

Projects selected in the 1st edition of the Science4Policy (S4P-23) call

This document summarises the main information (project title, thematic line, principal investigator, institution, and abstract) about the 18 projects selected in the 1st edition of the Science4Policy call launched by FCT and PlanAPP. The abstracts presented were written by the investigators.

Project title:

Housing. Territorial identification of social vulnerability and unworthy housing (Habit:AÇÃO)

Thematic line:

People First / Unworthy housing: who, where, how, why?

Principal investigator:

Teresa Sá Marques

Institution:

FLUP – Faculdade de Letras da Universidade do Porto

Abstract:

This project's primary objective is to study the unworthy housing crisis (overcrowding/inappropriate accommodation/sub-letting, homelessness and other atypical types). The purpose is to develop/test/apply/evaluate the potential of using methodologies for crossing social issues associated with unworthy housing with socio-demographic profiles of social agents and socio-territorial vulnerabilities. Thus, the aim is to identify, in a longitudinal and synchronous manner, on four territorial units (Porto and Lisbon Metropolitan Areas, Algarve and R. A. Madeira), taking as a starting point the interconnection between the information systems associated with unworthy housing and the creation/analysis of sociodemographic profiles, also crossing Local Housing Strategies in the case studies listed.

Project title:

Research as a public right tool for tackling child adversity and poverty (RESPUBLICA)

Thematic line:

People First / Impact of policies on the poverty reproduction cycle

Principal investigator:

Helena Moura de Carvalho

Institution:

FPCEUP - Faculdade de Psicologia e de Ciências da Educação da Universidade do Porto

Abstract:

“Making the fight against poverty a national goal.” (National Strategy to Combat Poverty 2021-2030)

The RESPUBLICA project is a response to concerns about the poverty and social exclusion faced by approximately 20 million children in Europe, with a particular focus on the situation in Portugal. The Portuguese context challenges the guidelines established by the United Nations Sustainable Development Goals and the European Pillars of Social Rights, which aim to reduce child poverty by 2030 significantly. Portugal presents challenging economic and social indicators, such as pronounced economic inequalities, the persistence of low-income jobs and limited investment in family support policies. The situation is particularly worrying in Northern Portugal, which has been identified as the region with the highest risk of poverty and social exclusion, especially among children. Some policies have been subject to international scrutiny but need more critical and systematic evaluation, particularly regarding their effectiveness in combating child poverty. The current research project, in line with the Sustainable Development Goals and the national guidelines of Portugal's Agenda 2030, aims to contribute to the reduction of child poverty by analyzing current policies to support families in vulnerable situations. By focusing on the North of Portugal, RESPUBLICA seeks a concerted and multi-sectoral approach to tackling child poverty. RESPUBLICA has three main objectives, namely: 1) to conduct a comprehensive and systematic analysis of policies and public services related to the fight against child poverty and the intergenerational transmission of exclusion; 2) to define the research process as a tool for social justice, involving professionals, families and, crucially, the voices of children; and 3) to develop policy-oriented research to inform the formulation and implementation of evidence-based strategies to improve public policies and reduce child poverty. To achieve these objectives, RESPUBLICA will use a multi-method, multi-informant and participatory approach. The current research project will include diachronic evidence studies and gap maps, synchronous participatory methods with professionals and families, and a study focusing on children's perspectives on poverty. RESPUBLICA will provide valuable knowledge and evidence-based recommendations for tackling child poverty in Portugal, responding to international and national

agendas and prioritizing the inclusion of diverse perspectives, particularly those of children and families in vulnerable situations. Outputs will include critical analyses of current policies, poverty monitoring tools, policy synthesis documents and ethical reports, all of which will inform decision-makers and contribute to a child-centered approach to poverty reduction in Portugal. REPUBLICA will contribute to the reduction of child poverty by generating knowledge sensitive to emerging socio-economic indicators and the traumatic psychological effects of poverty and exclusion.

The success of this project will undoubtedly depend on the ability and availability to listen, believe, and honor our commitment to do better, and be better, as scientists, as people.

Project title:

Memories and Archives: Mapping the (In)tangible (InMAP)

Thematic line:

People First / Heritage and Memory – National Archives

Principal investigator:

Ana Carvalho

Institution:

UÉvora – Universidade de Évora

Abstract:

In the last decades, there is a growing number of new archives created by memory institutions (museums, libraries and archives) and other public heritage organisations (universities, schools, community associations, among others). At least two intertwined aspects have contributed to this state of the art: 1) oral history development has reinforced the need to document the memories of people, communities, and participants in past events; 2) the impact of the 2003 UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, urged for the need to record traditional silks and practices, e.g., Intangible Cultural Heritage (ICH) for a sustainable future; 3) the need to enrich and complement official archives with community experiences and participation. Many of these recent memory archives contain collections of sound and video recordings, photographs or other documentary materials related to memory preservation and to ICH documentation, either in analogue or in digital form.

However, at present, in Portugal, there is no national-wide inventory of these scattered archives and systematized information that can inform about their characterization, development and impact in communities and society. Besides a characterisation of these recent memory archives (resources dimension; infrastructure & skills capacity; inventory, management system & cataloging; open access), it is essential to understand the scale and extent of barriers to preservation and access. In response to these challenges, the project will map, collect and analyze information about the situation of memory archives that have been created in the last two decades, considering a national-wide sample and focusing on a set of diverse institutions (e.g., museums, libraries and archives, universities, community associations).

The study will combine a set of analysis tools, which include a survey, fieldwork (in-depth interviews and focus groups) and literature review. The research will be valuable for several purposes. First, it will present a diagnosis of the current situation, identifying needs and challenges, and inform the development of plans to mitigate those problems. In this way, the project will deliver a final policy brief that will also include a proposal of guidelines for a legislative framework considering these archives specificities. Second, the findings will shape the design of

a digital preservation toolkit to help guide professionals in developing their strategy, especially considering smaller memory institutions in more remote areas. Finally, the research will help to raise awareness of the value of these unique resources and encourage safeguarding this heritage.

Project title:

Carbon storage in wetLands: assessment and maximisation (C-Land)

Thematic line:

Competitiveness and cohesion / Carbon farming schemes in coastal and marine ecosystems

Principal investigator:

A Rita Carrasco

Institution:

UAlgarve – Universidade do Algarve

Abstract:

Project C-Land aims to formulate a Guide for the Assessment and Maximisation of carbon sequestration and storage potential, designed by projections for the sustainability of carbon sinks in a pilot wetland area (Ria Formosa, Algarve, Portugal). C-Land will be developed in direct cooperation with land management authorities and will explore long-term scenarios of change in carbon potential, due to landscape changes initiated by mean sea level rise, by human interventions, and by restoration of degraded wetland areas, as well as other scenarios of interest to regional strategic planning. The transferability of project results to other locations and the potential for upscaling will be considered in C-Land, thus allowing for large-scale applications and usability of the outcomes to establish a blue carbon agenda for the wetlands of Portugal. The proposed work will provide local managers with a tool for assessing carbon storage based on satellite imagery analysis and on simplified modelling and will identify which priorities should be set for the strategic planning of landscape conservation and for the sustainability of sequestered carbon in ecosystems.

