



PhD in ARCHITECTURAL URBAN INTERIOR DESIGN - 38th cycle

**PARTENARIATO PNRR Research Field: CONFINED NATURE: OPEN SPACE DESIGN FOR
THE POROUS CITY IN EMILIA-ROMAGNA**

Monthly net income of PhDscholarship (max 36 months)

€ 1195.5

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**

In 2022-23, one of the AUID Ph.D. program research lines focuses on promoting Sustainable Development and reducing Climate Change impacts. This focus fully matches the ECOSYSTEM FOR SUSTAINABLE TRANSITION IN EMILIA-ROMAGNA, promoted to the call for tender for the presentation of proposals for the Strengthening of research structures and creation of R&D "innovation ecosystems" set up of "territorial leaders in R&D" to be funded under the National Recovery and Resilience Plan (NRRP), Mission 4, Component 2 Investment 1.4, funded from the European Union - NextGenerationEU. (*Decreto direttoriale di avviso DD 3277 del 30/12/2021; Decreto di concessione: D.D. 1052 del 23/06/2022; C.U.P. n. D73C22000800001*).

The research goal is to define a methodological approach to architectural and urban design for an approach based on Nature-Based Solutions that is multi-scalar, multi-disciplinary, and capable of acting simultaneously on two levels:

- the performance dimension relating to technological-environmental issues aimed at coping with the effects and preventing the causes of climate change (air pollution, dust, and CO2 emissions, heat islands, soil sealing,), guaranteeing biodiversity, comfort, cost-effectiveness, and safety;
- the cultural and aesthetic dimension of architecture and city, aimed at addressing the issue of urban quality in terms of recognition and appreciation by inhabitants and



	<p>users of the specific characteristics of different contexts. The settlement system of the Emilia Romagna region is structured around a historical framework of medium-sized towns characterized by a significant porosity of built-up areas on a background of agricultural and naturalistic areas organized around river basins, hills, and coastal zones. Over the last thirty years, this original layout has been transformed by the process of sprawl (housing, commerce, production) typical of the Po region and the Adriatic coastline.</p> <p>The research's basic assumption is that the porosity feature of recent settlement transformations in the Emilia-Romagna region offers unexpected opportunities for tackling the global environmental crisis in terms of the quality of primary elements (air, water, soil, and green systems).</p> <p>The proposed research aims to identify tools, methodologies, and techniques, in architectural design, for the use of Nature-Based Solutions to be applied in degraded, marginal, abandoned urban areas. More specifically, the goal is the definition of new types of open spaces designed to generate a series of benefits and ecosystem services, such as providing leisure/recreation opportunities to improve the quality of life, improving air quality (by intercepting particulate matter and other atmospheric pollutants), regulating the urban microclimate, reducing heat island effects in cities, regulating rainwater flows, preserving biodiversity, absorbing greenhouse gases.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The candidate will develop a research methodology starting from the lectures and assignments of the AUID courses and the courses of the Polimi Ph.D. School. Within the ECOSYSTEM FOR SUSTAINABLE TRANSITION IN EMILIA-ROMAGNA, the present research proposal refers to Spoke 4, whose overall objective is to contribute to the economic, social, and environmental sustainability of urban development. More specifically, it aims to define strategies and tools for improving ecosystem services, promoting an approach to architectural and urban design based on NBS, addressing problems related to climate change and city biodiversity</p>



	<p>loss, and increasing energy production from renewable sources.</p> <p>The general objective of the proposal is to define operational tools to enhance the relationship between urban morphology and sustainable development goals, contemporary mobility infrastructures and urban development, and green/blue infrastructures and the control of climate change effects.</p> <p>Starting from a careful analysis of the environmental condition of the Emilia-Romagna urban contexts, the proposed activity aims at defining operational tools (skills and know-how) necessary not only to identify the most appropriate and feasible morphological and technological solutions but also to assess the actual benefits of NBSs in terms of quality and healthiness of the urban environment and its usability.</p> <p>Activity Program in months</p> <p>(0-6) State of the art: a survey of the scientific literature on the subject and definition of the main research questions.</p> <p>(6-12) Selection and analysis of significant case studies in the Emilia-Romagna Region to identify criticalities and potentials and formulate the objectives for international comparable case studies.</p> <p>(12-24) Experiments on pilot projects are also to be identified in agreement with administrations, agencies, and companies on the Emilia Romagna land.</p> <p>(24-36) Guidelines for integrating plants for energy production from renewable sources in urban green spaces, elaborating the relations with the urban, environmental, economic, social, and cultural contexts of the Emilia-Romagna region.</p>
<p>Educational objectives</p>	<p>Educational objectives focus on the deep understanding of a well-selected and defined topic oriented to sustainable development.</p> <p>The candidate will define a specific research containing a comprehensive overview of the scientific question and an original track and output.</p> <p>The candidate will acquire the skill to organize a consistent analysis of case studies, formulate a clear proposal for an original approach to a question, and</p>



	elaborate innovative strategies and research methods.
Job opportunities	<p>The Program aims to train highly qualified researchers and professionals who will work in academic institutions, research centers, public administration, as well as in the private sector in the fields of architectural, urban, and interior design:</p> <ul style="list-style-type: none"> • University researchers and lecturers in the scientific fields of the Ph.D. Program; • Researchers with an excellent scientific profile in the field of complex architectural developments and interventions of recovery and transformation; • Researcher with an excellent scientific profile in the field of International Cooperation Agency, UN Agency, and private international company; • Independent professionals qualified in the management of highly complex design processes; • - Designers with tasks of high responsibility in institutions and professional structures and leading manufacturers engaged in traditional residential and special utilities, cultural institutions (museums, libraries, universities, schools, cultural centers), public and private services, commercial networks, accommodation, and leisure.
Composition of the research group	14 Full Professors 11 Associated Professors 18 Assistant Professors 79 PhD Students
Name of the research directors	Prof. Sara Protasoni

Contacts	
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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	597.76 €
By number of months	6

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

Universities which cooperate in the research

- Katholieke Universiteit Leuven, Campus Sint-Lucas, Ghent
- HafenCity Universitaet Hamburg
- TU Delft, School of Architecture
- TU Berlin, Institute for Architecture
- Università La Sapienza, Roma

Workspace

In the AUID hall, on the 4th floor of Bldg. 12 in Leonardo Campus, are available workstations for shared use.

All Ph.D. students can use their laptops with wireless connections.

Workstations and other equipment are available in the various departmental laboratories (Dastu) linked with the doctoral Program.



Educational activities

Budget per three years: **4.872,90 euros**; per year: **1624,30 euros** for funding participation in international and national conferences, meetings, courses, and workshops.