Ecosystem services determination on an Italian urban greenspace

ECOSYSTEM SERVICES DETERMINATION ON AN ITALIAN URBAN GREENSPACE (TURIN)

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This paper is part of the panorama of studies on climate changes in an urban context. Starting from the concept of Ecosystem Services, we aim to underline the importance of rebalancing equally what is demanded in an urban ecosystem and what it provides people with, focusing on pollutants quantity, carbon sequestration and runoff reduction. Ecosystem services (ES) can be defined as the components of natural capital that provide direct products (food, drinking water, etc) and benefits (like biological variability and soil creation) to people. Our goal is to determinate and to quantify ES related to urban greenspaces in terms of both economic and environmental point of view.

Specifically, the study has been developed through the use of *i-Tree*, a suite developed in the US context, that shows on both small and large scale the economic, environmental and water-related benefits provided by a green area. Its applicability has been tested for an Italian context on a newly built park, located in "Revello Street – Turin", with the collaboration of the Municipality of Turin, comparing past, present and future scenarios.

Eco, Hydro and *Canopy* tools were used for that urban greenspace, providing useful information on software usage and justifying the creation and/or the expansion of new urban green areas through economic and environmental outputs. Results show how the transition from a past residential area to an almost totally green area has led to air quality improvement, with a consequent increase in carbon storage and pollutants reduction, while in view of future improvement works in the park (intensification of arboreal and shrubby presence), the results economically justify the intervention by showing a significant water runoff reduction with consequent reduction of flood events risk.

This work aims to deepen advantages and disadvantages of *i-Tree* and to insert the software as an effective and innovative tool, not widely known in a European context, for the monitoring and development of methodologies to make urban spaces increasingly sustainable, within a view of smart cities.

Keywords: ecosystem services, climate change, urban greenspaces, smart cities, i-Tree