The project has three main tasks: (1) quantification of carbon storage potential, based on satellite image analysis (application of artificial intelligence algorithms and subpixel classification methodologies) to infer biomass indicators and ecogeomorphological dynamics; (2) definition of scenarios for maximising carbon storage, based on the schematisation of future scenarios of ecosystem adjustment in the face of climate change and interventions in the system; and 3) carbon storage maximisation plan, co-created with key managers and regional stakeholders, producing a guide for assessing and maximising carbon in wetlands. The project will be developed in close cooperation between academia and regional managers, particularly with respect to the definition of future adaptation scenarios and risk mitigation measures, the identification of intervention areas and the transference of tools and skills.

The proposed work is both innovative and challenging in terms of transferring wetland vegetation biomass indicators obtained from high-resolution satellite products (e.g. WorldView2) to medium-resolution, open-access products (e.g. Sentinel2), thus allowing for their exploitation by land

management authorities in the future. On the other hand, the proposed 2-D modelling approach allows for identifying areas within the system with high vulnerability to natural shifts and human interventions and even estimating carbon recovery time, which is the time that would be necessary for carbon accumulation rates of a newly-created ecosystem to compensate for the eventual carbon loss due to erosion or due to a potential future system shift. The results of this approach include a set of maps showing future ecosystem/landscape adjustments and carbon storage potential.

The C-Land project aims to define sustainable adaptation pathways for the carbon potential in Ria Formosa (and in other wetlands), and to create a carbon agenda that, among other socio-ecological challenges, will meet regional development goals, climate change adaptation policies, the European Biodiversity Strategy and the European Nature Restoration Act. At the national level, the project will include discussions with managers and national stakeholders from other wetlands, to present the guide and to discuss the transfer of methodologies and the challenges for application in other systems.

Project title:

The impact of vocational education and training on higher education and labour market - An analysis of merged individual data (VETeval)

Thematic line:

People First / Assessment of vocational education

Principal investigator:

Pedro Miguel Rodrigues da Silva Martins

Institution:

UNL – Universidade Nova de Lisboa

Abstract:

This project aims to assess the impact of vocational education (covering vocational, artistic, and technological secondary education, as well as customized and apprenticeship courses) on the educational and career trajectories of its graduates. Specifically, we propose to use anonymized and cross-referenced individual databases from the Ministries of Education (Education Statistics, DGEEC; school, demographic, and socioeconomic information), Labor and Social Security (Social Security, IEFP; Personnel Records), and Finance (Taxes - IRS) made available or to be made available at the National Statistics Institute (INE) to produce a descriptive and causal analysis of these educational formats.

Access to these databases and their integration result from ongoing collaboration among various organizations that have expressed their willingness and interest in participating in this project, along with this team of researchers in this application (INE, DGEEC, and IEFP). We also benefit from the collaboration of the European Commission (Joint Research Centre / Centre for Research in Impact Evaluation), who will participate as external experts, in line with similar work they have developed with Portugal and other Member States, and an international expert in labour and education economics (Thomas Siedler).

In particular, in this project, we propose to study (i) the causal impact of choosing a vocational course on the likelihood of completing secondary education; (ii) the subsequent differences in the likelihood of enrolling in and completing higher education (polytechnic or university); (iii) the labor market participation of these students, how their salaries evolve compared to their peers from regular education, and other indicators of quality integration into the labor market.

We will also assess the impact of measures implemented in Portugal to counteract the low frequency of higher education among students of dual certification courses, namely the higher professional technical courses (CTESP). As described in more detail below, we will adopt a counterfactual approach to this question, in line with our recent work on a very related topic (Ferreira and Martins, 2023; under review by an academic journal). The major innovation of the

study to be developed in this new project results from access to cross-referenced individual data, unlike Ferreira and Martins, 2023.

Another important innovative element of this project comes from the analysis of income data also from the databases of the Tax Authority, including taxpayers' income statements. This income dimension is very important in the context of an analysis of the profitability of vocational courses, given the high incidence of self-employment income in these individuals. In contrast, most national studies on this topic consider only the 'Personnel Records' database, which includes exclusively wage-earning workers.

The richness of the databases gathered in this project will allow a great granularity in the analyses to be developed, including differentiating financial returns among different vocational courses, and among different areas of these courses (especially in the case of professional courses). This analysis will also be conducted controlling for various characteristics of the individuals involved, including their academic performance and socioeconomic background even before starting secondary education. The "machine learning" techniques we propose to use, in addition to the econometric (quasiexperimental) techniques detailed below, will allow us to make the best use of the richness of the data for the estimation of counterfactual parameters, as necessary in the context of a study with objectives of supporting public policies.

In addition to the partnerships already established with the entities mentioned above, this study includes inputs from international experts in the fields of labor economics, education economics, and data science (also focusing on education and labor themes). It is a diverse team, including three full professors from the Universidade Nova de Lisboa, as well as a doctoral researcher. The main financial investment area of the project is the hiring of two research fellows, in both cases for 12 months (the full duration of the project), who will develop on a daily basis the preparation and analysis of the microdata bases, under close guidance of the team of researchers and, in particular, the PI (Pedro Martins).

Project title:

Here I find myself in a mix with people from all over the world, that belongs to everyone
(AquimeEncontro)

Thematic line:

People First / The role of schools in the integration of immigrants

Principal investigator:

Ana Maria Mouraz Lopes

Institution:

UAb – Universidade Aberta

Abstract:

My Village is the whole world
The whole world belongs to me.
Here I find myself and I mix
with people from all over the world
that belongs to everyone.
(António Gedeão)

We borrowed these three verses from the poem “Minha Aldeia” by António Gedeão to entitle this project. We have not found a more inspiring expression than this to name a project that aims to study the role of schools in the integration of immigrants.

As mentioned in the text announcing the opening of applications for which this project competes, an important part of the response to the demographic challenge of this aging Portugal will be given by the migratory balance. At the same time, we are currently experiencing one of the biggest phenomena of displaced populations worldwide, resulting from events such as war, government oppression and the search for better living conditions. Inevitably, educational systems are faced with the new demands that such demographic movements bring. How are these populations welcomed in our educational system?

