



EcoTech-LR



ELSA

Assessing water deprivation at the sub-watershed scale in LCA

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Objectives

Midpoint indicator to assess water deprivation in LCA, where are we ?

■ Product LCA

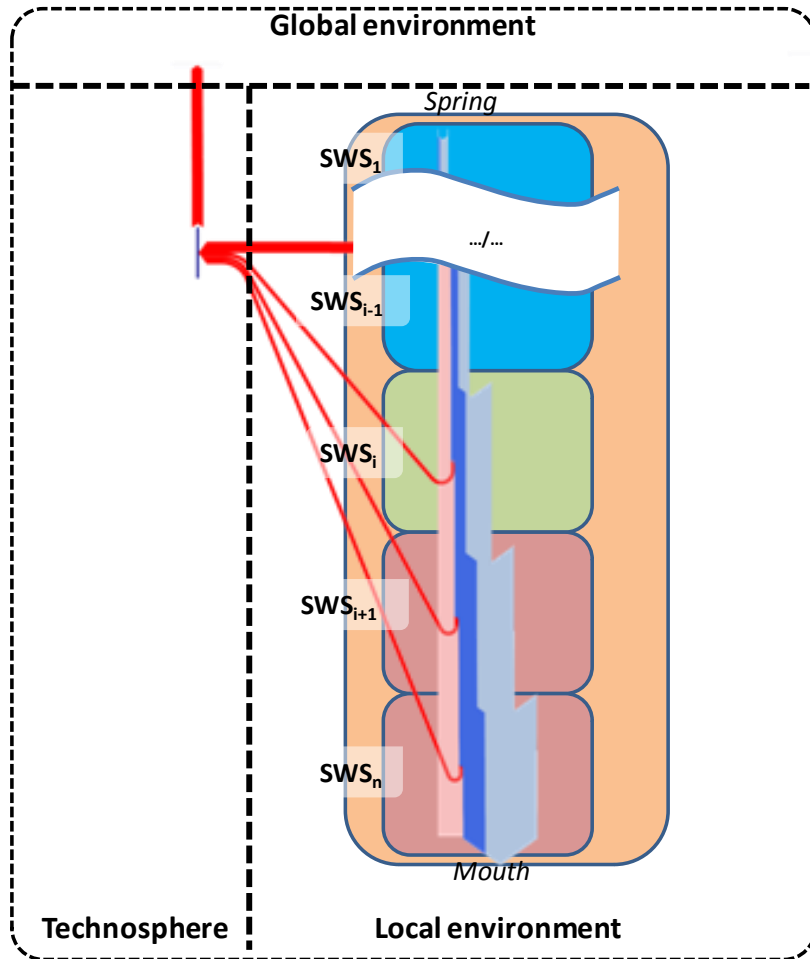
- ⇒ Current indicators (Pfister et al. 2009, Milà I Canals et al. 2008, etc.) are **operational**
- ⇒ Based on water scarcity indicators at the watershed scale

■ LCA focusing on water issues

- ⇒ *e.g., irrigated land areas, cities, non marginal users, etc.*
- **Needs for :**
 - ⇒ Finer geographical scale
 - ⇒ Finer temporal resolution
 - ⇒ Sensitivity to additional non marginal consumption
 - ⇒ Redefinition of water deprivation impact including cascade effects



Framework



Two-step approach at the sub-watershed scale

■ 1- CTA (scarcity)

- ⇒ Consumption-to-availability ratio
- ⇒ Shows SWS_i water scarcity

$$CTA_i = \frac{\sum_{k=1}^i tWC_k}{WA_i}$$

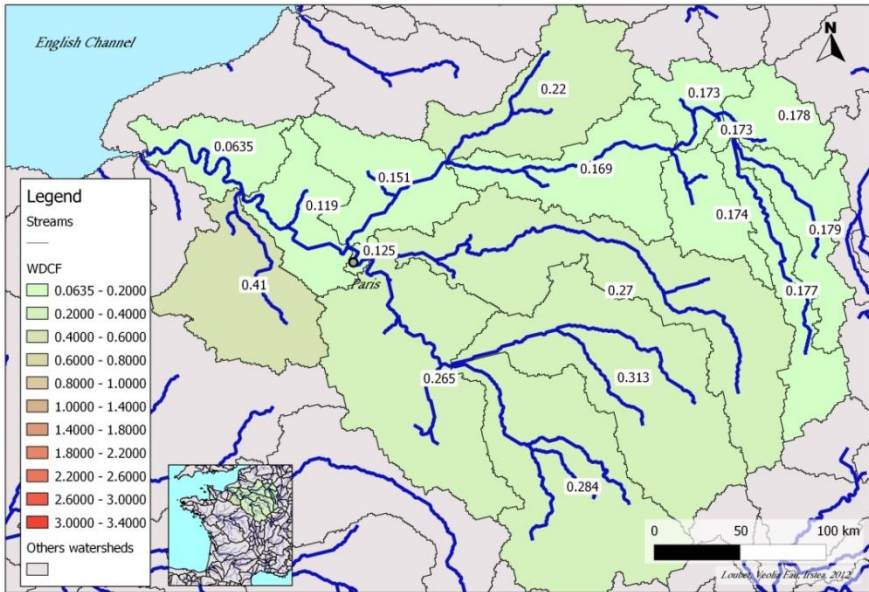
■ 2- WDCF (deprivation)

- ⇒ Water deprivation characterization factor
- ⇒ Assesses the cascade effect of water consumption in a SWS_i on the downstream impacted SWS

$$WDCF_i = \sum_{j=i}^n (CTA_j \cdot K_j) \quad 3$$



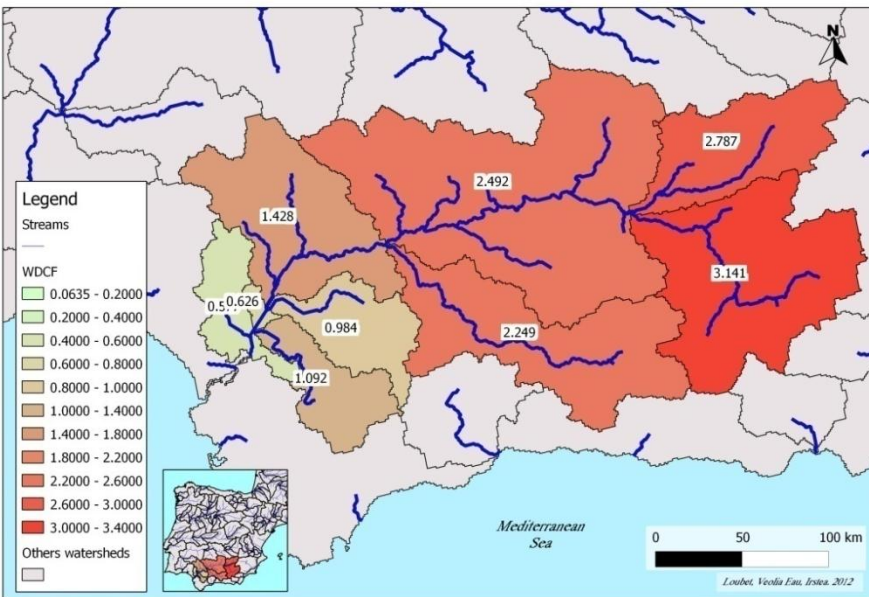
Results



■ WDCF

⇒ Seine watershed,
France

⇒ 0.06 to 0.41



⇒ Guadalquivir
watershed, Spain

⇒ 0.58 to 3.14