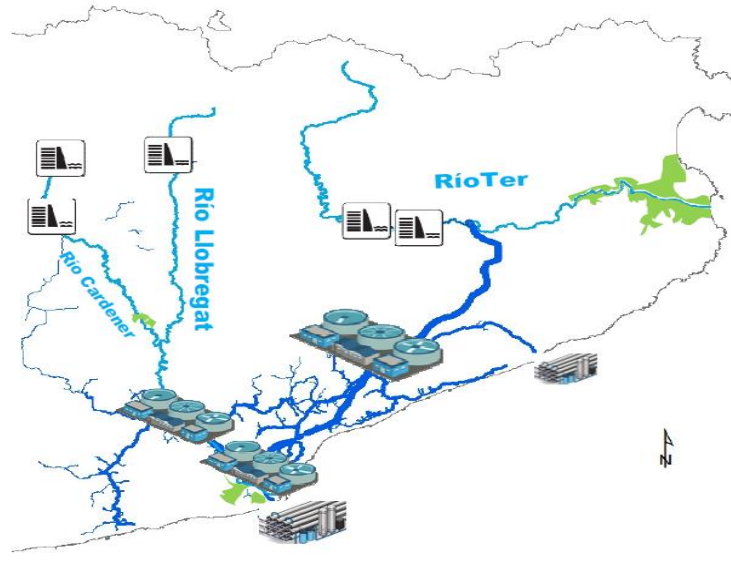


There needs to be a future in which provide opportunities for all, with access to basic services, energy, housing, transportation and more.

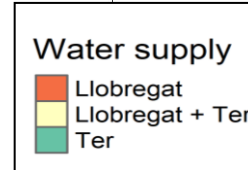
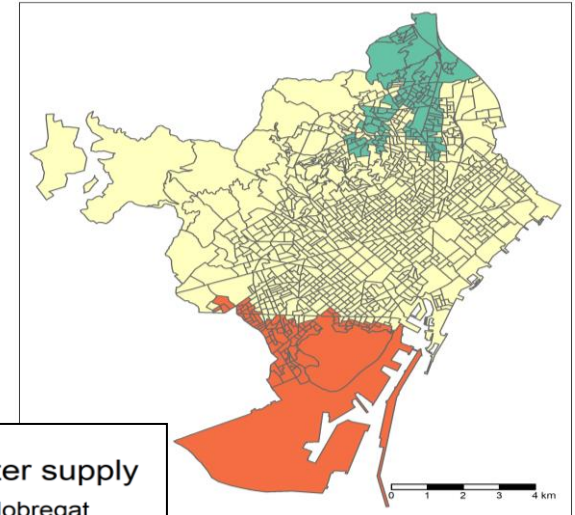
- Ability to sustain indefinitely
- Nothing is strictly sustainable...
... since everything produces some impact that cannot be sustained indefinitely
- Sustainability means looking for solutions with the least impact...
... comparing the "sustainability level" of alternative solutions





