



# PhD in SCIENCE, TECHNOLOGY AND POLICY FOR SUSTAINABLE CHANGE - 39th cycle

## PNRR 117 Research Field: DEVELOPMENT OF A QUANTITATIVE IMPACT ASSESSMENT FRAMEWORK - APPLICATION TO BUSINESS PROJECTS

### 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

The current national environmental commitments and long-term objectives are pushing national energy systems in rapidly adopting massive use of renewables and decarbonization solutions.

The definition and application of Life Cycle Assessment (LCA) methods able to provide a consistent quantitative impact assessment of new technologies and energy conversion systems is nowadays one of the major scientific challenges. This claim is evident by analyzing the recent publications on the subject and their relevance in the policy dialogue. In addition to this specific scientific interest, the broader interest of the whole international community is also claiming for transparent quantitative impact assessments based on open-source frameworks, to enable the ambitious goals defined by the Agenda 2030 associated to Sustainable Development and by the Paris Agreement associated to Climate Change.

At national level, the Plan of Recovery and Resilience (PNRR) are almost everywhere in Europe asking for scientifically grounded tools to comply post-covid recovery policies with a green transition.

The research project focuses on the development and application of a consistent Life Cycle Assessment modelling platform, able to model new energy technologies and the related supply chains with transparent and robust background data sources. The platform will be developed based on the Input-Output analytical framework, and it will enable the environmental



	and economic assessment of new technologies and energy projects in a Life Cycle perspective, based on a set of quantitative indicators. This platform will contribute to and support the identification of strategies to reduce the impact on climate change, by also assessing the economic and social recovery by creating wealth and jobs.
<b>Methods and techniques that will be developed and used to carry out the research</b>	Theoretical tools: Linear Programming, Constrained Optimization, Input-Output Analysis Computational tools: programming languages (Python, R) and open-source energy and industrial ecology modeling frameworks (MARIO)
<b>Educational objectives</b>	1. To develop a general-purpose modelling platform to assess the economy wide impact of products and systems in future scenarios; 2. To setup and manage complex impact assessment models; 3. To handle large scale databases and provide effective analysis of relevant output data.
<b>Job opportunities</b>	Researcher or analyst for energy utilities and/or for public or private research centres, R&D Departments, international institutions, NGOs.
<b>Composition of the research group</b>	2 Full Professors 2 Associated Professors 5 Assistant Professors 3 PhD Students
<b>Name of the research directors</b>	Matteo Vincenzo Rocco

<b>Contacts</b>
matteovincenzo.rocco@polimi.it

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

<b>Scholarship Increase for a period abroad</b>
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<b>Amount monthly</b>	700.0 €
<b>By number of months</b>	6

<b>National Operational Program for Research and Innovation</b>	
<b>Company where the candidate will attend the stage (name and brief description)</b>	Edison S.p.A.
<b>By number of months at the company</b>	6
<b>Institution or company where the candidate will spend the period abroad (name and brief description)</b>	Si prevede un periodo di ricerca di 6 mesi presso istituzione estera ancora da definire.
<b>By number of months abroad</b>	6

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