

Editorial

Forests as Nature-Based Solutions: Ecosystem Services, Multiple Benefits and Trade-Offs

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Forest ecosystems, including natural forests, managed forests, agroforestry systems, and urban and peri-urban forests, can be considered as multifunctional Nature-based Solutions (NbS) since they deliver key ecosystem services to people. The concept of NbS is an “umbrella” framework for several ecosystem-based approaches, categorized by the IUCN as protective (e.g., area-based conservation), restorative (e.g., ecological restoration), infrastructure-based (e.g., green infrastructure), management-based, or issue-specific (e.g., ecosystem-based disaster risk reduction) [1]. All of these approaches rely on biodiversity and ecosystem services to address global societal challenges, simultaneously providing environmental, social and economic benefits, and helping communities build resilience [2].

NbS are becoming more and more relevant in international and European policy frameworks, such as in the EU Biodiversity Strategy 2030 [3] and in the upcoming EU Forest Strategy. However, for the effective implementation and mainstreaming of NbS, several research gaps still need to be addressed.

These include the need for collecting further evidence about the ecosystem services provided by forests in natural, semi-natural and urban contexts, encompassing not only provisioning services (e.g., timber, raw materials) but also regulation and maintenance, as well as cultural services. Indeed, forests are fundamental for climate regulation, carbon sequestration, air, soil, and water quality improvement, and for mitigating natural hazards, providing also recreation, spiritual enrichment and aesthetic experience, that contribute to human wellbeing. Key ecological characteristics of forests (e.g., plant functional traits [4]) supporting the delivery of multiple benefits, as well as the possible impacts of climate change on forest functionality and services provision, should also be further investigated.

Another research priority concerns the assessment of the trade-offs between services which might result from different stakeholders’ objective function and management strategies [5]. Monetary valuation, ecosystem services accounting, and cost-benefit analysis are intended to inform citizens, firms, and policy makers about the contribution of forests to private and public benefits and the welfare consequences of alternative forest planning [6]. In this context, the potential disservices, as well as the limitations in using forests as NbS for addressing specific challenges, must be identified and critically discussed by adopting a science-policy interface approach [7].

This special issue entitled “Forests as Nature-Based Solutions: ecosystem services, multiple benefits and trade-offs” encourages studies that deal with the above-mentioned ecological, economic, and social aspects. The aim is to stimulate discussion between scientists and to propose solutions for the operationalization of forests as NbS, thus supporting stakeholders in decision-making processes.



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