



PhD in URBAN PLANNING, DESIGN, AND POLICY - 41st cycle

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| Number of scholarship offered | 5 |
| Department | DIPARTIMENTO DI ARCHITETTURA E STUDI URBANI |

Description of the PhD Programme

The PhD programme in Urban Planning, Design and Policy aims to explore the impact of contemporary urban change and understand how it can be governed through planning, design and policy-making activities.

The programme focuses on territorial, social, economic and institutional transformations in contemporary cities. It aims at addressing these as a complex of intertwined phenomena, which calls for new governance, planning and design approaches. By fostering a dialogue with the best international schools, this programme is the place for research and innovative approaches to urban studies, spatial planning and urban design.

PhD candidates are encouraged to reflect upon traditional and innovative practices in these fields by participating in research activities concerning cities and regions, paying attention to international comparison. This approach is fostered through the organization of international seminars and an internship period at one of the research institutes, universities or public agencies that make up the international network of the programme.

Further information is available at the website: <https://www.dottorato.polimi.it/corsi-di-dottorato/architettura/urban-planning-design-and-policy> .



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**INTERDISCIPLINARY Research Field: METROPOLITAN WATER GOVERNANCE: A.I.,
TRADITIONAL KNOWLEDGE, AND SPATIAL PLANNING FOR WATER RESOURCE
MANAGEMENT AND SOCIAL COHESION IN THE METROPOLIS OF THE FUTURE**

Monthly net income of PhDscholarship (max 36 months)

€ 1300.0

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**

Interdisciplinary PhD Grant. The PhD research will be carried out in collaboration with research groups of the PhD programme in "**SCIENCE, TECHNOLOGY AND POLICY FOR SUSTAINABLE CHANGE**". See <https://www.dottorato.polimi.it/?id=422&L=1> for further information.

This PhD research project aims at developing a metropolitan water governance model that integrates Artificial Intelligence (AI) with traditional local knowledge and spatial planning, fostering more resilient and adaptive climate strategies. On the one hand, AI has already demonstrated potential in hydrological forecasting, water quality management, and precision agriculture. However, data availability and governance fragmentation remain significant obstacles, as megacities often struggle with incomplete information and operate within complex, transcalar, and often disconnected decision-making frameworks. Addressing these gaps is essential for transforming AI into an effective tool for equitable water distribution and sustainable urban planning. On the other, there is a clear need for proactive and multi-scalar governance models, moving beyond reactive crisis management that can allow metropolitan areas to embrace preparedness and antifragility developing water systems that not only withstand crises (such as droughts,



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| | <p>floods, or climate change) but also improve and evolve in response to them.</p> <p>Moving from these general hypotheses, the PhD project will contribute to delve into the growing interests in digital technologies rising in the sphere of spatial planning, in particular at the metropolitan scale: AI is tested in particular in its capacity to support urban and territorial planning to promote sustainability, to understand and map urban metabolism, providing models able to predict resource flows in complex territories like those invested by metropolitan scale urbanisation processes and to collect large volumes of data to identify patterns and anomalies in the flows and predict future trends or to help optimize the use of resources. At the same time, AI use in spatial planning is questioned in the light of several concerns: AI algorithms could perpetuate social and economic biases, leading to unfair decisions as well as power concentrated in the hands of large tech companies could threaten cities' sovereignty.</p> <p>This research project stems from a long-term interaction between the Department of Architecture and Urban Studies and UN-Habitat MetroHUB program, defined through a Memorandum of Understanding and aims to contribute to UN-Habitat's current effort to critically address and discuss the power of digital transition and its challenges in metropolitan contexts.</p> |
| <p>Methods and techniques that will be developed and used to carry out the research</p> | <p>The research will adopt an interdisciplinary approach, integrating quantitative and qualitative methods. It will combine advanced data analysis tools, predictive modelling, urban planning, and social sciences. Artificial intelligence plays a central role in predicting water supply and demand, simulating the effects of climate change, and optimizing resource management through machine learning and deep learning techniques. Geospatial analysis and the use of GIS make it possible to map water distribution and identify areas at risk of scarcity. At the same time, Big Data Analytics enables the collection and interpretation of data from urban sensors, water networks, and climate models.</p> <p>~ In parallel, metropolitan planning and public policy</p> |



