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Advances in the investigation of the construction costs of Sustainable Urban Drainage Systems (SUDS)

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85% of the civil works costs of a SUDS in Spain is linked to the supply of geocellular systems (on average)

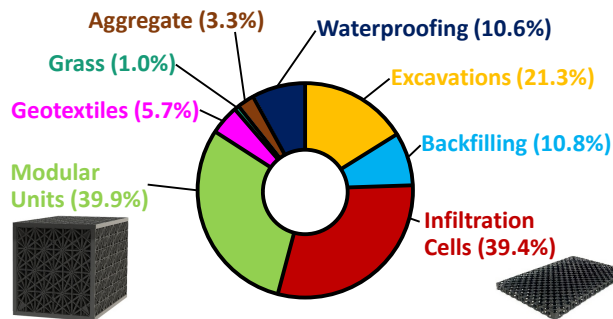
Advances in the investigation of the construction costs of Sustainable Urban Drainage Systems (SUDS)

Background: Researchers and design engineers often use the same SUDS capital cost tables, but the composition of their construction costs is unknown.

Result 1: In Spain, the items with greater incidence in the construction costs of 34 SUDS are modular units (40%), infiltration cells (39%) & geotextiles (6%).

Result 2: SUDS capital and O&M cost functions were proposed in the Spanish context (see color code).

Average incidents of SUDS Supply Costs



SUDS cost functions:

$$C_{TSUDS} = C_{CSUDS} + C_{O\&MSUDS}$$

$$C_{CSUDS} = C_{EXC} + C_{BFILL} + C_{CEL} + C_{UNIT} + C_{GEO} + C_{PAV} + C_{GRASS} + C_{AGR} + C_{IND}$$

$$= UC_{EXC}V_{EXC} + UC_{BFILL}V_{BFILL} + UC_{CEL}A_{CEL} + UC_{UNIT}N_{UNIT} + UC_{GEO}A_{GEO} + UC_{PAV}A_{PAV} + UC_{GRASS}A_{GRASS} + UC_{AGR}V_{AGR} + C_{IND}$$

Variable $C_{O\&MSUDS} = \sum_{t=0}^n \frac{kC_{CSUDS}}{(1+i\%)^t} \rightarrow 0.9\% \leq k \leq 13\%$

≈3%

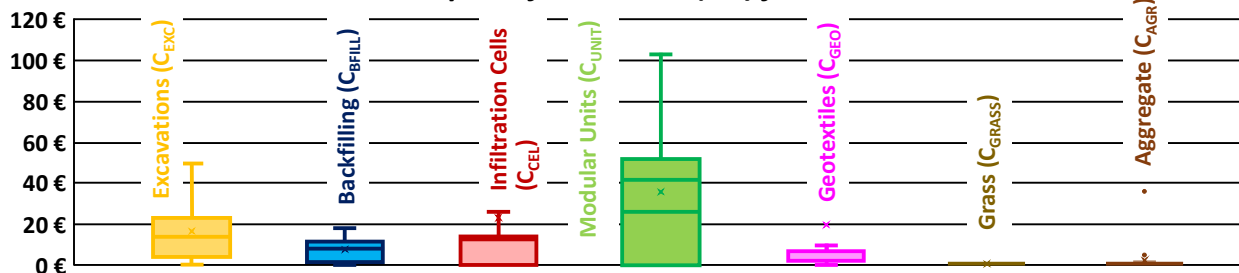
Methods

Meetings with stakeholders

Creation of a project bank

Data series statistics

Box-and-whisker plot of Unit Costs (UC) for SUDS Construction



Limitations: Collecting information on SUDS projects conducted by private construction engineering companies is difficult due to corporate oversight. *This accentuates the gap in understanding such costs.*

