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Identifying the External Environment of Greek Fisheries †

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Abstract: The Greek fishing sector faces various challenges which can threaten its long-term sustainability. The PESTLE analysis is used to assess the impact of the external environment on the Greek fishing sector. According to our analysis, appropriate strategic planning should emphasize promoting the integration of innovation and technology transfer from the laboratory to the fisheries sector to address the challenges and capitalize on the opportunities. Future research can be conducted on the prioritization of external factors by sector experts and the coupling with other strategic planning tools.

Keywords: external environment; PESTLE analysis; Greek fishing sector; long-term sustainability; fisheries policy

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1. Introduction

Fishing is a critical sector for the national economy but, above all, for the social cohesion of disadvantaged and remote areas [1]. However, the sector faces various challenges, affecting its long-term sustainability.

For example, political factors, such as government policies and regulations, can significantly impact the sector's operations and profitability. Economic factors, such as market trends and the macroeconomic environment, can influence the sector's financial performance. Social factors, such as changing consumer preferences and attitudes towards sustainability, can affect the fisheries sector. Technological advancements and innovations can bring new opportunities and challenges to the sector. Legal factors, such as international regulations and environmental laws, can significantly impact the sector's operations and sustainability. Finally, environmental factors, such as climate change, can threaten the sector's future.

The analysis of the above external factors presupposes a holistic and multidisciplinary approach such as PESTLE analysis [2,3]. PESTLE analysis of the fisheries sector can help stakeholders gain a comprehensive understanding of the sector's external environment and develop strategies to address the challenges and capitalize on the opportunities [4]. This can lead to the development of sustainable practices and policies that promote the long-term viability of the fisheries sector.

PESTLE analysis has been widely used as a strategic planning tool in fisheries in various regions worldwide [4–7]. Nevertheless, applying the PESTLE strategic planning tool to the analysis of the fisheries sector of Greece constitutes a contribution to the existing bibliographic background.

2. Materials and Methods

PESTLE analysis is a strategic planning tool to identify the external factors affecting a particular industry or sector. The acronym PESTLE stands for Political, Economic, Social,

Technological, Legal, and Environmental factors [8,9]. This analytical framework can provide valuable insights into the external factors that may impact the fisheries sector's growth and sustainability [10]. In particular, conducting a PESTLE analysis of the fisheries sector can help stakeholders to identify the opportunities and challenges that arise from these external factors.

3. Results and Discussion

Table 1 outlines the profile of exogenous factors that can affect the long-term sustainability of Greek fisheries. In this context, we highlight the primary challenges in the sector that need to be addressed. In particular, although the positive role of support measures in the common fisheries policy (CFP) framework is found, a deficit is observed in promoting the integration of the innovative component and transferring technology from the laboratory to the sector. The specific challenges can be addressed, given the flexibility provided through the CFP to member states to develop policy tools adapted to the current economic, social, and technological needs. The existing high-level scientific staff serving the fisheries sector can help in this effort by promoting the development of multi-level pilot actions. Moreover, cases of successful collaboration between scientific institutions and the private sector can be the "pilot" for future collaborations between stakeholders.

Table 1. External factors affecting Greek fisheries, according to PESTLE analysis.

P **Political factors**	- Policy measures to promote the modernization of the fishing fleet; - Policy measures to support fishermen due to the pandemic; - Design of policy measures with a more national orientation - Designing policies to mitigate climate change; - Funding of training actions and introduction of new fishermen.
E **Economic factors**	- Economic efficiency of small-scale fisheries due to diverse distribution channel; - Significant degree of dependence of small-scale fishing on tourist flows; - Low bargaining power of large-scale fishing; - Limited number of small-scale processing units (run by fishermen and their families) that produce high-value-added fishery products; - Adverse macroeconomic environment.
S **Social factors**	- Positive effect of the role of women in the development of the sector; - High-level scientific staff serving the fisheries sector; - Reduced level of social sustainability in disadvantaged and remote areas; - Reduction in tourist flows due to the pandemic; - Consumers are turning to long-lasting products due to the pandemic.
T **Technological factors**	- Collaboration of scientific institutions and the private sector for the construction of innovative fishing technologies; - Collaboration of scientific institutions, organizations, fishermen, and the private sector for the implementation of innovative fisheries management systems; - Limited actions integrating innovation and transfer technology from the laboratory to the sector.
L **Legal factors**	- Special fishing licenses; - Advanced tracking systems of fishing activity; - International governance efforts in the Mediterranean region.
E **Environmentalfactors**	- The rich biodiversity of the Greek seas; - Seasonality of fishing species; - Increase in competitive foreign fishing species due to climate change.

4. Conclusions

In conclusion, the deficits in the promotion of innovation integration and technology transfer from the laboratory to the sector can be reduced, given that there are three main elements: (i) the critical number of high-level scientific staff serving the fisheries sector; (ii) the interest of the private sector in collaborating with scientific institutions; and (iii) the possibility of co-financing from policy measures (under the CFP) and the private sector.

Therefore, coupling these elements is necessary, which could be implemented and achieved by creating research and innovation units (Innovation Hubs). The successful operation of such structures can promote, for example, the development of innovative small-scale processing units (run by fishermen and their families) that produce high-value-added fishery products [1], which is judged to be another severe challenge of the sector. By extension, developing such innovative small-scale processing units can cure the tough challenge of reducing social sustainability in the country's disadvantaged and remote areas [1]. Future research can be conducted on the prioritization of external factors by sector experts utilizing multi-criteria decision analysis methods (e.g., analytic hierarchy process (AHP) method) [11,12]. The PESTLE analysis should also be used with other tools to support strategy (e.g., coupling with SWOT analysis) [11–14].

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