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| | <p>analysis will provide the theoretical and application framework for developing future water management scenarios through urban scenario planning and multi-criteria evaluation methods considering sustainability, efficiency, and social inclusion. Analyzing water governance policies and structures helps to understand the power dynamics and institutional fragmentation that often characterize metropolises.Â</p> <p>A key aspect of the research is integrating traditional knowledge and involving local communities. Through participatory research methods, qualitative interviews, and co-design workshops, we collect and valorize cultural experiences and practices related to water use to co-design solutions adapted to specific contexts.Â</p> <p>Â This approach will allow the PhD candidate to transcend a purely technological vision and build a governance model considering water's social, cultural, and ecological dimensions as a common good.</p> <p>Â Finally, the research will focus on modelling urban resilience and antifragility, applying complex systems theories to understand the interactions between water, population, infrastructure and governance. Adopting urban resilience indicators enables cities to assess their ability to adapt to water crises and environmental shocks. At the same time, the concept of antifragility explores how urban systems can strengthen and improve in response to challenges.</p> |
| Educational objectives | <p>The proposed PhD candidate will benefit from the joint support of the PhD Program in Urban Planning, Design, and Policy (UPDP) and the PhD Programme in Science, Technology, and Policy for Sustainable Change (STEP-CHANGE).</p> <p>UPDP focuses on sustainable, equitable, and resilient urban development. The research aligns closely with its goals by proposing AI-based models for urban water management that integrate spatial planning and participatory governance. This supports UPDP emphasis on understanding and guiding urban transformations through inclusive and innovative planning practices. STEP-CHANGE promotes sustainable transitions via</p> |



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| | <p>green technologies, decarbonization, and inclusive policy design. The research directly contributes to this mission by applying AI to water governance and urban resilience, addressing key global environmental challenges with technology-driven solutions.</p> <p>By combining UPDP expertise in urban governance with STEP-CHANGE focus on technological innovation, the PhD candidate will work in a strongly interdisciplinary environment, bridging urban planning and systems thinking, offering new methodologies to tackle complex challenges like water scarcity and climate adaptation.Â</p> <p>This collaboration enhances both programmes by uniting technological and policy-driven perspectives. It will equip the PhD candidate with the tools and frameworks to address urgent urban and environmental issues, contributing to more resilient, sustainable, and inclusive cities on a global scale.Â</p> |
| Job opportunities | <p>According to its international orientation, the PhD program trains highly qualified researchers and professionals. It expects them to work in academic institutions, research centers, public administrations and the private sector in fields such as spatial planning, design and management of urban projects and policy, urban studies and urban governance. PhD graduates with such a profile are qualified to be employed by Italian and international academic institutions, public bodies and research centres, as well as public and private development agencies.</p> <p>Moreover, this PhD bursary stems from the collaboration with UN-Habitat and will also envisage and develop opportunities of exchange during and after the PhD programme.Â</p> |
| Composition of the research group | <p>16 Full Professors 9 Associated Professors 1 Assistant Professors 60 PhD Students</p> |
| Name of the research directors | V. Fedeli, A. Castelletti, E. Morello |

Contacts

PhD Coordinator:



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Further information on the PhD Program in Urban Planning, Design and Policy is available at: <https://www.dottorato.polimi.it/corsi-di-dottorato/architettura/urban-planning-design-and-policy>

| Additional support - Financial aid per PhD student per year (gross amount) | |
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| Housing - Foreign Students | -- |
| Housing - Out-of-town residents | -- |

| Scholarship Increase for a period abroad | |
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| Amount monthly | 650.0 € |
| By number of months | 6 |

| Stage and period abroad | |
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| Institution or company where the candidate will spend the period abroad (name and brief description) | |
| By number of months abroad | 0 |

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

List of 5 Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research:

1. Katholieke Universiteit Leuven
2. HafenCity Universitaet Hamburg
3. Bartlett School of Planning, UCL



4. Universidade de São Paulo

5. Sciences Po, Paris

Educational activities (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student per year ("DOTE"): total amount: **5.300,25 euro**:

1st year: max **1.766,75 euro**

2nd year: max **1.766,75 euro**

3rd year: max **1.766,75 euro**

Teaching assistantship (availability of funding in recognition of supporting teaching activities by the PhD student)

There are various forms of financial aid supporting the teaching practice.

The PhD candidate is encouraged to take part in these activities, within the limits allowed by the regulations.

Workspace:

In the UPDP PhD room at Bldg. 14 in Leonardo Campus, workstations are available for shared use. All the PhD students can use their laptops with wireless or LAN connection.