AquimeEncontro Project aims to contribute to the analysis of political measures for the integration of immigrants and refugees into the Portuguese educational system, seen from the integration practices that Portuguese public schools were able to put into practice. It also aims to contribute to the knowledge and reinforcement of instruments aimed at welcoming and integrating migrants and refugees, operationalized through initiatives within the scope of training and education and having children, youth and adults as their recipients.

Notwithstanding the existing information on immigrants living in Portugal and the characterization data of these populations are accessible and are regularly subject to scientific analysis, particularly to establish that fundamental issues remain unresolved in the reception of immigrants and refugees, including measures that support their effective integration and inclusion and, consequently, that promote their educational success and combat discrimination and racism.

The new perspective that this project proposes is to look at Portuguese public schools, at the pedagogical practices of integration of immigrants that they are promoting, in a double movement of refocusing the object of study - it is not immigrants and their difficulties that are object of analysis, but the practices promoted by schools. It is not the flaws and perceived gaps that we are interested in prioritizing, but the effective and inspiring ways in which schools respond to these new audiences.

This is the innovative approach that AquimeEncontro intends to follow, and which is based on previous interventions and projects by some team members that are catalysed here.

Looking at the purposes of the project and its framework, we chose to follow a mixed research methodology that, initially, allows us to map the concerns and practices of schools to deal with the phenomenon. In a second stage, we will carry out this research work in a finer cut that scalps effective practices and analyses their inspirational potential.

In short, the project aims to develop an extensive study of the pedagogical practices implemented by Portuguese public schools to promote the integration of immigrant students (children, youth and adults) and then analyse some of these practices in more detail to understand their transformative potential.

The specific objectives are:

- Design, validate and apply a questionnaire to evaluate the diversity and effectiveness of pedagogical practices that promote the integration of immigrant students in Portuguese public schools.
- Carry out a set of case studies on some of the practices found to be most effective, to analyse the reasons for their success and determine their inspiring potential.
- Produce a protocol for monitoring the integration practices of immigrant students in Portuguese schools.
- Disseminate the results of AquimeEncontro among the educational and scientific community, sharing the project's products.

The project's team members are 12 researchers from Universidade Aberta, who bring to the project the complementarity of the subjects they have investigated and the connections to the local schools that the geographical diversity of their residence allows them to mobilize for this project. In this way, the diversity of the team will not only ensure the diversity of approaches to the problem, but also the diverse possibilities that the inspiring experiences of some schools must

show, when analysing in depth the reasons for the effectiveness of these happy integration practices

Project title:

Productivity Growth and Resource Efficiency through EU Incentive System Evaluation in Portugal (PROGRESSE)

Thematic line:

Competitiveness and cohesion / Company productivity and entrepreneurship

Principal investigator:

Bruno Damásio

Institution:

UNL – Universidade Nova de Lisboa

Abstract:

The present project aims to evaluate the impact of the incentive systems from the European Structural and Investment Funds (ESIF) to support business investment in Portugal, focusing on support for new companies.

The anemic productivity growth in the Portuguese economy over recent decades suggests that innovative companies still do not benefit from an economic environment conducive to their birth and growth. Productivity growth requires an economic environment that fosters the emergence and growth of innovative companies (Alexandre, 2021b). Financial constraints stand as one of the primary obstacles to creating new businesses (Queiró et al., 2022). Studies on the subject show that companies benefiting from venture capital are more likely to grow and innovate (e.g., Akcigit et al., 2017). These results stem from investors' ability to identify companies with high growth and innovation potential, as well as their involvement in the company's capital leading to the integration of startups into new contact networks.

Therefore, it's crucial to analyze the complementarity of European funds with forms of private investment, particularly highlighting the role of national and foreign venture capital in financing startups. It's also relevant in evaluating European funds for new companies to consider the capital structure of companies with better performance born after 2005 and the financing conditions of frontier companies (e.g., 10% more productive) with better performance in different activity sectors.

Apart from the economic environment, factors such as the level of education of entrepreneurs and managers are also important indicators of future business growth. In fact, managers' characteristics are a significant indicator of company performance, particularly in terms of productivity (Alexandre et al., 2021). In assessing the implementation of European funds, evaluating this dimension is fundamental.

Several studies assess the impact of these incentive systems on companies' productivity. In general, the methods used focus on the classic difference-in-differences estimator (DiD) or matching techniques.

Quasi-experimental statistical methods have become the gold standard in evaluating public policies, specifically, the difference-in-differences (DiD) method has asserted itself as the main method for evaluating public policies. However, in the context of public policies, it's common for policy measures not to be implemented simultaneously. In that scenario, the DiD estimator is not suitable. Thus, recently, a new revolution emerged that overcame this constraint: staggered-designs DiD methods (which allow for lags relative to the treatment period).

In addition to this innovation, the incorporation of machine learning methods also emerged. The impact of interventions can vary depending on the characteristics of the population under study, so it's pertinent to assess the impact using a heterogeneity analysis. In the context of the availability of a large dataset, a recent approach is causal trees. This machine learning method efficiently estimates treatment effects according to discrete variables in the presence of a large dataset.

Therefore, we aim to address the following questions: (1) What is the impact of incentive systems on companies' productivity, and (2) to what extent does this impact manifest heterogeneously, varying according to both the entrepreneur's and entrepreneurship's characteristics? To address the first question, we'll use staggered designs DiD estimators. To answer the second question, we'll employ causal trees, using entrepreneur and company characteristics as variables to be considered.

Project title:

Relationships between soil characteristics, land use, land cover and agroforestry practices:
Machine learning approaches (MLearning4Soil)

Thematic line:

Competitiveness and cohesion / Soil and carbon farming

Principal investigator:

Vítor João Pereira Domingues Martinho

Institution:

IPV – Instituto Politécnico de Viseu

Abstract:

As part of the European Union's "Farm to Fork Strategy" initiative and the "Carbon Farming" strategy, it is essential to create up-to-date databases and use this information to build reference indicators for policy-making by national and international institutions. This is particularly important when it comes to soil contributions to carbon sequestration, thus enabling the European Union to mitigate climate change and achieve the environmental targets set for 2030 and 2050. With this in mind, the aim is to update the INFOSOLO database with data already collected and available from partner institutions and to make this data compatible with the LUCAS platform (<https://esdac.jrc.ec.europa.eu/projects/lucas>). The aim is also to use the updated database to build statistical models to analyse the data and establish links between soil characteristics, agricultural practices and soil carbon sequestration. The intention is to build indicators that will serve as a reference for national and international institutions to define more appropriate policies. The methodologies for building the statistical and predictive models are based on "Machine Learning" approaches in order to identify the most appropriate models and the most important predictive variables. The idea is to identify models that make it possible, based on soil characteristics and agroforestry practices, to predict the carbon sink capacity of soils.

