

LAMACLIMA

LAnd MAnagement for CLimate Mitigation and Adaptation

The LAMACLIMA project was initiated with the primary goal of deepening our understanding of the intricate relationship between land-use practices and climate dynamics, with a specific focus on supporting the objectives outlined in the Paris Agreement and broader sustainability endeavours. This endeavour necessitated a collaborative effort spanning multiple disciplines, including climate science, economics, modelling, and stakeholder engagement. Through the integration of various expertise, the project aimed to unravel the complex impacts of land cover and management changes on critical climate variables such as water availability and carbon storage. Central to the project were Earth System Model experiments, which simulated the consequences of large-scale deployment of key land cover and management options, such as afforestation and irrigation, on both local and non-local climate dynamics. Complementing these simulations, statistical emulators were developed to facilitate efficient exploration of the repercussions of different land-use pathways on both climate and economic variables. A cornerstone of the project was continuous engagement with stakeholders, achieved through avenues like webinars and workshops, fostering meaningful dialogue between scientists and those directly impacted by the research. Additionally, scenario co-development efforts were undertaken to craft new narratives for future land cover and management strategies, extending the existing Shared Socio-economic Pathways. The project yielded significant insights, revealing profound impacts on global water and carbon cycles, as well as on factors like labour productivity and food security. These findings underscored the importance of considering biogeophysical effects in land-use planning and policy formulation. Technical advancements in models like MAgPIE and GRACE were instrumental in better representing land-use options and their economic ramifications, including adaptation measures and associated costs.

Keywords

Land use, modelling, adaptation, mitigation, land based solutions