

Post-Doc research project

This document synthetically describes the research project that I intend to develop from April 2024 to April 2026 within the scope of CICEE activity, under the supervision of Professor Eduardo Cardadeiro.

The Algarve region of Portugal stands as a prominent tourist destination, drawing millions of visitors annually. However, the surge in tourism brings along significant challenges, particularly in waste management. This post-doctoral project aims to delve deeper into the relationship between tourism and municipal waste production in the Algarve from 2017 to 2023, in the first phase, and other regions, in a second phase. By addressing existing research gaps and understanding the dynamics of waste generation attributable to tourism, this project seeks to contribute to evidence-based policymaking and sustainable waste management strategies.

Thus, the above-mentioned proposal is structured as follows:

1. Relevance of the topic
2. Research proposal and method
3. Expected results
4. Planning and scheduling



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1. Relevance of the topic

This project aims to investigate and assess the impact of tourism on municipal waste production and treatment in the Algarve region of Portugal over a period of six years, from 2017 to 2023. The Algarve's status as a premier tourist destination, attracting millions annually, underscores the urgency of understanding the nexus between tourism and waste management. Despite the region's popularity, there exists a notable research gap regarding the specific quantification and analysis of waste generation attributable to tourism activities. This project seeks to address this gap by conducting a comprehensive investigation spanning six years, allowing for a nuanced understanding of the temporal variations and long-term trends in waste production linked to tourism influx. By understanding the relationship between tourism and waste production, policymakers and stakeholders are able to develop sustainable waste management strategies to minimize environmental degradation. Furthermore, it can provide information to create fair tourism policies that safeguard the interests of the local community.

The research team is composed of the CICEE's associate researcher Eduardo Cardadeiro (PhD), the BRU iscte's associate researcher Catarina Roseta Palma (PhD), Cátia Magro (PhD) and Joana Dionísio (MSc) and has already started working on the project, with the cooperation of ALGAR, the waste management company for Algarve.

Objectives:

1. Calculate the proportion of waste produced in the Algarve, according to source and type of waste produced;
2. Characterization of tourism profiles in the Algarve, regarding the waste produced;
3. Develop a mechanism for a fair tourist tax calculation in the Algarve, based on tourism profiles;
4. Apply the model developed to other regions of the country;
5. Pave the way for new approaches on tourism driven waste management, engaging the municipalities, the waste management companies and touristic operators.

In detail:

The **first** objective is to determine the proportion of waste generated by the local population compared to that produced by tourists, which allows for the estimation of the tourism's driven incremental waste management capacity. This analysis will be carried out at a municipal level and will also incorporate an evaluation of the different types of waste generated. Furthermore, the **second** goal aims to develop a comprehensive model that can accurately calculate these proportions. In addition to waste analysis, the project strives to characterize different tourism profiles. By understanding the specific characteristics and behaviors of different tourists, more targeted waste management strategies can be implemented. Another important aspect of the project is described on the **third** objective, the development of a mechanism for implementing

a just tourist tax. This tax will serve as a way to offset the costs associated with waste management and other services required to accommodate tourists. As the **fourth** goal is the applicability of the developed model to other regions within the country. By creating a flexible model, it can be adapted to different types of tourism and waste production patterns in different areas. Ultimately, the outputs of this project aim to contribute to tourism management that ensures social justice for local residents. By accurately calculating waste proportions and implementing effective waste management strategies, the project seeks to minimize negative impacts on local communities and maximize the benefits of tourism. This is the fifth and final objective, which implies the engagement of the main stakeholders to design new approaches and induce a more sustainable behavior in this respect.

2. Research proposal and method

The research method for this project will involve collecting data on waste generation from both the local population and tourists. The researchers will analyse existing waste management data from ALGAR, the waste management company for Algarve. To develop a comprehensive model for accurately calculating waste proportions, the researchers will use statistical techniques and modelling approaches. The model will be fed with variables such as population size per region and/or municipalities, tourist overnight stay, and waste type and production rates to create an accurate model. To create a mechanism for implementing a just tourist tax, the research team will analyse the costs associated with waste management and other services required for tourism. Factors such as infrastructure development, waste collection and disposal, and community services will be taken into account to propose a tax structure that fairly distributes these costs among tourists.

