

ENERGETICS

Ateneo/DENERG - Environmental Life Cycle Assessment for aviation sector decarbonisation

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Context of the research activity	<p>The aviation sector is under increasing pressure to decarbonize, this urges for both airports and airlines alike. DENERG is actively engaged in projects supporting airport decarbonization, acknowledging that sustainability is a pivotal dimension in shaping the sector.</p> <p>DENERG's research team is involved in the development of LCA based methodology to assess the potential benefit of the use of alternative fuels from innovative pathways, such biomass pyrolysis or others.</p> <p>The PhD candidate will support system energy modelling, together with quantifications of the potential environmental benefits of the use of alternative technologies to support the decarbonisation of the aviation sector.</p>
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Objectives	<p>The aviation is need to engage in projects actively supporting the sector decarbonization, acknowledging that sustainability dimension is key for its future.</p> <p>DENERG of the Politecnico di Torino is involved in several research activities related to the decarbonisation of hard-to-abate transport sector, working to support the green transition by proposing innovative solutions with lower GHG emissions. Hard-to-abate sectors includes transport, in particular aviation and maritime.</p> <p>The first objective of the PhD is the analysis of the most promising solution to decarbonise the aviation sector, at airport level.</p> <p>The PhD candidate will perform system energy modelling and draft scenarios for technological transition at airport scale.</p> <p>Another important objective of the PhD is to investigate the feasibility and techno-economic potential impact of using these renewable or low carbon innovative solutions.</p> <p>At the same time, the dimension related to alternative fuels will be investigated, targeting the development and/or the application of modelling innovative pathways like waste stream to alternative fuels, via pyrolysis or other routes.</p> <p>Finally, the PhD will have to quantify the potential environmental benefits of the investigated solutions, using LCA based open tools.</p> <p>The research will contribute to the definition of actions to reduce the impacts</p>
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of climate change and to the promotion of sustainable development, as a contribution to promoting green recovery and overcoming the effects of the climatic crisis.

Skills and competencies for the development of the activity

The PhD candidate is expected to develop:

- Competences on energy modelling.
- Sustainability framework for biomass to energy vectors pathways.
- Competencies on environmental LCA.
- Other relevant soft skills, such as:
 - o Team working.
 - o Autonomy at work.
 - o Problem solving.
 - o Communication skills.
 - o Basics of project management.