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LCA Case Study: Tertiary treatment process options for wastewater reuse

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Acknowledgments

Context

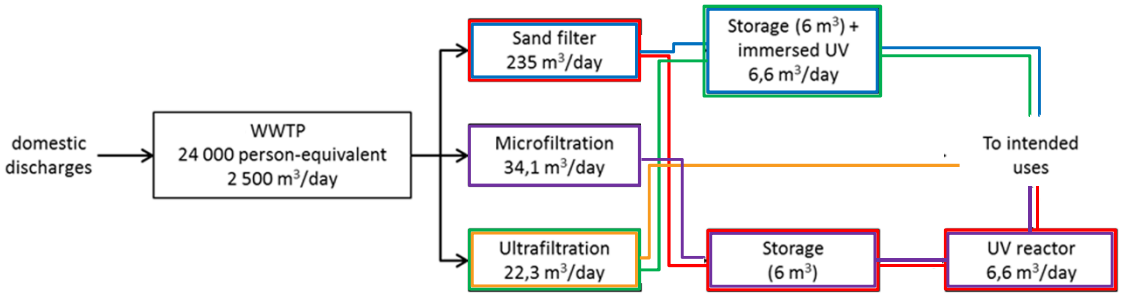
- Reclaimed water is a reliable and ongoing resource in arid regions
- Wastewater treatment techniques should allow meeting health related standards at low investment and O&M (operation and maintenance) costs, and requiring low O&M skills
- Life Cycle Analysis (LCA) can be used as a decision support tool to compare different treatment option

Purpose: to compare environmental impacts of different options of tertiary treatment processes following a conventional wastewater treatment plant

Methods

Data collection

- Five options of tertiary treatment processes following a wastewater treatment plant based on a conventional biological process scheme

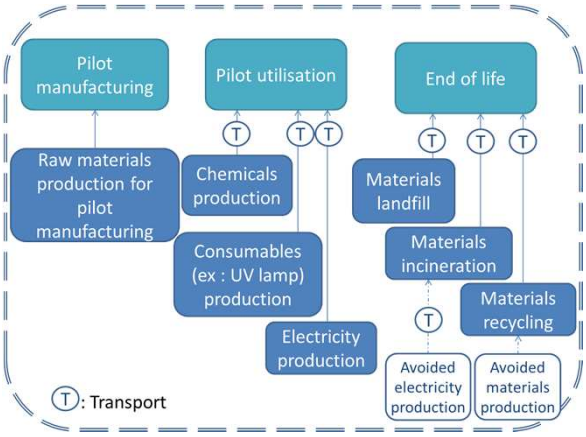


LCA Methodology

- Functional unit:

"To produce 1 m3 of water with a quality in compliance with the highest standard of the French reuse directive"

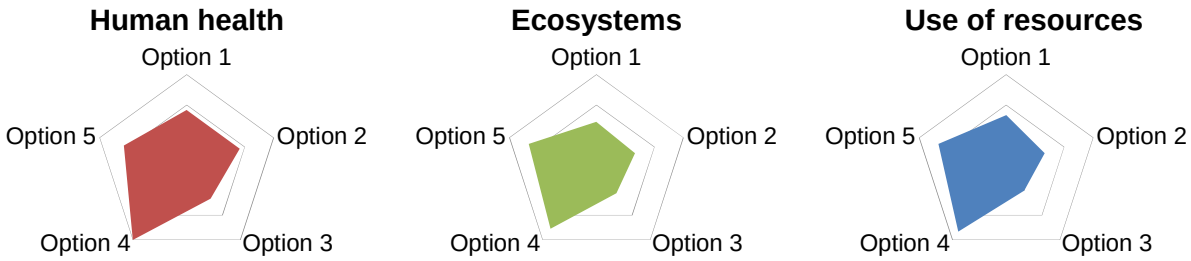
- Environmental impact indicators selected with ReCiPe method
- Model building : Gabi software
- Databases: PE International and EcoInvent v2.2



Borders of the systems studied for life cycle inventory

Results

Ranking of the five options studied according to the three main groups of environmental impacts



Study conducted at pilot scale: results hardly generalizable because other materials would be used in real scale

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