ENERGETICS

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

Funded By	Dipartimento DENERG FONDAZIONE CRT CASSA DI RISPARMIO DI TORINO [P.iva/CF:06655250014]
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Context of the research activity	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 secot. 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. 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.
Objectives	The aviation is need to engage in projects actively supporting the sector decarbonization, acknowledging that sustainability dimension is key for its future. 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. The first objective of the PhD is the analysis of the most promising solution to decarbonise the aviation sector, at airport level. The PhD candidate will perform system energy modelling and draft scenarios for technological transition at airport scale. 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. 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. Finally, the PhD will have to quantify the potential environmental benefits of the investigated solutions, using LCA based open tools.

	The research will contribute to the definition of actions to reduce the impacts 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 us: o Team working. o Autonomy at work. o Problem solving. o Communication skills. o Basics of project management.