Project title:

The historical archive of LNEG slides collection of national scientific value (LAMINOTECA 1.0)

Thematic line:

Digitalisation, innovation, and skills / Valorisation of the national geological repository - digital data centre

Principal investigator:

Zélia Pereira

Institution:

LNEG – Laboratório Nacional de Energia e Geologia, I. P.

Abstract:

LNEG (*Laboratório Nacional de Energia e Geologia*) historical archive includes the scientific deposit of 170 years of geological and mining activity, corresponding to an exceptional data bank and a national geological repository. LNEG mission areas includes the preservation, treatment and availability of this unique heritage, belonging to the institution's Geological Repository. This collection is considered national scientific heritage, with historical and fundamental significance for the country's strategic research and of enormous economic value.

However, it is necessary that the existing collections should be properly organized and prepared, to be made available online through the LNEG Geo-Portal platform. To achieve this objective, it will be necessary to create and develop a digital data center, which facilitate and promote the consult of the existing information. The LNEG collections are curated by the LNEG Litoteca and Geological Museum. The LITOTECA infrastructure manages a vast collection of boreholes (more than 3405 boreholes, corresponding to more than 700 000 meters of cores), carried out in the national territory developed by LNEG teams or delivered by companies and entities to LNEG (under the Decree n° 39669, of May 20, 1954). In addition to this collection, there are collections of samples of rocks, minerals, fossils, slides of rocks and minerals, slides and polished surfaces of ores, slides and microfossils cells, soils and alluvial sample sediments (more than 400,000 samples). This entire collection is divided into 3 large archives (Campus of São Mamede de Infesta, Alfragide and Aljustrel). A large part of this archive is currently inventoried in databases available in the LNEG geoPortal, such as SONDBASE, TECNIBASE, SIORMINP, among others (www.lneg.pt/service/informacao-tecnica/geoportal/).

One of the historical archives that needs urgent organization, is the collection of slides and polished surfaces, made up of thousands of specimens that exists in the LNEG campuses of Alfragide, São Mamede de Infesta and Aljustrel.

These slides and surfaces collection are the result of numerous petrographic studies of rocks, fossils and ores, developed over decades and decades of research in the Portuguese territory

and former colonies (today CPLP countries). Slides and polished surfaces are fundamental to the characterization of igneous, metamorphic and sedimentary rocks, and their petrographic study provides valuable support for different mission areas such as geological mapping and stratigraphy, evaluation and characterization of mineralisations and associated hydrothermal alteration paragenesis, and the study of metal zoning in metal deposits and the characterization of textures and minerals of ornamental rocks and other geological resources. During several decades, human resources were available to produce slides and polished surfaces, supporting LNEG's research and development work, a situation that has now reversed, causing serious constraints to the mission areas. In this context, it is essential to valorize the existing collections of slides and polished surfaces, organizing them in the LAMINOTECA 1.0 collection, which will have strategic importance for LNEG researchers and also for external consultants from universities or companies.

The creation and formalization of LNEG's LAMINOTECA 1.0 will allow, in addition to the conservation and organization of collections, to establish more accessible scientific exchange between the institution, universities and companies. The project presented to FCT, in the context of greater specialization of public policies, focuses on a detailed inventory of existing collections of slides and surfaces, investing in, classification, standardization and digitization of the archive and, subsequently, making the database available through the LNEG geoPortal. Through this platform it will be possible to complete the information of georeferenced slides and polished surfaces, with detailed data and establish links to geological mapping survey studies, palynostratigraphic data studies of sediments, mineral deposits study and other geological resources, for example. After the organization and structuring, an open access repository of these collections will be created, promoting cataloguing and scientific valorisation applied to LNEG's mission. The methodologies used in this project will also allow a better communication and projection of this collection with consequently valorisation of these collections, which could enhance the development of new partnerships and the revitalization of one of the most important thematic collections, the LNEG LAMINOTECA 1.0.

Project title:

Separate waste collection in Portugal: characterisation of initiatives and proposal of norms and incentives (S4P Rec-Sel)

Thematic line:

Climate transition and sustainable resources / Waste: the collection challenge

Principal investigator:

Célia Maria Dias Ferreira

Institution:

UAb – Universidade Aberta

Abstract:

Portugal is in a transition phase regarding urban waste management. The selective collection of biowaste will begin on January 1, 2024, and PAYT (Pay-as-you-Throw) tariff systems, where fees are based on the amount of waste produced, will be widely implemented. It is also necessary to meet national targets for preparing wastes for reuse and recycling, set at 60% by 2030.

To address these national waste policies, local municipalities need to understand the different solutions available and assess their suitability to the local context. There are already various initiatives in Portugal testing the selective collection of biowaste, PAYT, and other economic incentives like GAYT (Gain As You Throw) and RAYT (Receive As You Throw). However, a systematic analysis of these initiatives' results is lacking, which is crucial for supporting informed policy decisions.

This project employs the future exploration technique of backcasting. It starts with the goals of selective collection (future situation to be achieved) and traces back to the present to determine how the desired future situation can be reached with the current resources, technologies, and constraints. The results are then translated into proposals for norms and incentives to be used presently.

The project will combine scientific techniques and methodologies, merging social sciences (surveys, expert consultations, content analysis) with exact sciences and engineering (advanced statistical modeling using artificial intelligence). The proposed methodology is based on a Community of Practice (CoP), promoting social interaction (virtual and physical) among its members around a common goal, and stimulating information exchange and social learning, from a perspective of "collective intelligence".

The global methodological approach of this project emerges from the "science for public policies 2.0" model proposed by the Joint Research Center (JRC, 2020) and is based on four main principles: i) close interaction with policy-makers and regulators; ii) breaking down barriers

between scientific fields; iii) horizontal and vertical knowledge management; and iv) adopting tools for future foresight.

The project is structured into seven tasks. The first three involve mapping the reference situation, specifically characterizing selective waste collection initiatives in Portugal (Task T1), analyzing environmental policies and reviewing normative instruments (T2), and identifying the best international practices in selective collection (T3). Tasks T4 and T5 focus on processing the collected data, notably by creating an open-access "data warehouse" on selective collection initiatives (T4) and their statistical modeling (T5). Task 6 involves establishing the CoP S4P Platform for selective collection in Portugal, ongoing throughout the project. Finally, Task 7 will propose norms and incentives using future foresight.

Tasks T1-T7 are complemented by two cross-cutting activities: project management and knowledge dissemination. All knowledge produced by this project will be effectively transferred through the CoP, made digitally available in open access.

To execute this project, a multidisciplinary team has been formed, covering areas such as environmental engineering, economics, management, public policy, law, sociology, mathematics, and computer science. This team will be expanded with the establishment of the CoP, bringing together relevant waste management stakeholders, including producers, policy-makers, collection companies, SGRU, regulatory bodies, and central administration. This project, thus, assumes a transdisciplinary character to address the challenge of selective collection in Portugal.