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



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OPEN SUBJECT Research Field: URBAN PLANNING, DESIGN AND POLICY

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Context of the research activity

Motivation and objectives of the research in this field

The Ph.D. programme in Urban Planning, Design, and Policy fosters research that critically engages with contemporary societal challenges, using spatial and governance perspectives to explore urban and regional development processes. It promotes original, interdisciplinary contributions across various themes, including:

- The role of contemporary landscapes, as well as agricultural, forestry, and park systems, in protecting and sustainably transforming urban and regional environments.
- Socio-economic dynamics shaping territorial transformations, with attention to their impact on productive sectors, tourism, and service economies. Critical approaches to urbanity, emphasizing urban design and regeneration to reshape the spatial and social fabric of cities.
- Responses to radical uncertainty in spatial planning, and the exploration of new governance and decision-making paradigms.
- The digital transition and its effects on urban and regional development, digital citizenship, and the evolving right to the city.
- Ecological and energy transitions as strategic responses to climate change and geopolitical instability, focusing on spatial and policy dimensions.



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| | <p>spatial and policy dimensions.</p> <ul style="list-style-type: none"> •Innovation in spatial planning tools and policies to strengthen public administration capacity. •Mobility as a spatial, socio-technical, and ethical issue in the planning and design of cities and regions. •Cultural heritage as a platform for experimentation and innovation in urban development and regeneration. •The housing crisis, with a focus on affordability, policy reform, and governance innovation. |
| <p>Methods and techniques that will be developed and used to carry out the research</p> | <p>The integration between different fields and disciplines of urban research on the one hand and between theory and practice on the other characterizes the approach promoted by the PhD programme. Based on this, introductory courses support educational activities, which focus on research methods, comparative assessment of best practices, and design workshops. The main courses and workshops provided in the first year are the following:</p> <ul style="list-style-type: none"> •course on research design and methods, providing a methodological introduction to the doctoral dissertation (literature review, drafting of a research project), as well as research tools in the fields of urban planning, policy and design; •research-by-design workshop, in which different experiences and skills are combined to explore themes and methods of urban planning, policymaking and project design. The workshop, organized in an intensive work period, is anticipated by introductory seminars. Each learning activity is subject to grading through oral examination and the submission of written papers. Detailed programs are available on the PhD programme's website. Within the end of the first year, PhD students will be required to submit a research proposal for their PhD dissertation. The core activities of the second year are: <ul style="list-style-type: none"> •an internship of six months in a foreign university or agency working in the field of urban planning and policy; •at least one paper submitted to an international journal and the participation in an international conference as a |



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| | <p>speaker.</p> <p>During the third year, the PhD candidate should devote his/her time to research and development of the PhD thesis. For each candidate, one member of the Board is appointed as a tutor, responsible for supporting the candidate's work. A scientific supervisor is also appointed during the first year. The board of professors holds regular meetings with PhD candidates.</p> <p>By fostering a dialogue with the best international schools, this programme is the place for research and innovative approaches to urban studies, spatial planning and urban design. PhD candidates are encouraged to reflect upon traditional and innovative practices in these fields by participating in research activities concerning cities and regions, and paying attention to international comparison. This approach is fostered through the organization of international seminars and an internship period at one of the research institutes, universities or public agencies that make up the international network of the programme.</p> |
| <p>Educational objectives</p> | <p>The programme pays specific attention to the transition towards new, more sustainable and equitable modes of urban development as well as to pro-active advancements in planning practices and to potential innovations in traditional urban studies, urban design and policy approaches. The integration between different fields and disciplines of urban research on the one hand, and between theory and practice on the other, distinguishes the approach promoted by this PhD programme.</p> <p>The objective of the PhD programme is to provide PhD students with analytical and interpretative tools and research methods to advance research frontiers in the field of urban studies, spatial planning, urban design, urban policy and governance. PhD students are encouraged to reflect upon traditional and innovative practices in these fields by participating in research activities concerning cities and regions in Italy and abroad, paying particular attention to international comparison. This objective is achieved through the</p> |



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| | organization of international seminars and a period of internship to be carried out by PhD students at one of the research institutes, universities or public agencies that constitute the international reference network of the programme. |
| Job opportunities | According to its international orientation, the PhD program trains highly qualified researchers and professionals. It expects them to work in academic institutions, research centres, public administrations and the private sector in fields such as spatial planning, design and management of urban projects and policy, urban studies and urban governance. PhD graduates with such a profile are qualified to be employed by Italian and international academic institutions, public bodies and research centres, as well as public and private development agencies. |
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| Contacts | |
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| <p>PhD Coordinator: Prof. Eugenio Morello e-mail: eugenio.morello@polimi.it phone +39/02/2399.2666</p> <p>PhD tutor: Dafni Riga email: dafnitheodosia.riga@polimi.it</p> <p>Contact in the PhD Office at DASTU: Marina Bonaventura E-mail: marina.bonaventura@polimi.it; phone +39/02/2399.5165</p> <p>Marilena Mastalli Email: marilena.mastalli@polimi.it phone +39/02/2399. 9395</p> <p>Further information on the PhD Program in Urban Planning, Design and Policy is available at:</p> | |



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