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How to integrate SUITMA potentials into urban planning to optimize ecosystem services – A Review

Marie STAS[1], Geoffroy SERE[1]*, Gérald FAYOLLE[2], Daniel RODRIGUEZ[3], Jean Louis MOREL[1], Christophe SCHWARTZ[1]

[1]Laboratoire Sols et Environnement, UMR 1120 Université de Lorraine / INRA, Vandœuvre-lés-Nancy, France
[2]SCE, Bron, France
[3]CEREMA, Direction technique territoires et ville, Lyon, France

*Corresponding Author

Working Session: Considering of soil ecological functions for urban planning and management

Urban sprawl and the consequent massive loss of arable and natural soils require reconsidering the design and the management of urban areas. Indeed, to tackle such major issues as the population growth, the resources scarcity and the demand of a better quality of life, every land surfaces - including cities - should fully be exploited.
Despite the specific features of most of urban soils (*e.g.* coarse texture, high bulk density, basic pH, potential contamination) that lead to poor physical and chemical fertility preventing them to be a good medium for plant growth, they can provide a large range of ecosystem services (Morel *et al.*, 2014). These ecosystem goods (such as food) and services (such as waste assimilation) represent the benefits human populations derive, directly or indirectly, from ecosystem functions (Costanza *et al.*, 1997). Ecosystem services, as an emerging concept, receive a drastically increasing attention. However, scientific studies still focus mainly on natural (forest and aquatic habitat) or slightly anthropized (agriculture) environments, rather than on urban and industrial areas (Figure above).

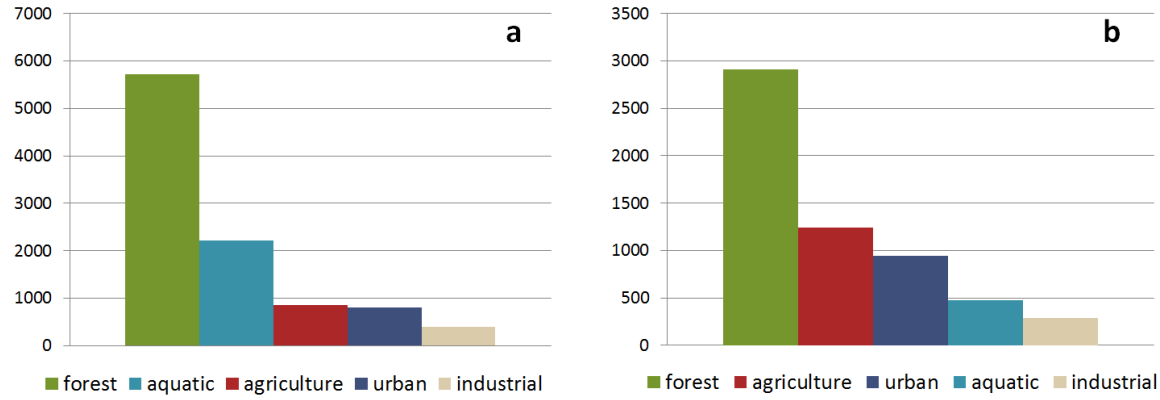

Figure: number of publications in Web of Science quoting the terms "ecosystem function" (a) or "ecosystem services" (b) and « forest », « aquatic », « agriculture », « urban » or « industrial »

Our work aimed at developing a decision support tool to take into account soils potentials during redevelopment of urban wastelands. It was based in particular on a review of previous studies about ecosystem services provided by the urban environment especially its soil compartment. Following the recommendations of most authors (including Escobedo et al., 2011), we proposed our own list of ecosystem services – each of them linked with its relevant soil and ecosystem functions -, inspired by previous work, but adapted to our specific issue. A list of soil indicators that could be measured *in situ* has been established that could, at the end, enable the semi-quantitative evaluation of the level of ecosystem services provided.

The structure of the decision model has been constructed and is now progressively supplied with data and references. The next step will be its implementation before it could be used by land-use managers.

References

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