This project will generate scientific and practical knowledge and will create tools supporting selective waste collection, enabling informed decision-making and contributing to effective public policies.

Project title:

Inequality and earnings dynamics in Portugal: exploring the spatial heterogeneity and location externalities (Location)

Thematic line:

Competitiveness and cohesions / Inequality and regional earnings dynamics

Principal investigator:

José Pedro Andrade de Portugal Dias

Institution:

UNL – Universidade Nova de Lisboa

Abstract:

In this study, the authors propose to characterize in detail the income asymmetries between different regions in Portugal. Using a vast and exceptionally rich set of micro-datasets (*Quadros de Pessoal/Relatório Único, registos individuais da Segurança Social, modelo 3 do IRS e Declarações Mensais de Rendimentos*), conventional inequality statistics are computed (measures of dispersion, percentiles and percentile ratios, Gini indices, etc.) for different levels of aggregation: municipality; NUTS3 and NUTS2. In this aspect of the investigation, asymmetries between regions and asymmetries within regions will always be contrasted.

In a second aspect, more strongly rooted in the field of urban economics, administrative micro-data will be used to explore productivity trends and wage disparities between municipalities (Chetty et al., 2014; Stansbury et al., 2023; Gaubert et al., 2021; Kemeny and Storper, 2020). It will be investigated whether, like in other developed countries, a decline in the manufacturing industry is observed, leading to the concentration of national production in successful local labor markets (Bauluz, 2018) and a decrease in urban wage premiums for workers low-skilled (Author, 2019). Furthermore, the possibility of highly qualified workers gravitating towards the most productive areas with higher wages will be explored (de la Roca and Puga, 2017; Dauth et al., 2018; Card et al., 2021).

Therefore, in addition to the descriptive component, which will be exhaustive and will allow for a systematic mapping of the income heterogeneity of different geographic spaces over time, an analysis of the sources of variation in regional asymmetries will be carried out using econometric models that incorporate high-dimensional fixed effects. This approach will make it possible to determine to what extent, the quality of work and the sectoral composition of employment explain the spatial distribution of income inequality. Using quantile regression will make it possible to identify the determinants of income, not only the average, but the entire distribution. Additionally, the inclusion of individual fixed effects, industry effects and, very importantly, regional effects will allow us to understand how the various determinants of spatial inequalities should be

decomposed. In other words, we will seek to reveal to what extent the spatial distribution of talent (human capital) and geographic disparities in productivity influence regional imbalances. In this methodological framework, it will also be possible to measure the impact of agglomeration economies on income levels and their spatial dispersion.

In a third aspect, inequalities in local labor markets and in larger cities will be examined, seeking to verify whether when inequalities grow more significantly, possibly due to the fact that agglomeration economies favor highly qualified workers (Baum-Snow et al., 2018).

Finally, another innovative aspect of this research project will be developed by measuring the spillover effects of the levels of development (or growth) of a region on neighboring regions. This analysis, which will be conducted at the municipality level, will use econometric models specially developed to measure the influence of partners on individual performance (“peer effects”) which will be contrasted with spatial autocorrelation models. Portugal et al (2022) show that the average educational qualification of co-workers has positive externalities on the salaries of their peers. It will be interesting to investigate whether the “richer” geographic areas also generate positive externalities on the border areas.

Project title:

BridgeAI: Boosting Regulatory Implementation with Data-driven insights, Global expertise, and Ethics for AI

Thematic line:

Digitalisation, innovation, and skills / Anticipating the regulation of Artificial Intelligence

Principal investigator:

Helena Moniz

Institution:

INESC-ID – Instituto de Engenharia de Sistemas e Computadores, Investigação e Desenvolvimento em Lisboa - Instituto Superior Técnico - Universidade de Lisboa

Abstract:

World-leading researchers in AI and Machine Learning (ML) hold differing views on the real potential risks of AI in the future. The divergent views on AI regulation reflect the uncertainty of the true potential and true risks of AI, and reinforce the need to align regulation and its implementation with a context-based approach, informing decision-makers about multiple perspectives and future paths.

The context-based approach should also be complemented by an ethical dimension that safeguards human integrity, fostering innovative solutions to material, economical, social, or cultural needs of the environment in which AI is developed/deployed. An ethical approach to AI offers a "dual advantage," enabling organizations to identify and leverage new opportunities that are socially acceptable or preferable, and avoiding or at least minimizing costly mistakes. This thus creates an environment that empowers all stakeholders to move from passively complying with regulations to actively designing responsible AI.

BridgeAI's main goal is to create a medium to provide decision-makers and other relevant stakeholders with the best context, allowing for a more informed and efficient implementation of the EU AI ACT in Portugal. Specific goals are settled to achieve it:

- i) Defining an enlarged consensus across the fundamental elements (key dimensions) allowing for the most efficient implementation of regulations: *AI risk assessment tools; *AI Ethics in the regulatory process; *Interface between AI Act and other key regulations (e.g., GDPR, IP), norms, and audits; *Responsible AI literacy; *AI ethics and regulatory efforts outside the EU;
- ii) Proposing concrete outcomes: generating actionable points for improvement, quantitative and qualitative actions and metrics for implementation grounded in the real needs and challenges faced by private and public, for profit and nonprofit entities that are already preparing for the

implementation of the AI ACT in PT (in partnership with the Center for Responsible AI), in articulation with international experts in each key dimension;

iii) Delivering a tested science4policy methodology allowing to achieve cross-sectorial and multidisciplinary consensus;

iv) Paving the way to the sustainable efficient implementation of the EU AI Act in Portugal.

To achieve the proposed goals, BridgeAI brings together a team of national (from public and private sector) and international practitioners and experts, from researchers to technology developers and deployers, including clinicians, to philosophers and ethicists, law-experts, and Responsible AI International Advisors, all with hands-on experience and expertise across the five key dimensions.

Grounded on real case studies, BridgeAI network of experts will further explore each key implementation dimension. Through a 3-day hands-on workshop to be held in Lisbon, a consensual proposal on the fundamental aspects that should guide EU AI ACT implementation in Portugal will be achieved and distilled in a positional paper to be publicly available.

BridgeAI's main outcomes are expected to include: a) Enhanced national public risk assessment tool(s) for the Public Administration that can also be used by private entities based on the explored case-studies; b) International best practices for the implementation and monitoring of AI ethics and regulation adapted to concrete use-cases; c) Guidelines for the application of the EU AI Act, such as the implementation of the ALTAI, and understanding of the possible adaptations to use-cases; d) Advanced training proposal for specialized audiences and general AI literacy instruments; e) Key monitoring points for Social and Economic Development with non-EU economies; f) Description of the Framework with all the WGs contributions as holistic guidelines proposed by the consortium.