3. Expected results

The anticipated outcomes of the project include enhanced tourism management strategies aimed at reducing adverse effects on local communities and maximizing the positive impact of tourism for residents in the targeted region. Additionally, the project aims to disseminate knowledge through presentations at conferences or to municipalities, focusing on effective waste management practices. Furthermore, the project endeavours to contribute to academic discourse by submitting a peer-reviewed paper to a pertinent academic journal and a proceedings paper. Ultimately, the development of a model with applicability to other regions in Portugal is a key result, promoting broader sustainability practices beyond the immediate project area.

4. Planning and scheduling

The objectives of the project have allocated the following chronogram that represents the tasks needed to the achievement of the project's deliverables.

	2024			2025				2026
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Task: Research and Analysis	D ₀							
Task: Stakeholder Consultation								
Task: Collection of statistical data on management systems								
Task: Data Treatment & Analysis of the results								
Task: Community & Municipality Engagement								
Task: Documentation and Reporting			D ₁				D ₂	
Task: Dissemination		D ₃				D ₄		D ₅

Q1 Jan-Mar; Q2 Apr-Jun; Q3 Jul-Sep; Q4 Oct-Dec

Deliverables

- D₀: Online news release for project dissemination
- D₁₋₂: Paper preparation for submission in scientific journals
- D₃₋₅: Conference and workshop presentation

Task 1: Research and Analysis

- Gather background information on the Algarve region's tourism industry, waste management practices, and existing data on waste generation (Top-Down approach).

Task 2: Stakeholder Consultation

- Identify key stakeholders and establish communication channels within ALGAR partnership.

Task 3: Collection of statistical data on management systems

- Collect comprehensive data on tourism statistics, waste generation, and treatment practices in the Algarve region from 2017 to 2023 (with ALGAR in a bottom-up approach);
- Acquire relevant demographic and economic data that may impact waste production.

Task 4: Data Treatment & Analysis of the results

- Utilize statistical methods and modeling techniques to analyze the relationship between tourism influx and municipal waste production;
- Assess correlations and trends in waste generation attributable to tourism activities;
- Evaluate the effectiveness of existing waste management strategies in coping with increased waste loads during peak tourism seasons;
- Identify key challenges and opportunities for improving waste management practices in the context of other regions.

Task 5: Community & Municipality Engagement

- Engage and/or facilitate stakeholder workshops or meetings to discuss findings and solicit feedback on proposed recommendations;

- Develop evidence-based recommendations for policymakers and stakeholders about tourism profiles in the Algarve;
- Provide guidance on implementing equitable tourism policies that prioritize community well-being and environmental stewardship.

Task 6: Documentation and Reporting

- Presentation materials for disseminating project findings to stakeholders;
- Final project report consolidating all findings, recommendations, and conclusions;
- Any supplementary documentation or materials generated during the course of the project.

Task 7: Dissemination

- The communication plan initiates at the project's outset with an online feature on the university website, introducing the project to key stakeholders and the scientific community. Additionally, a paper is slated for submission to an indexed academic journal, while a preliminary working paper will be crafted and presented to Algarve municipalities as well as at an international academic conference, following the project timeline. A proceedings papers is also anticipated from the two conferences the team will attend. Upon project completion, a comprehensive report containing recommendations for Algarve municipalities and others, where the algorithm can be applied, will be produced.

This research project implies no cost other than the travel and accommodation for some of the members of the research team to present working paper, as planned. These costs can be financed by the research account in the CICEE allocated to Eduardo Cardadeiro's research projects on waste management or financed by the Professional Development funds allocated to me as Assistant Professor at School for International Training, World Learning Inc.