



PhD in ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO / ARCHITECTURE, BUILT ENVIRONMENT AND CONSTRUCTION ENGINEERING - 39th cycle

THEMATIC Research Field: CLIMATE RESILIENCE OF THE BUILT ENVIRONMENT

Monthly net income of PhDscholarship (max 36 months)

€ 1275.0

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

Climate change-related impacts exacerbate existing conflicts in land use and settlement morphology, in a scenario of higher temperatures and rain storms extended at all latitudes; also the recent drought phenomenon poses new and unpredictable issues and challenges for anthropised landscapes, putting in doubt the efficacy of many of mitigation interventions based on vegetation and urban forestry. The research proposal highlights the need for a paradigm shift in the existing urban planning and design approaches, assuming climate resilience as a main driver and focusing on built environment adaptation to climate extremes, also investigating relevant synergies with climate change mitigation. The research develops an innovative methodology (analysis and design) delivering scalable and replicable frameworks to foster climate resilience within urban settlements.

The approach could be declined in a site-specific and culture-sensitive way in order to value peculiar environmental resources, history and landscape features. Potential research perspectives combine climate adaptation with tackling climate-related built heritage threats. The challenge of the research will be that of moving along the disciplinary frontiers of urban design, planning, heritage valorisation, looking for their integration in the climate change scenario and discussing the



	<p>internationally shared digital and ecological transition strategies. The research will be carried out by means of pilot cases in collaboration with stakeholders, experts and local communities, contributing to the public debate on regeneration and sustainable development strategies.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The methodology will open a new design-oriented knowledge in the domain of urban settlements climate resilience. An interdisciplinary, mixed-method and multi-scalar research approach will be developed, integrating urban design and planning, mobility trends and patterns, preservation and environmental sciences, jointly focusing on climate change.</p> <p>Performed activities and tools include:</p> <ul style="list-style-type: none"> • identification, mapping and investigation of relevant assets and data; • processing of satellite data in GIS environment; • measurement campaign data collection, processing and analysis; • modelling software of urban spaces (e.g. microclimate simulation software ENVI-met); • climate service tools (e.g. Urban Multi-scale Environmental Predictor – UMEP). <p>Design activities, vision, concept plan, masterplan and rendering will be supported by GIS, CAD and Adobe software.</p> <p>Different research approaches and cases will be compared at an international level and critically discussed: in particular data driven and morphological approaches will be combined making treasure of their complementarities. The research will be developed in collaboration with international institutions, such as SUPSI (DACD, Dipartimento Ambiente Costruzioni e Design), ETH (IRL, Institute for Spatial and Landscape Development, Department of Civil, Environmental and Geomatic Engineering), MIT Boston (DUSP, Department of Urban Studies and Planning) and the research sector of ULI, Urban Land Institute Europe.</p> <p>SDGs related to this research: 3, 11, 13, 15</p>



Educational objectives	<p>Educational goals include:</p> <ul style="list-style-type: none"> •Upskill and acquire abilities, system of knowledge and innovative methodological approaches that can contribute to shape the PhD Candidate as a valued researcher and professional at international level; •Produce knowledge advancements on climate resilience and deliver critical advice for the development of policies and projects; •The educational perspective indeed is project-oriented at the strategic level, preparing the Ph.D. candidate to participate in interdisciplinary design teams, with special focus on developing sustainable concept plans and masterplans for urban and landscape regeneration.
Job opportunities	<p>Research in the academic field, in international research institutes.</p> <p>Design and consultancy activities at multinational design and real estate companies.</p> <p>Consulting, planning, project evaluation and policy development in the environmental and planning sectors, at international foundations involved in ESG, supranational bodies (EU, UN, etc) and public administration.</p>
Composition of the research group	<p>3 Full Professors 0 Associated Professors 1 Assistant Professors 1 PhD Students</p>
Name of the research directors	Prof. Giovanna Fossa

Contacts
<p>Prof. Giovanna Fossa giovanna.fossa@polimi.it</p>

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)	--



(more than 80Km out of Milano)	
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Scholarship Increase for a period abroad	
Amount monthly	637.5 €
By number of months	6

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

Additional support:

Budget for the research activity (only for positions supported by scholarship):

total amount Euro 5197.60 per student

In detail:

- 1st year Euro 1732.53
- 2nd year Euro 1732.53
- 3rd year Euro 1732.53

Additional information about the organization and regulations of ABC-PhD programme can be found in the Regulations for the 39th Cycle of ABC-PhD:

download is available at link:

<https://www.dottorato.polimi.it/corsi-di-dottorato/architettura/architettura-ingegneria-delle-costruzioni-e-ambiente-costruito>

Additional information about ABC department and ABC-PhD programme:

available at link:

<https://www.dabc.polimi.it/>

Desk availability:

The ABC department provides non-permanent desks to be temporarily booked in common PhD rooms.