



PhD in INGEGNERIA MECCANICA / MECHANICAL ENGINEERING - 39th cycle

PNRR 118 PA Research Field: ENVIRONMENTAL AND ECONOMIC ASSESSMENT OF
INVESTMENT IN TRANSPORT SECTOR

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

This research addresses the challenges that public administrations face to address investment in transport sector **toward sustainable mobility**. The PhD will contribute to renew competences and instruments with the final goal to improve public administration governance and management capacities in relation to the assessment of transport schemes. In the transport sector, several strategies have been adopted to assure a smooth transition to achieve the goal of decarbonised transport such as investments to promote modal shift toward Rail, public transport, cycling and shared modes, as well as funding programmes to upgrade existing infrastructure (e.g. digitalization, smart roads,...) and to incentivize the use of clean vehicles (electric, Hydrogen, hybrid...). The above-mentioned policies need to be carefully assessed and duly planned, in order to facilitate an effective transition without inefficiencies and other undesirable indirect counter-effects. This research programme aims at developing an overall framework to assess transport policies and investment at the national scale, that would critically analyse emerging innovations, contextualizing them in the Italian context and would assess the contribution of innovations on overall sustainability (environmental, economic and social), including also an assessment of the associated risks and wider (social and economic) effects. Starting from the national policy and administrative framework, including funding for Rail and Road networks development as well as mass rapid



	<p>transport and fleets renewal, the research would allow to develop technical/application guidelines that could integrate the reference regulatory framework of the sector to assist public administrations through an effective decision-making process.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The research will be conducted in collaboration with the Technical Unit of the Ministry of Infrastructure and Transport (MIT). To carry out this research the following methods and techniques will be developed:</p> <ul style="list-style-type: none"> - Life-cycle assessment, cost-benefit and multi-criteria analyses, in order to assess the economic and environmental impact of investments; - advanced discrete choice models, in order to simulate travellers' behaviour, attitudes and perceptions about innovative technologies and new modes of transport; - traffic assignment models (micro and macro), in order to forecast traffic flows on the transport networks.
<p>Educational objectives</p>	<p>The project will provide the candidate with:</p> <ul style="list-style-type: none"> - knowledge of the transportation sector, particularly the impact assessment of technologies; - methodological competences at both the theoretical and applied level; - problem setting and solving capabilities; - capabilities to interact with people of diverse background.
<p>Job opportunities</p>	<p>Our last survey on MeccPhD Doctorates highlighted a 100% employment rate within the first year and a 35% higher salary, compared to Master of Science holders in the same field.</p> <p>The research will be jointly developed in the framework of the Sustainable Mobility Center (Centro Nazionale per la Mobilità Sostenibile - MOST), led by the Politecnico di Milano and including 25 Italian Universities.</p>
<p>Composition of the research group</p>	<p>2 Full Professors 1 Associated Professors 2 Assistant Professors 4 PhD Students</p>



Name of the research directors	Prof. Pierluigi Coppola
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Contacts

Research Supervisor:

Prof. Pierluigi Coppola (<https://www.mecc.polimi.it/ricerca/personale-docente/personale-docente/prof-pierluigi-coppola>)

E-mail: pierluigi.coppola@polimi.it *Phone:* +39 02 2399 8376

The Supervisor from Polimi will be supported by a tutor that will be designated by MIT (Ministero delle Infrastrutture e dei Trasporti).

The research activities will be carried out at the Department of Mechanical Engineering of the Politecnico di Milano (Head of Department: prof. Marco Belloli)

For questions about scholarship/support please contact phd-dmec@polimi.it.

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

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

National Operational Program for Research and Innovation	
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Company where the candidate will attend the stage (name and brief description)	MINISTERO DELLE INFRASTRUTTURE E DEI TRASPORTI (MIT)
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	Universidad de Cantabria
By number of months abroad	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
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Financial aid is available for all PhD candidates (purchase of study books and materials, funding for participation in courses, summer schools, workshops and conferences) for a total amount of euro 5.707, 13.

Teaching assistantship: availability of funding in recognition of supporting teaching activities by



the PhD candidate. There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.