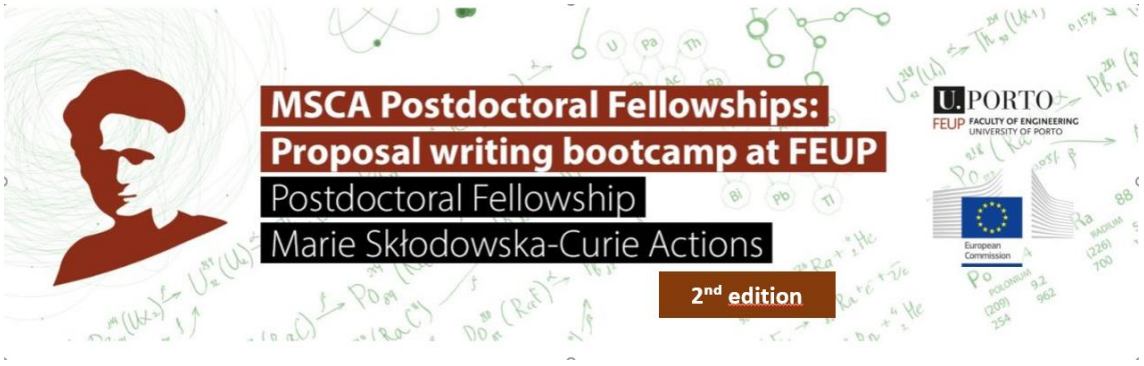
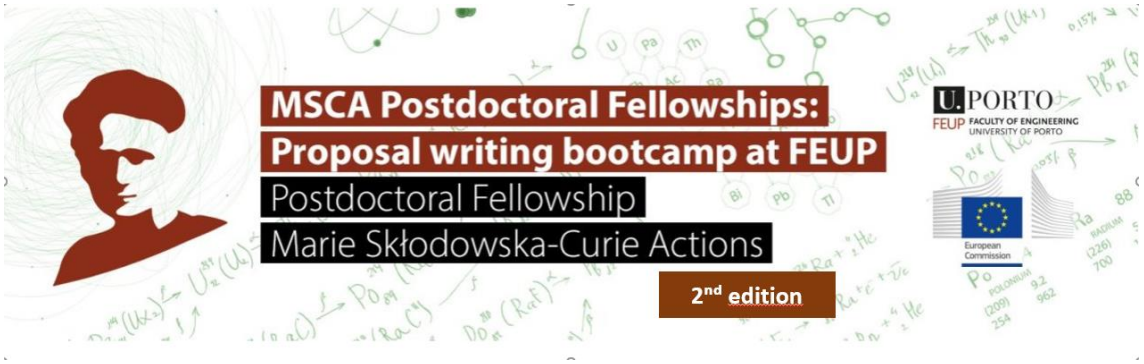


SUPERVISOR INFORMATION	
First and Last name	1) Belmira Neto 2) José Coelho Rodrigues
URL of supervisor webpage	1) https://sigarra.up.pt/feup/pt/func_geral.formview?p_codigo=239083 2) https://sigarra.up.pt/feup/pt/func_geral.formview?p_codigo=415643
Department	1) Department of Mechanical Engineering, Faculty of Engineering, University of Porto, Portugal 2) Department of Industrial Engineering and Management Faculty of Engineering, University of Porto, Portugal
Field(s) of research	Environmental Sciences; Industrial Engineering and Management
PROJECT PROPOSAL	
Title (optional)	Evaluating the sustainability dimensions—environmental, social, and economic—across a spectrum of business models, from traditional approaches to innovative sustainable business models (SBMs).

Brief project description

Environmental and social awareness has grown significantly across sectors, largely fuelled by societal pressures. Resulting from that awareness, business organizations have been developing efforts to adopt sustainable business models (SBMs) that incorporate economic, environmental and social sustainability aspects. Such shift is made toward the replacement of traditional business models (BMs) focused essentially on economic aspects. The drift from BMs to SBMs is expected to require adaptations of different elements of the business model. Such adaptation relies strongly on the number and type of indicators used to assess the business performance, which are no longer solely captured by economic indicators, but are extended to other sustainability pillars as the environmental and social.

The present research project focuses in studying the changes in the configurations of traditional business models toward sustainable business models and ultimately to evaluate these changes in terms of the mitigation potentials of the overall impacts. The assessment will cover the evaluation of economic, environmental and social impacts of the organizations from different industrial/service sectors (as e.g. the water supply/treatment and the manufacture sectors). At stake the traditional business models are described and assessed for the various sustainability dimensions. The results of the sustainability assessment for the new business model configurations will inform about the most sustainable path towards SBMs for each one of the sectors evaluated. This is done by identifying the most relevant elements of the business model that change and how do they change in detail, considering the most appropriate specific theoretical perspectives for each element (strategy, marketing, operations, financial, among others). The design of the SBMs will be based on the most appropriate existing SBMs frameworks proposed in the literature, applied to the specific cases under study in combination with specific methodologies that inform how to deep dive into the specificities of the different elements of the



Business Models. The latter include resource-based view, strategic alignment model, supply chain management tools, as well as operational strategy tools and other frameworks focused on specific elements of the Business Model. As for the sustainability assessments the methodologies are leading front tools for sustainability assessments. They include Life Cycle Assessment (LCA), a tool to assess potential environmental impacts throughout a product's life cycle, i.e., from natural resource acquisition, via production and use stage to waste management (including disposal and recycling). LCA methodology is standardised by ISO 14040. The Social Life Cycle Assessment (S-LCA) is an evaluation tool that evaluates potential positive or negative effects throughout a product's life cycle by capturing the social aspect. S-LCA uses the UNEP Guidelines for Social life cycle assessment of products and organizations. The Techno-Economic Assessment (TEA) is a well-recognised method to analyse the economic performance of an industrial process or service.

The results will allow to compare the performance of organizations in economic, environmental and social dimensions before and after business model change, resulting in assessing the overall impact of such change. This is done by using reference indicators for each sustainability dimension.

At the end of research project, it is foreseen the following project outputs:

- Identification of the critical elements underlining the creation of SBMs (paper 1).
- Conceptual design of the transition process towards SBMs per case study from the sectors covered in the project (paper 2)
- Evaluation of the sustainability dimensions (environmental, social and economic) for the traditional and SBM for the two case studies (paper 3). Recommendations for enhancing the sustainability of the BMs for the two case studies by listing the key benefits of SBM and insights to inform policymaking towards sustainable practices within the sectors evaluated.

Belmira Neto (Assistant Professor at FEUP, PhD-Environmental Sciences)

José Coelho Rodrigues (Assistant Professor at FEUP, PhD-Industrial Engineering and Management)