IST – LNEC Joint doctoral Initiative

Dissertation Proposal

TITLE: Energetically sustainable aquaculture ponds. A contribute for Blue Economy

Short Description - Literature review of coastal hydrodynamics and aquaculture systems in nutrient-rich ocean waters. - Identify the energy necessities of a narrow range of aquaculture species. Identify possible renewable energy sources. - Develop a methodology to optimize the unit cost of produced mass of aquaculture species by optimizing the hydrodynamic design of the aquaculture pond. - Adapt CFD NS solvers with meshless or mesh based discretization to model transport processes and species movement inside the aquaculture pond. - Employ the numerical simulation tool to delimit acceptable pond designs. - Develop an experimental pond to relate hydrodynamic design with energy demands, for the pond configurations defined by numerical modelling. Seek an optimal or a narrow range of acceptable solutions. - Validate the methodology for the specific conditions of an actual aquaculture species with economic relevance in the west Atlantic context.
Keywords: Aquaculture, Renewable energy, Blue economy

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