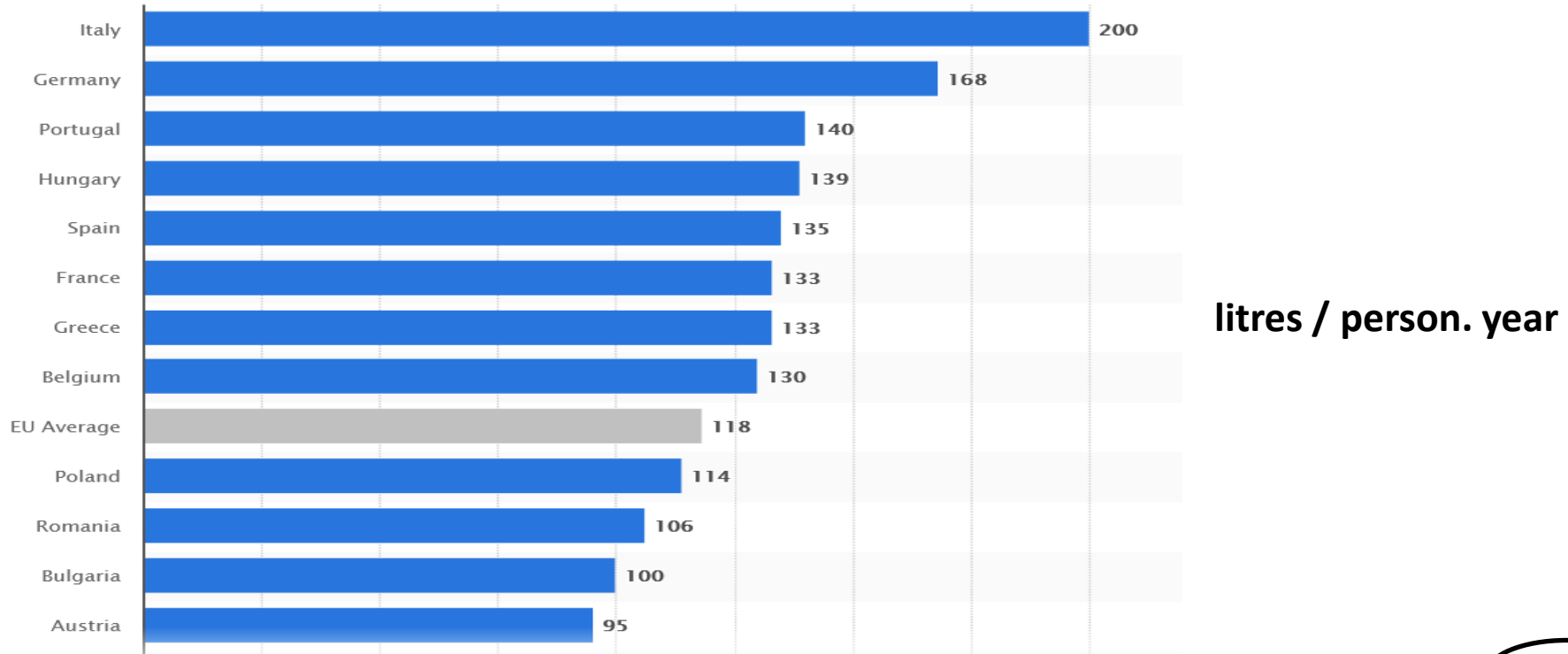


SISTEMA TER-LLOBREGAT





Per capita consumption of bottled water in Europe in 2019, by country





ISGlobal survey (2019)

60% of the population consumes bottled water (994.000 people)
17% of the population filters tap water (282.000 people)

Causes: Organoleptic properties / Acceptance

Consecuencias: Resources – Wastes / Economy





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Contents lists available at [ScienceDirect](#)

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro

CrossMark

Life cycle assessment of drinking water: Comparing conventional water treatment, reverse osmosis and mineral water in glass and plastic bottles

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Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv

Health and environmental impacts of drinking water choices in Barcelona, Spain: A modelling study

Cristina M. Villanueva ^{a,b,c,d,*}, Marianna Garfí ^e, Carles Milà ^{a,b,c}, Sergio Olmos ^{a,b,c}, Ivet Ferrer ^e, Cathryn Tonne ^{a,b,c}

^a ISGlobal, Barcelona, Spain

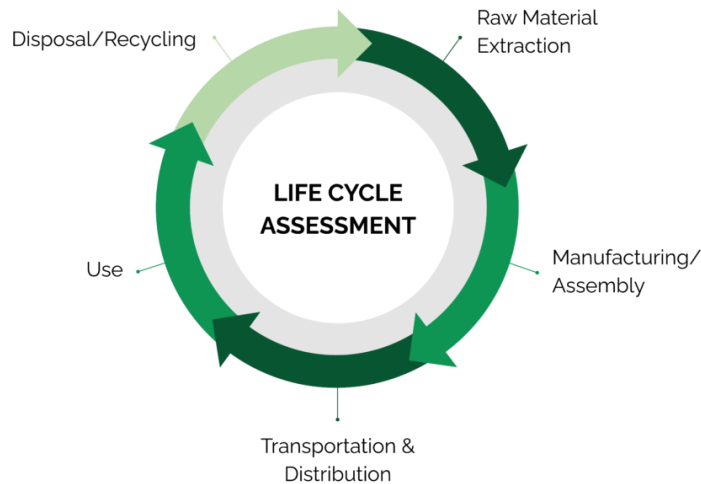
^b CIBER Epidemiología y Salud Pública (CIBERESP), Madrid, Spain

^c Universitat Pompeu Fabra (UPF), Barcelona, Spain

^d IMIM (Hospital del Mar Medical Research Institute), Barcelona, Spain

^e GEMMA-Group of Environmental Engineering and Microbiology, Department of Civil and Environmental Engineering, Universitat Politècnica de Catalunya-BarcelonaTech, Barcelona, Spain

Alternatives: Tap water / Bottled water / Filtered tap water



Health impacts (THM exposure)



Environmental impacts (Water production)

Scenarios

Current

All tap water

All filtered tap water

All bottled water

Key results

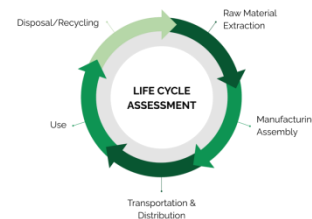
If all bottled water

1,400 times more impact on ecosystems

3,500 times higher resource extraction cost

If all tap water

2 hours of life expectancy lost (even less if filtered)



Economic Analysis

Scenario	Cost (€/m³)	Considerations
Tap water	0,95	The price of water and the water canon are considered
Filtered tap water (Reverse Osmosis device)	31	The price of tap water, the amortization price of the Reverse Osmosis device and the prices of consumable spare parts are considered
Bottled water (PET)	267	An average price is considered

