Dossier on the environmental and economic value of investment projects on urban forests and green infrastructures
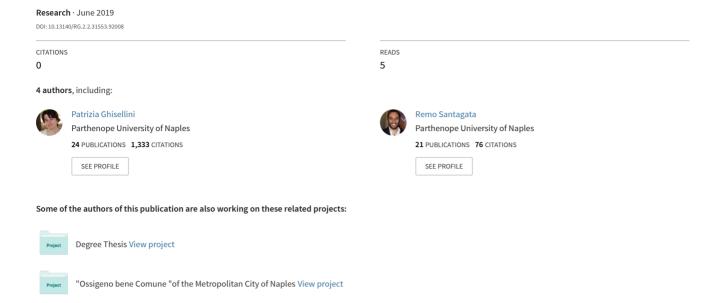
4 authors, including:

Patrizia Ghisellini
Parthenope University of Naples
24 PUBLICATIONS   **1,333** CITATIONS

SEE PROFILE

Remo Santagata
Parthenope University of Naples
21 PUBLICATIONS   **76** CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:

Project   Degree Thesis View project

Project   "Ossigeno bene Comune "of the Metropolitan City of Naples View project

DOSSIER INFORMATIVO SUL VALORE AMBIENTALE ED ECONOMICO DI PROGETTI DI INVESTIMENTO IN FORESTE URBANE E INFRASTRUTTURE VERDI

Istituzione: Università degli Studi di Napoli "Parthenope"

Unità: Dipartimento di Scienze e Tecnologie

Gruppo di ricerca: "Ambiente, Risorse e Sviluppo Sostenibile" (Prof. Sergio Ulgiati)

Authors:

Patrizia Ghisellini, Mariana Oliveira, Remo Santagata, Sergio Ulgiati

Giugno 2019

Acknowledgments:

Outline

In this dossier we have collected information on projects of urban forests in Italy and globally also including scientific contributions that, by means of different methodologies of analysis, have assessed the environmental and economic costs and benefits of forests projects in urban environment. This review therefore represents a preliminary set of data and results aimed at providing a scientific support to the project of the Metropolitan city of Naples of planting 3 Million trees.

Executive Summary

The Dossier starts by summarizing the most recent published reports (Report on the state of forests and forests sector, the annual reports of the committee for the development of urban green, the first and second report on the natural capital) and important Laws adopted in Italy. At this latter regard e.g. the Law 10/2013 requires by the municipalities with more than 15000 inhabitants to perform a census of planted trees for the purpose of implementing an inventory of trees that registers and classifies all the different kind of trees (e.g. monumental trees, street trees) planted in the territory of the municipality.

Currently in Italy in many cities (such as Naples, Milan, Prato, Bologna, Modena, Ferrara) there is a growing interest in urban forestry projects. Moreover, the analysis of several case studies of the Mantua Forum on urban forests arranged by the FAO (2018) highlights that there is also a growing interest worldwide[1]. The Forum underlines on one side the role of urban forests in improving the wellbeing of citizens for the achievement of a more sustainable development and on the other side the need for increasing the general awareness of people around the importance of conserving their value (Bhushan, 2018; Diolaiti, 2018). Urban trees and forests as types of green infrastructures, as any other infrastructure, require an adequate planning, design, maintenance and use (Duarte et al., 2018; Diolaiti, 2018).

It is important to mention that e.g. urban trees provide the maximum of their benefits to cities if they are maintained in a good health. As a result, the continuous monitoring of their well-being is a fundamental activity (Bhushan, 2018). The case of participatory inventory of urban forest in Montevideo shows that the adoption of such tools could be a viable and sustainable way of contributing to a better monitoring and management of urban trees (Duarte et al., 2018).

The review of the scientific literature performed on the Web of Science database[2] dealing with the analysis of urban trees and forestry projects shows many interesting cases from which emerge the multiple benefits (social, economic, health, visual and aesthetics) that e.g. urban trees provide to cities. Urban trees also entail problems, hazard costs and expenditures (e.g. plantation, maintenance, irrigation, pruning, removal) (Roy et al., 2012). However, these could be partially mitigated by an adequate planning and design based on a scientific support that would orient such activities towards the most suitable species of urban trees (Ragni, 2017). The balance between benefits and costs is positive in many cases (Song et al., 2018; Wang et al., 2018). These latter authors calculate that citizens annually received $3.2 in benefits from every $1 invested in the management costs of street trees.

---

[1] World Forum on Urban Forests book of proceedings, avaialble at:
https://www.wfuf2018.com/public/file/WFUFBookofAbstracts-26025.pdf

[2] We selected the studies carrying out a search of the relevant literature on Web of Science using the keywords "Urban tree" AND "benefits and costs"

Moreover, given that the ecosystems services that urban trees, forests and other green infrastructures provide are not clearly identified by market prices, the balance could be probably higher (Almeida et al., 2017)

Finally, the review also points out the wide use of different methods (i-Tree Streets tools, cost-effective analysis, costs and benefits analysis, emergy accounting) adopted by the studies to evaluate the contribution of trees to the local scale (cities) as well as to the wider scales (surrounding region) (Vandermeulen et al., 2011). In that, this contributes to generate a scientific support to public administrations based on a wider and more accurate framework of analysis.

References:

Bhushan, S., Urban Forestry in changing Environment: A Case Study of National Capital Region, Delhi, India. In book of Proceedings World Forum on Urban Forests, Mantova 27/11-01/12/2018.

Diolaiti, R., 2018. Urban Forest Management For Better Cities: Case Studies And Trends From The Board Of Directors Of Public Green Spaces In Italy. In book of Proceedings World Forum on Urban Forests, Mantova 27/11-01/12/2018.

Duarte, A. P., Baietto, A., Daniluk, G., Moras, G., Hirigoyen, A., Rodríguez, M., 2018. Participatory Inventory Of Urban Forest: Case Study On Community Involvement By The Volunteer Program "Voluntárboles. In book of Proceedings World Forum on Urban Forests, Mantova 27/11-01/12/2018.

Ragni, R., 2017. Dieci motivi per piantare un albero. Available at: https://www.greenme.it/informarsi/natura-a-biodiversita/piantare-alberi-motivi/. Last retrieved on: 18/12/19.

Roy, S., Byrne, J., Pickering, C., 2012. A systematic quantitative review of urban tree benefits, costs, and assessment methods across cities in different climatic zones. Urban forestry & Urban Greening 11: 351-363

Song, X. P., Tan, P. Y., Edwards, P., Richards, D., 2018. The economic benefits and costs of trees in urban forest stewardship: A systematic review. Urban Forestry & Urban Greening 29: 162-170.

Vandermeulen, V., Versprecht, A., Vermeire, B., Van Huylenbroeck, G., Gellynck, X.,

2011. The use of economic valuation to create public support for green infrastructure investments in urban areas. Landscape and Urban Planning 103:198-206.

Wang, X., Yao, J., Yu, S., Miao, C., Chen, W., He, X., 2018. Street Trees in a Chinese Forest City: Structure, Benefits and Costs. Sustinability 10, (674): 1-16. doi:10.3390/su10030674.

World Forum on Urban Forest, 2018. Vision. Available at: https://www.wfuf2018.com/public/file/WFUFBookofAbstracts-26025.pdf. Last retrieved on: 18/12/19.