Project title:

Quantifying the Effectiveness of Results-Based Model Policies for Biodiversity Enhancement (IMPACT WATCH)

Thematic line:

Climate transition and sustainable resources / Anticipating the Nature Restoration Law: biodiversity indicators in agri-environments

Principal investigator:

Maria Helena Guimarães

Institution:

UÉvora – Universidade de Évora

Abstract:

Agricultural habitats encompass half of the land in the European Union (EU) and play a crucial role in supporting around 50% of all species. The well-being and long-term sustainability of these habitats depends on effective agricultural management. However, this management is facing mounting pressure to double food production by 2050, all while grappling with the challenges of climate change and the need to halt resource depletion. Developing strategies that address both food security and sustainability, while simultaneously reducing the environmental impact of agriculture, presents a significant challenge for the 21st century. The Nature Restoration Law approved by the European Parliament acknowledges the crucial role of the area dominated by agro systems in providing biodiversity, and the challenge is now to define how conservation goals can be achieved within the farm units and how to monitor the progress towards these goals.

The Agri-environment scheme (AES) under the Common Agricultural Policy, serves a policy framework for incorporating environmental considerations into European agriculture and represents the largest source of funding for practical nature conservation in the EU. Over the past 30 years, the importance of AES has grown, but its ecological performance and cost-effectiveness have remained unclear. Consequently, there has been a call to incorporate an ecosystem services approach into AES. This has led to proposals for Results-based Models (RBMs), which aim to tie payments to the achievement of specific environmental results (ERs), such as promoting healthy and functional soil. RBMs necessitate the definition of an optimal level of ERs to be achieved, linked to a maximum payment. Results-based indicators (RBIs) are established to assess the extent to which the ERs are met on an annual basis. RBMs are currently being piloted across Europe (see Annex 1), and Portugal has recently joined this endeavour.

Our project embraces a transdisciplinary approach and aims to establish a monitoring system that not only tracks the progress of this new RBM implementation, but also allows for the necessary adjustments throughout the duration of the agri-environmental scheme. While our work is focused

on a case study, our ultimate objective is for the tested approach to be scalable and serve as a new model for policy monitoring.

Our case study focuses on the Montado, which serves as a significant example of agroforestry – a silvo-pastoral farm system which combines extensive production with high levels of biodiversity and habitat preservation. At the European level, silvo-pastoral systems are recognized as High Nature Value farmlands (HNVf). These landscapes are multifunctional, offering various benefits through diversified patterns of forest/grassland/shrubs and natural elements. These benefits include sustainability in livestock production, high biodiversity, and resilience to climate change. Despite the multitude of values and services provided by HNVf, their long-term sustainability is under threat from unsustainable land use practices exacerbating ecological disturbances. Therefore, our project proposes the Montado as a pertinent case study for developing and applying tools which ultimately support the enhancement of biodiversity in farmland.

Over the 12 months of the project, specifically focusing on the Montado, we intend to develop and implement a monitoring system designed to track the progress of this RBM and assess its intended ecological and socio-economic impacts – which will then be available for other monitoring other policy tools addressing conservation in farmland. This system will not only facilitate the identification of outcomes but will also play a crucial role in adapting the implementation of this AES over its five-year duration. Our approach aims to be cost-effective and take advantage of current digital opportunities. We have already conducted a proof of concept to test our approach, demonstrating its feasibility. With IMPACT WATCH, we will have the opportunity to further refine and expand this proof of concept, while also introducing innovative tools for monitoring the ecological quality of a system.

Why our team? IMPACT-WATCH needs case-specific knowledge through collaborative efforts. Our research team is at the forefront of applying transdisciplinary approaches and in developing methodologies and tools for the sustainable utilization of natural resources, effectively integrating science, society, and policymaking. Specifically concerning the Montado, our work spans a range of disciplinary, inter-disciplinary, and TD outcomes. We have fostered a wealth of social capital, distributed among researchers, landowners, land managers, and public administration, which empowers us to advance this scientific inquiry and target its practical application.

Project title:

Nature-based Innovation in Urban Planning for Sustainability Transition (PLANN@T)

Thematic line:

Climate transition and sustainable resources / Responding to climate challenges with ecology and urban planning

Principal investigator:

Isabel Loupa Ramos

Institution:

IST-ID – Associação do Instituto Superior Técnico para a Investigação e o Desenvolvimento

Abstract:

Urban challenges emerging from megatrends like rapid demographic and urbanization growth, climate change-related hazards, and biodiversity loss call for a paradigm shift in current urban planning policies and practice, one that triggers a sustainable urban transition.

A comprehensive body of literature clarifies how urban development contributes to the urban heat island effect and increases urban flooding occurrences. It also recognizes the crucial role of vegetation in enhancing climate change resilience and promoting biodiversity. However, the urge for climate action and sustainability transition, challenges planning policies for more comprehensive approaches.

Within this context, Nature-Based Solutions (NBS) have a prominent position on the policy agenda. Leveraging natural processes, NBS aim to restore, sustain, and introduce ecosystem functions, fostering the provision of ecosystem services (ESS).

However, despite the relatively well-defined concept of NBS and the establishment of practical applications, a policy gap persists in integrating them at the planning level.

This is where PLANN@T aims to intervene. Leveraging existing literature across various scientific domains on the impacts of climate-related extreme events, the project explores the capacity of biodiversity and NBS to provide ESS for human well-being. Integrating NBS in urban planning emerges as a promising strategy, facilitating the management of ESS within urban areas. It provides a comprehensive framework for a greener vision for the city, its policies, and legal grounds for binding principles, norms, and rules in urban development and management. These regulatory measures can be integrated in territorial planning models, land use zoning, and urban design. However, practical implementation reveals that the integration of this approach needs to be revisited, namely by including monitoring methodologies to measure accomplishments and ensuring alignment between principles, goals, policies, instruments, and targets.

In this context, PLANN@T will address the following research question: How can the integration of NBS be ensured to mitigate the effects of climate change and biodiversity loss, and enhance human well-being by leveraging ESS in urban planning? Therefore, the primary objective is to propose a set of principles, norms and rules for urban planning legal framework and practice, along with robust guidance to promote, implement, and monitor NBS through cross-sectoral and trans-disciplinary approaches. In light of this innovative integrative approach, PLANN@T introduces the concept of Nature-based Urban Planning (NUBP), fostering communication of scientific knowledge to the urban planning community.