Partners



AGUA PARA EL CONSUMO HUMANO EN BARCELONA
Evaluación de la sostenibilidad y del impacto sobre la salud



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ISGlobal Instituto de Salud Global Barcelona



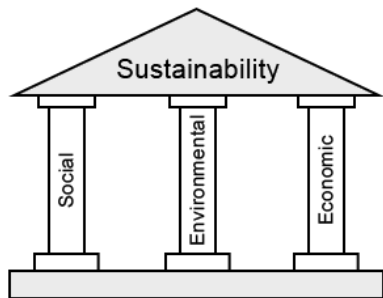
PLATAFORMA TECNOLÓGICA ESPAÑOLA DEL AGUA

Alternativas de estudio
 Se analizarán los impactos ambientales, sociales, económicos y sobre la salud de las diferentes alternativas

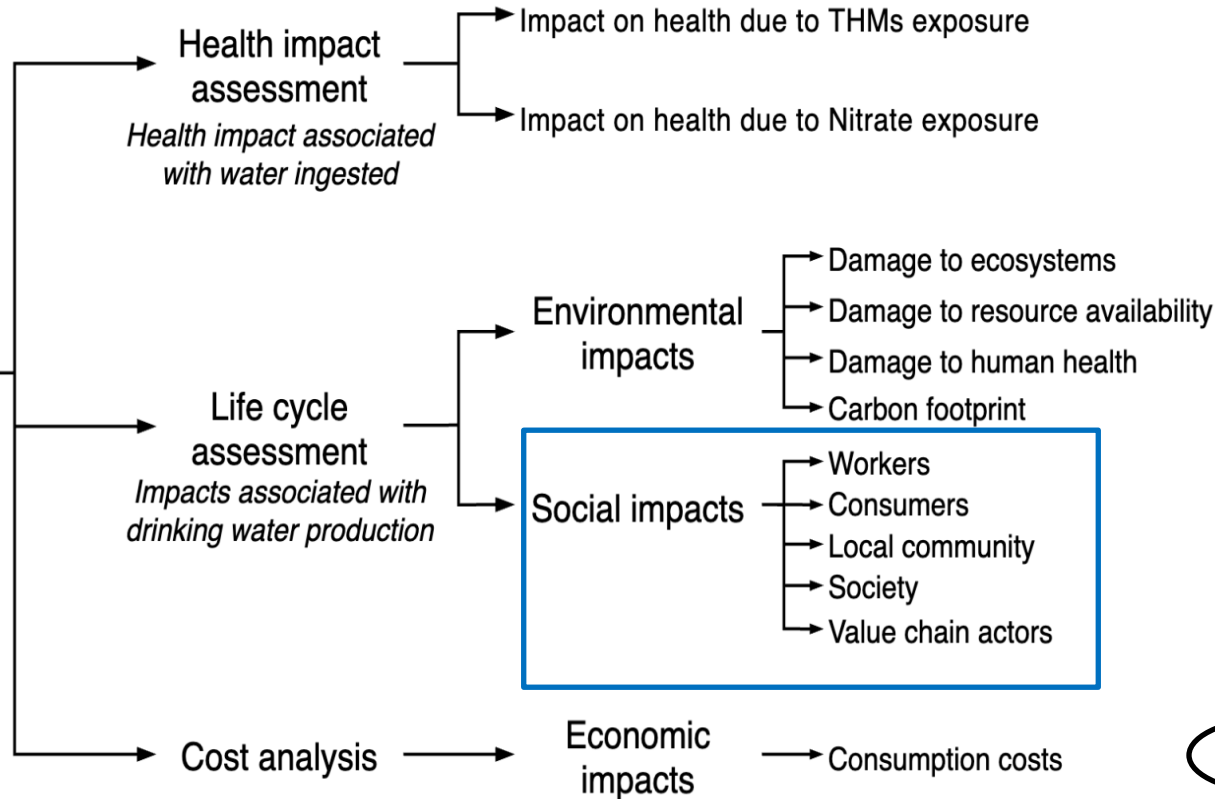
AGUA DEL GRIFO	AGUA DEL GRIFO TRATADA CON SISTEMA DE OSMOSIS INVERSA DOMÉSTICA
AGUA DEL GRIFO TRATADA CON UN FILTRO DOMÉSTICO DE CARBÓN ACTIVADO	AGUA MINERAL EMBOTELLADA (BOTELLA PET)

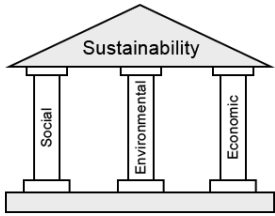
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Index of sustainability of drinking water choices
Tap, bottled, filtered, reverse osmosis





**Thank you
for your attention**

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