Project name: **Evaluation of production and consumption patterns in the chemical industry**

Vacancy: ***YES***

Summary:

Chemical industry currently presents a significant contributor to global warming, being responsible for up to 7% greenhouse gas emissions worldwide. These emissions ultimately originate from the transformation of chemicals in production sites and their transport to demand locations (either other chemical facilities or for final customers), these defining the global chemical supply chain. The complexity of this supply chain cannot be understated, as it impacts almost all sectors of the economy and has a significant presence in all regions of the world. As a result, the global chemical supply chain involves a very large number of agents and markets as well as production and distribution strategies that determine the robustness and efficacy of the supply chain to satisfy demands but also define the sustainability of all the agents involved (economic, environmental and social).

The modelling and evaluation of such sustainability, however, is a complex task, as it requires several levels of assumptions as well as the processing and analysis of large amounts of data.

This project aims to define an approximate global chemical supply chain model to determine the main bottlenecks for global chemical sustainability as well as to define the robustness of the entire supply chain and of its agents.

To that end, this project will apply chemical process modelling for the characterization of production and consumption patterns, combining this with computational data analysis (python database management), obtaining approximate production and consumption models for the chemical industry.

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