To achieve this objective, the methodological approach is based on the Double Diamond Design Process model (DDDP). The model comprises two phases. The first one focuses on the exploration of the problem, while the second concentrates on the formulation of solutions. Within this framework, PLANN@T will place NBS and the Portuguese urban planning context, as well as, the opportunities for their integration, in the problem phases while prospects for their effective operationalization and monitorization will be placed in the solution phases.

According to this, the project is structured into five tasks (T), with T1 responsible for project management and communication. T2 and T3 will run simultaneously, both contributing to defining the problem through collaborative processes with experts and stakeholders. T2 will scan scientific knowledge on climate change and how NBS can provide ESS to enhance human well-being. In the end, it will result in a catalogue NBS effectiveness constituting milestone 1 (M1). T3 will focus on how Portuguese urban planning addresses the challenges of climate change and biodiversity promotion. This involves analyzing the legal framework, current urban planning, and monitoring practices to identify a pool of promising and best practices. The findings, also supported by international comparative studies, define M2. The integration of outputs from T2 and T3 is the focus of the final task of the project, T5. Here, a proposal for guidelines on integrating, operationalizing, and monitoring Nature-Based Urban Planning (NBUP) will be developed. This proposal defines principles, norms, and rules at different scales, corresponding to various typologies of urban transformation. The development process involves various collaborative interactions, ultimately leading to the achievement of M3.

Finally, Task 4 runs alongside T2, T3, and T5. It is the project's backbone, serving as a co-creation arena for collaborative sessions with a diverse spectrum of relevant experts and stakeholders, all playing a crucial role in enhancing the effectiveness of NBUP.

Project title:

Indicators System of Inclusion Policies (SIPI)

Thematic line:

People First / Emerging dimensions of poverty

Principal investigator:

José Miguel da Graça Estevão André Nogueira

Institution:

Iscte - Instituto Universitário de Lisboa

Abstract:

Statistical information also shows that both in Portugal and on average in EU countries, the risk of poverty or social exclusion is higher in the social group of people with disabilities, with greater intensity in households made up of women. According to Portugal et al., 2010:14: "People with disabilities are among the poorest of the poor in various societies, constituting (...) what is commonly known as the inner third world, that is, the world made up of socially excluded and economically unprotected population groups, even in developed countries."

Given that the intensity of the social phenomenon described remains unmitigated, the main international and European bodies, such as the UN and the European Commission, have insistently urged countries, through various reference documents, to design statistical and social indicator tools that make it possible to assess and monitor the living conditions of people with disabilities, as well as the impact of public policies on the daily lives of these citizens. Although Portugal has ratified the Convention on the Rights of Persons with Disabilities, Articles 30º and 32º of which recommend that countries design and implement a system for observing public policies that have an impact on this area and how they affect the living conditions of people with disabilities, this recommendation has not been implemented to this date. In addition to being scarce, the existing statistical information in this regard is dispersed across sectors and is not harmonized from a conceptual point of view, which makes it difficult to read.

The project therefore aims to fill this gap, which is widely accepted as essential. The general aim of this pilot project is the collaborative design and operationalization of an "Observation System for Inclusion Policies in Portugal", through the design of a broad, cross-cutting set of social indicators, covering some of the main sectoral areas with an impact on the living conditions of people with disabilities and their families. The specific objectives are: i) conceptual harmonization in the area of disability statistics (in line with the European Strategy); ii) identifying statistical/administrative information that already exists and that which does not exist should be collected and analysed; iii) in collaboration with INR, IP, raising awareness and involving the main relevant services of the Public Administration, as well as representative NGOs, in this

collaborative work with Iscte; iv) to learn about and assess the results and impact of the main public policies in this area; v) to learn about and assess the living conditions of people with disabilities in Portugal and their families; vi) to produce an annual report on the results of the policy measures studied and their impact on the living conditions of people with disabilities in Portugal.

In terms of future sustainability and based on the experience of this pilot project, the aim is to set up a future broader observatory, which will make it possible to monitor, on a regular and longitudinal basis, the performance of the main public policies at this level and their impact on the living conditions of people with disabilities and their families. As it is impossible for this project to cover all the sectoral areas of public policy that have an impact on the daily lives of people with disabilities, four areas have been selected that are seen as central to the fight against poverty and social inclusion, namely: i) Social Protection (income and social support, including services and equipment); ii) Education (basic, secondary and higher education); iii) Employment and vocational training; iv) Accessibility (including transport and social participation, i.e. a broader area of accessibility that promotes social participation). The project will focus on a mixed, collaborative and inclusive approach, involving, from the outset of the project, the relevant public administration services, including local authorities (with a greater focus on physical accessibility) and the main organizations representing people with disabilities.

From a methodological point of view, the observation system will be fed by: i) existing sectoral administrative data; ii) sectoral administrative data that does not yet exist, but which the partners agree is necessary; iii) a public policy scoreboard; iv) a scoreboard on the living conditions of people with disabilities. Focus groups will be held with experts in the main sectors that have a direct and indirect impact on the living conditions of people with disabilities. The project will produce: - an initial report on inclusive public policies in Portugal; - an annual report on the Inclusion Policy Observation System; - scientific articles; - an international conference.

Project title:

External demands in the Portuguese housing market: multidimensional impacts and the role of public policies (HOUSEnomics)

Thematic line:

People First / Characterising the external dimension of the housing crisis

Principal investigator:

Ana Drago

Institution:

CES – Centro de Estudos Sociais da Universidade de Coimbra

Abstract:

HOUSEnomics aims to study the impact of external demands on Portuguese housing market in the aftermath of the socio-economic crisis of 2011- 2013 and to provide a comparative survey on policies enacted in other countries to tackle its disruptive effects, to offer guidance for future policy action.

In recent years, the rise of housing prices in multiple countries hampered affordability for multiple social segments. Accounting for this new housing crisis, a burgeoning scientific literature signaled the disruptive impacts of external demands driven by foreign investment flows, non-resident purchases and the rise of tourism short-term rentals (STR) in central urban areas and tourism regions. These effects of external demands in local housing markets create new challenges for urban and housing policies, used to plan and respond to a stable national/local context that is disrupted by demands that are hard to estimate and require a new generation of market regulation, sustained on a robust empirical-based assessment on its effectiveness.

In the last decade, Portugal exhibits several indicators that seem to point to a significant impact of these external demands on the housing affordability. Flows of FDI have risen towards real estate; the volume and capital of non-resident and foreigner purchases has risen; and STR in city centers and tourism regions also rose considerably. As such, since 2018 Portugal ranked in the first positions of rising prices in the Eurozone (Eurostat, 2023); and, in that period Portugal also took first positions in OECD's price-to income ratio among more than 30 countries, signaling a significant discrepancy between housing prices and national household income (OECD, 2023).

