



PhD in SCIENCE, TECHNOLOGY AND POLICY FOR SUSTAINABLE CHANGE - 38th cycle

PARTENARIATO PNRR Research Field: PLANNING AND MANAGEMENT OF URBAN BIODIVERSITY: FROM INDICATORS OF THE STATUS QUO TO PRIORITIZATION OF INTERVENTIONS

Monthly net income of PhDscholarship (max 36 months)

€ 1400.0

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

Within the newly founded National Biodiversity Future Centre (NBFC), the protection of urban biodiversity and the enhancement of the provided ecosystem services are key challenges to improve the ecological value of cities for the incoming, crucial decades of change (Spoke 5 of NBFC). While much is known about how to quantify biodiversity and ecosystem services in the natural environment, developing biodiversity indicators for urban forests and related ecosystems is surprisingly still matter of ongoing research. Only on the basis of sound measurements of the health of green spaces in cities, though, is it possible to assess their current state, to plan novel interventions and to design an appropriate and citizen-inclusive management plan.

Goals of this PhD position are to:

- a) develop indicators that include both the environmental and the socio-economic values of urban biodiversity;
- b) quantify such indicators for focal areas in champion cities identified within Spoke 5;
- c) elaborate strategies of prioritization in a multicriterial and multiobjective framework;
- d) evaluate how specific interventions (e.g. expanding existing green areas vs creating novel ones) improve the quality of urban greenness and enhance its associated ecosystem services;
- e) develop management activities that ensure sustainability of the suggested solutions in the medium-



	<p>long term.</p> <p>This project research is in the framework CN-Biodiversità CENTRO NAZIONALE PER LA BIODIVERSITA' CUP D43C22001250001 Decreto di Concessione D.D. 1034 del 17/06/2022</p> <p>Bando, D. D. 3138 del 12/16/2021 rettificato con D.D. 3175 del 18/12/2021 -Avviso pubblico per presentazione Proposte di intervento per il Potenziamento di strutture di ricerca e creazione di campioni nazionali" di R&S su alcune Key Enabling Technologies da finanziare nell'ambito del Piano Nazionale di Ripresa e Resilienza, Missione 4 Componente 2 Investimento 1.4 Potenziamento strutture di ricerca e creazione di campioni nazionali di R&S su alcune Key Enabling Technologies finanziato dall'Unione europea - NextGenerationEU</p>
Methods and techniques that will be developed and used to carry out the research	<p>Using GIS software, the candidate will elaborate geographically distributed information of urban biodiversity and its underlying potential drivers. These drivers range from environmental variables (such as temperature, water availability or soil quality) to the urban fabric and matrix. Ad hoc multicriterial and multiobjective techniques will be developed to specifically deal with indicators that are different in nature and measurement. Since available softwares (like InVEST or iTree) are not yet ready to assess both the ecological and social values of urban ecosystems in a coupled manner for European cities, the candidate will be required to code the identified models, so as to offer appropriate decision support systems to decision makers and urban managers.</p>
Educational objectives	<p>Being this PhD research developed within a multi-partner and multi-city project, the educational objectives span multiple, hierarchical levels. In terms of the doctorate program (sensu stricto), the candidate will be offered the participation to PhD courses to deepen knowledge in Science, Policy, and Technology of Sustainable Change.</p>



	Also, the candidate will develop the capacity to apply innovative monitoring and modelling techniques concerning the specific research field of ecology, by working in a multi-disciplinary research group that include theoretical and applied ecologists, zoologists, botanists, urban planners and decision-makers. The candidate will be invited to visit (whenever needed) the partners of the Italian network of research institutions onboard NBFC (specifically those involved in Activities 3, 5 and 7 of Spoke 5) as well as possible industrial/public partners interested in developing solutions to manage urban biodiversity. Nonetheless, the candidate will be encouraged to spend a period of study in international University/centres where action in this field is at the frontier, so as to learn, bring back and further elaborate the most up-to-date techniques and practices concerning urban biodiversity and ecosystem services.
Job opportunities	Upon completion of the PhD program, the graduate will be equipped with distinctive skills and advanced trans-disciplinary knowledge that open up career opportunities as analyst, researcher or planner at universities, research centers, public and private institutions, R&D departments, regulatory authorities, policy institutions, and other public bodies. The successful candidate will also be able to take advantage of the job opportunities specifically offered by the National Recovery and Resilience Plan (NRRP).
Composition of the research group	3 Full Professors 0 Associated Professors 0 Assistant Professors 1 PhD Students
Name of the research directors	Prof. Renato Casagrandi

Contacts
renato.casagrandi@polimi.it

Additional support - Financial aid per PhD student per year (gross amount)	
Housing - Foreign Students	--
Housing - Out-of-town residents (more than 80Km out of Milano)	--



Scholarship Increase for a period abroad	
Amount monthly	700.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

The selected applicant will be enrolled within the STEP-CHANGE Phd program. The doctoral program offers advanced training organized in three pillars: basic research (methodological courses related to key aspects of theoretical and applied research in science, policy, and technology of sustainable change), specific research (designed to strengthen candidates' knowledge on specific topics aligned with their research interests), and doctoral thesis development (allowing candidates to produce leading-edge research, original scientific, and societal impact). Teaching assistantship opportunities will be available over the triennium; the PhD student will be encouraged to take part in teaching activities, within the limits allowed by the regulations. Suitable computational resources (e.g., laptop for individual use, access to shared servers) will be made available through funding by the School or the PhD advisor. A desk within the Department premises will be provided for the duration of the PhD programme. The PhD student will be actively involved in the activities of Spoke 5 within the NBFC, which is part of Mission 4 (Education and Research), Component 2 (From research to business) of the NRRP.

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CN-Biodiversità

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