

Project Proposal: Identifying and Addressing Climate Change Drivers Across Sectors

Objective: The primary objective of this project is to identify the main drivers of climate change across various sectors, examining both direct and indirect impacts. This comprehensive analysis will consider how these drivers contribute to climate change and how they are influenced by the energy transition and the increasing reliance on renewable energy sources, including the associated challenges such as the demand for rare earth elements.

Scope: The project will focus on the following sectors: Energy, Agriculture and Forestry, Transportation, Industry and Manufacturing, Buildings and Construction, and Waste Management. For each sector, the project will explore the direct impacts (e.g., emissions, resource consumption) and indirect impacts (e.g., supply chain changes, technological shifts, resource extraction for renewables). Special attention will be given to the energy transition, considering how the move towards renewable energy influences these sectors and the environmental and social implications of increased demand for critical minerals.

Methodology:

- Literature Review and Data Collection:** The project will begin with an extensive literature review to gather existing data and research on climate change drivers in each sector. This will include scientific studies, government reports, industry publications, and data from international organizations such as the IPCC, IEA, and UNFCCC. The aim is to compile a comprehensive dataset that reflects current knowledge and identifies gaps.
- Sectoral Analysis:** Each sector will be analyzed to identify its primary climate change drivers. The analysis will be divided into two main components:
 - Direct Impacts:** This includes emissions from activities directly associated with the sector, such as GHG emissions from energy production, agricultural activities, industrial processes, transportation, and waste management. The project will quantify these emissions where possible and explore the main sources within each sector.
 - Indirect Impacts:** This component will examine the secondary effects of the sector's activities, including the energy transition's impact on resource demand (e.g., rare earth elements for renewable technologies), changes in land use, and shifts in consumer behavior and policy. The focus will be on understanding how these indirect factors contribute to the sector's overall environmental footprint.
- Case Studies and Regional Focus:** To provide a more detailed understanding, the project will include case studies from different regions and countries. These case studies will highlight specific examples of how climate change drivers manifest differently depending on local contexts, such as energy infrastructure, economic development, and regulatory environments.
- Integration of Findings:** The data and insights from the sectoral analysis and case studies will be integrated to identify common themes and unique challenges. This synthesis will help to illustrate the interconnectedness of sectors and the cumulative impact of direct and indirect climate change drivers. It will also explore the feedback loops between different sectors, such as how the energy transition in the energy sector influences raw material extraction in the mining sector.
- Recommendations and Policy Implications:** Based on the findings, the project will develop a set of recommendations aimed at mitigating the identified climate change drivers. These recommendations will target both policymakers and industry stakeholders, providing guidance on how to reduce emissions, manage resource demands, and adapt to the evolving

energy landscape. The policy implications will address the need for coordinated action across sectors and levels of government, emphasizing the importance of integrated approaches to climate mitigation and adaptation.

Expected Outcomes: The project aims to produce a detailed report that outlines the main climate change drivers for each sector, both direct and indirect. It will provide a nuanced understanding of how these drivers are influenced by and contribute to the energy transition, with a particular focus on renewable energy and associated resource demands. The recommendations will offer actionable steps for reducing climate impacts and promoting sustainable practices across sectors.

Timeline: The project is expected to take 12 months, divided into the following phases:

- **Months 1-3:** Literature review and data collection
- **Months 4-6:** Sectoral analysis
- **Months 7-9:** Case studies and regional focus
- **Months 10-11:** Integration of findings and report drafting
- **Month 12:** Final report and dissemination

Conclusion: This project will provide valuable insights into the complex web of factors driving climate change across different sectors. By examining both direct and indirect impacts, the project aims to offer a comprehensive understanding that can inform more effective and integrated climate policies and strategies.

Progetto GRINS - *Growing Resilient, INclusive and Sustainable*" (PNRR - M4C2 - I1.3 - PE00000018 – CUP J33C22002910001)

- numerosità di posti: 1
- decorrenza contratto e durata: 1/10/24, durata 1 anno (+ eventuali 3 mesi)
- titolo del progetto di ricerca: **Identifying and Addressing Climate Change Drivers**

Across Sectors

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- requisiti per la partecipazione alla selezione comparativa sono:
- Dottorato: Sì No / Scuola di Specializzazione medica richiesta: Sì No
- Lingua colloquio: INGLESE
- Lingua straniera richiesta: INGLESE
- composizione commissione giudicatrice: Presidente prof. SILVIA ROMAGNOLI, Componenti proff. ENRICO BERNARDI, DANIELE RITELLI