Despite these indicators, we still lack an encompassing perspective on the disruptive effects of external demands in Portuguese housing market and a clear evaluation on public policies that can guide future policy action and tackle what local demand experience today as a new housing crisis.

Our proposal aims to fill these gaps through a four-step research strategy: provide a detailed and territorialized characterization; explain processes unfolding in housing market and housing supply driven by external demands; provide an assessment on housing policies or/and policies that impacted housing market in the last decade; and to offer comparative international survey on policies that counter its effects.

First, our research strategy aims at offering a rigorous account of characteristic, location and its uneven territorial impacts of external demands, which has not been accounted yet, and that is vital for the adequacy of future regulation policies.

Secondly, we propose to approach the impacts of external demand through a multidimensional perspective that explores its spillover effects in residential segregation, rising housing costs and housing supply. Our working hypothesis is that in the last decade external demands reconfigured the Portuguese housing market towards affluent buyers, foreign investment, and tourism accommodation. Despite initially centered in urban and touristic regions, external demands began to rise in the context of the social and economic crisis of 2011-2013, that dampen local demand and fueled the retraction of the construction sector. Facing rising housing prices and stagnant real income since 2011, low and middle-class local segments were crowded-out by external demands, while the reconfiguration of supply provided scarce affordable alternatives. In that sense, external demands had a spillover effect in the overall dynamic of housing markets – shaping prices dynamics and segments of supply towards high-standard developments and luxury renovations. To test this hypothesis, we propose a multidimensional research approach: 1) to analyze the spillover effect of external demands on prices and housing supply sectors, such as real estate and construction; 2) to assess its impact on residential segregation and inequality of housing costs for “newcomers” in the post-crisis market in metropolitan and tourism regions.

Thirdly, we propose to examine economic and housing policies that have impacted the market in the last decade to foreground policy recommendations, proposing a close collaboration with IHRU in that assessment.

And finally, relying on secondary literature, we aim to offer a comprehensive comparative survey of policies enacted in other countries to counter the disruptive effects of foreign demands, assessing its feasibility to curb present-day housing crisis within the rules of European Single Market.

This four-step research strategy will result in a comprehensive report that can provide territorialized diagnosis, a comparative assessment of market regulation and housing policies, a perspective on the role of public policies and a set of recommendations for future policy action.

Project title:

Key monitoring requirements for effective management of the Portuguese Network of Marine Protected Area (INDIMAR)

Thematic line:

Climate transition and sustainable resources / Integrated indicators for marine and coastal biodiversity

Principal investigator:

Isabel Sousa Pinto

Institution:

CIIMAR – Centro Interdisciplinar de Investigação Marinha e Ambiental

Abstract:

The rapid decline of global marine biodiversity poses a significant threat to the overall health of marine ecosystems. This decline jeopardises vital ecosystem services such as climate regulation, coastal protection, food, and livelihoods. Halting and reversing marine biodiversity loss is, therefore, crucial to both nature and people. Marine Protected Areas (MPAs) are recognized as key tools for safeguarding marine life. Portugal currently has 93 diverse MPAs across its regions, covering about 7% of the country's ocean area. With Portugal's commitment to protect at least 30% of its ocean area by 2030, MPA coverage is set to increase rapidly. However, the prevalence of "paper parks" in Portugal – legally established but ineffective MPAs – remains a significant concern. This highlights the critical need for improved monitoring within these areas to assess their performance, improve conservation decisions, and ensure effective protection.

Despite being a best practice in evidence-based marine conservation, monitoring is often inadequate due to weak plans and indicators, short-lived programs, and limited resources. This results in dispersed and fragmented data and indicators, hindering informed decision-making. To overcome this, there is a pressing need to develop effective monitoring efforts capable of delivering steady and timely data and indicators on the status and trends of marine biodiversity and ecosystem services. Our project addresses this urgent need.

We aim to lay the foundations of a robust, cost-effective, and impactful Monitoring Program for the upcoming Portuguese Network of Marine Protected Areas. Through collaborative efforts with natural and social scientists, conservation practitioners, and policy makers, INDIMAR seeks to develop the Terms of Reference defining the priority requirements of a Monitoring Program capable of supporting evidence-based MPA management and policy. These key requirements involve designing a new set of key indicators with regionally adapted thresholds capable of assessing performance against MPA goals; harmonising monitoring methods and data management protocols; and identifying strengths and limitations of available operational

monitoring resources. INDIMAR is expected to provide a decisive contribution for the effective monitoring of Portugal's MPAs.

Project title:

Pulse Check: Monitoring Family Health Units in Portugal (PC-MFHUP)

Thematic line:

People First / Monitoring and assessing Family Health Units

Principal investigator:

Marco Antonio Catussi Paschoalotto

Institution:

UMinho – Universidade do Minho

Abstract:

The health system assessment worldwide has gained relevance and importance in the last 40 years. Regarding this health system assessment process, the service delivery dimension points out the Primary Health Care (PHC) role, represented by the *Cuidados de Saúde Primários* (CSP) in the Portuguese National Health System (SNS), as a fundamental part in the care promotion and prevention. Despite that, there are still great gaps between the PHC studies development and their application in the field, which means, into the health systems. In the last years and being innovative, a new methodological approach to study PHC in the health systems has passed by this problematic and advances in the development studies' application, the implementation science.

Based on the implementation science to fill out this need in the Portuguese PHC context, this study proposes a mixed approach to analyse Primary Health Care (PHC) in Portugal, emphasising Family Health Units (USFs) and implementing the pay-for-performance component. The research begins with collecting quantitative data, including metrics such as the average waiting time for scheduled appointments, access to open consultations, the size of patient lists per doctor, and the relationship of these indicators with emergency rates in health centres and hospitals. These data will be collected from governmental sources, public health reports, and health unit records, complemented by questionnaires for patients and healthcare professionals.

In parallel, the study will also address qualitative analysis, exploring the perception of access and service quality in PHC through interviews with healthcare professionals. This approach will provide insights into the more subjective and human aspects of USFs' performance. Based on the diversity of available indicators, the study will consider creating composite indices for a more refined analysis, facilitating the comparison between different management models.

An innovative aspect of the study is the evaluation of the impact of the pay-for-performance strategy in USFs. Advanced statistical techniques, such as ANOVA, PCA, and regression methods, will be employed to analyse the influence of this remuneration model on performance

indicators, assessing whether it leads to tangible improvements in efficiency and patient satisfaction.

Furthermore, the study will include a pilot project in the Braga Health Center Group, chosen due to its balanced representativeness and strategic relations with Braga Hospital and the University of Minho. This pilot project will allow testing the implementation of pay-for-performance and evaluating its effectiveness.

The study promises to significantly contribute to the knowledge of PHC management in Portugal, providing essential data for the development of more effective and patient-centred health strategies.