Urban Hazard Adaptation: Efficiency of a Green Infrastructure in an Italian metropolis

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In recent years, safeguarding approaches and environmental management initiatives have been adopted both by international institutions and local governments , aimed at sustainable use of natural resources and their restoration, in order to manage hazard level of climate change consequences (urban flooding, droughts and water shortages, sea level rise, issues with food security).

Cities represent the main collectors of these effects, consequently they need to implement specific adaptation plans mitigating consequences of such future events: Green Infrastructures (G.I.) fall within the most effective tools for achieving the goal. In the urban context, they also identify themselves as valid strategies for biodiversity recovery and ecological functions.

This work analyzes the role of a G.I. in an urban environment, with the aim of quantifying Ecosystem Services (E.S.) provided by vegetation: through usage of *i-Tree*, specific software suite for E.S. quantification, the sustainability offered by "Le Vallere" park, a 34-hectares greenspace spread between municipalities of Turin and Moncalieri (Italy), was analyzed, in collaboration with the related management institution (*Ente di gestione delle Aree Protette del Po torinese*). The study, carried out using two specific tools (*i-Tree Eco and i-Tree Hydro*), focuses on different aspects: carbon sequestration and storage, atmospheric pollutants reduction, avoided water runoff and water quality improvement are just some of the environmental benefits generated by tree population. Tools enable to carry out the analysis also from an economic point of view, evaluating monetary benefits brought by the green infrastructure both at present day and in the future, taking into account climate change effects through projections based on the regional climatic model COSMO-CLM (RCP 4.5 and RCP 8.5 scenarios).

The work led to deepen potential held by the greenspace, helping the cooperating management institution to plan future territorial agenda and to find innovative approaches for an integrated and sustainable hazard control.