## Painel: Inovação e transição para sociedades sustentáveis

# Inter-industrial relationships driving the blue economy industrial transformation

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**Resumo:**

The "Blue Economy" is considered one of the drivers of European growth, based on the development of new competences and activities that enable a sustainable exploitation of ocean resources (EC, 2021; Howard, 2018). Strategies and policies were formulated, both at the UE and national levels, to address "Blue growth", combining industrial growth objectives with sustainability concerns. These strategies have targeted a broad variety of actors engaged in ocean-related activities, namely companies from established and new industries, and have promoted the development of new transversal technologies through the support of research and innovation (Sousa et al, 2020; EC, 2012).

These new, transversal technologies – such as advanced materials, biotechnology, ICTs, robotics - have the potential to drive changes in established industries, contributing to their transformation and economic revitalization (Dolata, 2009). This revitalization is achieved by the establishment of inter-industrial relationships (Stephen et al., 2017), between established and new industries, and by the adoption of diversification strategies (Wiersema & Beck, 2017) by companies from the established sectors, resulting from the exploitation of the opportunities opened by the collaborations established (Fontes et al., 2021).

This paper analyses the role played by research and innovation projects in providing conditions for a fruitful interaction between previously unrelated activities (Content et al, 2021), in in the field of "blue economy", conducive to the economic revitalization of established industries and the emergence of new ones. Transformative activities in this field are especially important, given the weight of ocean-related traditional sectors in the economic activity of several European countries, including Portugal, and the need to revitalize their activities (RCM nº120/2021), particularly in the context of a post-pandemic recovery.

The paper addresses the conditions in which interaction between new technologies and established activities can bring about change within the Blue Economy. It proposes that collaborative relationships in the context of research and innovation projects can be a first step towards the development of new products or adaptation to new markets (Becker & Dietz, 2004).) that may drive diversification processes in established/mature sectors. It further proposes that technology-based firms – and in particular knowledge intensive business services (KIBS) – play a key role in these processes, as co-innovators and "translators" (Shearmur & Doloreux, 2017), that bring knowledge related to new technologies and support their combination with business/market competences and (material) resources of established firms. These processes can be critical to induce new activities in established, mature sectors, thus contributing to their rejuvenation and revitalization.

The empirical analysis addresses the development of Blue Economy in Portugal, adopting an exploratory approach. In a first step it uses Social Network Analysis (SNA) to map the relationships between the sectors involved in

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Blue Economy related projects. The collaborative relationships between new and established sectors and their potential to induce revitalization and transformation processes are then illustrated through a few cases, in areas selected by their relevance for the Portuguese economy.

To map the inter-industrial relationships, data was collected on two groups of projects with the participation of Portuguese firms: 1) projects funded by the Horizon 2020; 2) projects funded by various operational programmes from the Portugal 2020. A total of 168 projects were identified, 72 European funded and 96 supported by national funds. These projects involved 149 Portuguese firms from 68 industrial sectors, which were the object of the analysis.

The data shows two main dynamics. On one hand it provides evidence of the role of inter-industry collaboration networks in the development and implementation of new transversal technologies in established sea-related industries, to which they add value through new product development, increasing efficiency and safety and improving sustainability. This can be illustrated by the key role being played by KIBS and other technology intensive firms active in biotechnology in the revitalization of the fisheries/ aquaculture or sea-related food sectors. On the other hand, the data also provides evidence that the development of new technology-based activities in the so called "new uses of the ocean" area (e.g. marine renewable energies or marine inspection and monitoring) are providing established supplier sectors, such as shipbuilding or maritime works, with opportunities for engaging in collaborative relationships that lead to innovation and diversification.

These results are relevant to policies that aim to promote industrial transformation, in particular the revitalization of mature industries experiencing stagnation or decline, which became especially critical in the post-pandemic situation. They point to the need of a greater directionality of innovation policies (Mazzucato, 2018) and suggest that a potentially fruitful direction for these policies concerns the establishment or strengthening of inter-sectoral relationships between established and new industries, which can support increases in efficiency and sustainability, as well as create conditions for value-added diversification.

**Palavras-chave**

Industrial transformation; Diversification; Blue Economy; Inter-industrial relationship; Research & Innovation projects; Social network analysis.