



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

PNRR 118 PA Research Field: ME.TO.ME.-METHODS AND TOOLS FOR MONITORING THE ENVIRONMENTAL QUALITY OF PUBLIC WORKS IN THEIR LIFE CYCLE (METODI E STRUMENTI PER MONITORARE LA QUALITÀ AMBIENTALE DELLE OPERE PUBBLICHE NEL CICLO DI VITA)

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

The Public Administrations responsible for the planning, design, construction and management of public works are now called upon both to ensure compliance for all the PNRR projects with the six criteria deriving from the "Do Not Significant Harm" (DNSH) principle (see: MEF Circolare del 13 ottobre 2022 n. 33), and to apply for the investments the regulatory model Environmental, Social and Governance (ESG) defined at EU level to integrate investment processes with elements of attention to environmental, social and governance factors. With the need therefore to conceive and adopt new models and control tools for guiding processes and projects capable of organically integrating a complex set of specialist and sectoral standards and specific certification protocols. In fact, currently, a supportive regulatory framework already exists (CAM - Minimum Environmental Criteria and sector standards) as well as a multiplicity of tools and methods (e.g. the EU Level(s): a voluntary reporting framework to improve the sustainability of buildings) that are applied in the main voluntary certification protocols (LEED, GBC Historic Buildings, ITACA, WELL), as well as numerous technical solutions able to improve performance on a



	<p>building and urban scale (Bologna R., Losasso M., Mussinelli E., Tucci F., 2020).</p> <p>However, there is still a significant segmentation and specialization of the current mandatory and voluntary regulatory instruments, with gaps with respect to the ex-post monitoring activities of the works and the more general control of the process that begins with the design. In this context, the Agenzia del Demanio (a Public Agency that manages public real estate assets worth approximately 63 billion euros and with ongoing interventions for a value of approximately 3.5 billion euros) is reorganizing its managing models for systematically integrate the DNSH criteria and the ESG model into a tool to guide the design and assessment of the environmental and social quality of projects and works throughout their entire life cycle. An ambitious goal in line with mission 2 of the PNRR "Green Revolution and Ecological Transition" which includes more efficient private and public buildings among the priority actions. An objective which, in order to be fully achieved, needs to develop also innovative solutions and models for monitoring and controlling building processes in progress and ex-post in order to guarantee the achievement of the initial hypotheses and also to introduce corrective measures in a circular vision of continuous improvement of the interventions? quality (objective of the PhD research proposal).</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The aim of the research is to develop new tools for monitoring and controlling public works processes to guarantee the results of the interventions in terms of environmental quality and social impact. In particular - also in continuity with the activities already in place between the Agenzia del Demanio and the EnviReg Research Group of the ABC Department, with reference to the implementation of the Framework Collaboration Agreement entered into by the Politecnico di Milano for the start of scientific cooperation in some areas of common interest (architecture/landscape; urban planning; energy and digital efficiency; reduction of seismic risk) - the doctoral research will identify as an emblematic case of experimentation and verification of the results the</p>



	<p>Agenzia del Demanio which, through a specifically established Struttura di Progettazione, has recently strengthened its decision-making capacity, equipping itself with specific Guidelines for the design and evaluation of the environmental and social quality of the interventions, with indicators and benchmarks that are adequate and proportionate to the various phases of the process and to the complexity of the interventions themselves.</p> <p>The research, starting from the first results of the application of the Guidelines, will develop monitoring, control and feedback models aimed at progressively improving the general performance of the entire building system (building system as a dynamic reality) during its life cycle. Monitoring system intended as an integral part of the new environmental and social management model inherent both in the project and in the use phase and it can also be used to control and optimize the management costs of the interventions.</p> <p>For these reasons, the doctoral experience includes an internship at the Struttura di Progettazione of Agenzia del Demanio (total time: 12 months), which will be divided into three periods distributed over the three years of the PhD programme (5 months, 2 months and 5 months respectively to analyze the application of the Guidelines with respect to possible limits and criticalities, to develop an initial hypothesis of a monitoring model, and finally to apply, verify and implement the tool defined in the second year of the research).</p> <p>In the second year, in order to broaden the cognitive and experiential framework underlying the proposal for a monitoring tool, a stay abroad of 6 months is envisaged in a public agency that carries out activities similar to those of the Agenzia del Demanio or in an international research center that deals with the issue of climate change in relation to the construction sector.</p>
Educational objectives	<p>The goal is to train a highly qualified figure capable of developing and applying complex tools for monitoring, controlling and implementing the effectiveness of choices in the planning, design, construction and management processes of public works.</p>



Job opportunities	A figure with the skills described above will be able to find opportunities both within the public administrations with roles including coordination and management of highly complex processes, but also as a freelancer or in private organizations operating in the construction sector not only with reference to public works.
Composition of the research group	2 Full Professors 3 Associated Professors 2 Assistant Professors 1 PhD Students
Name of the research directors	Profs. Elena Mussinelli and Andrea Tartaglia

Contacts
<p><i>elena.mussinelli@polimi.it</i> <i>ph. +390223995146</i> <i>andrea.tartaglia@polimi.it</i> <i>ph.+390223995166</i></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)	--

Scholarship Increase for a period abroad	
Amount monthly	637.5 €
By number of months	6

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	Struttura di Progettazione of Agenzia del Demanio
By number of months at the company	12
Institution or company where the candidate will spend the period abroad (name and brief description)	To be defined
By number of months abroad	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>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</p>



- 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-dellecostruzioni-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.

This scholarship is funded by the PNRR national programme under the research line on 'Public Administration' in D.M. 118. This means that the owner of the position will be obliged to submit periodical reports about her/his activity.