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# **Unraveling the Impact of Environmentally Harmful Subsidies in the Mediterranean**

## SUMMARY AND KEY TAKEAWAYS

Despite international momentum for sustainable development, unsustainable practices are fueled by economic incentives that generally favour an expansion of economic activity at the expense of conservation and restoration, often causing environmental damage. Such incentives are known as environmentally harmful subsidies (EHS). They are defined as a set of aids emanating, directly or indirectly, from a public entity, which favour production or consumption that is harmful to the environment by increasing the exploitation of resources, the level of pollution or the deterioration of biodiversity. On a global scale, EHS are estimated to be 5 to 6 times higher than those that benefit the environment.

Harmful subsidies to the environment pose a significant challenge for many countries in the Mediterranean, each facing unique circumstances regarding their subsidy programs. For some, subsidizing water to ensure affordable access is the biggest issue. Others focus more on providing subsidies for fishing, aiming to boost economic activity in the maritime sector and/or employment in coastal communities. Additionally, several countries still subsidize fossil fuel production to maintain energy security, especially considering the current challenging economic context. To this day, though uneven, the Mediterranean has seen progress in efforts to identify and reform EHS. Some countries have taken proactive steps, while in other cases countries are in the early stages of learning about the issue and its impacts, highlighting the need to keep raising awareness.

Recent decisions and declarations from the UNEP/MAP system emphasize the need to promote economic instruments and reforms, such as reducing environmentally harmful subsidies (incl. Article 21 of the ICZM Protocol - 2009, Common Regional Framework for Integrated Coastal Zone Management in the Mediterranean - 2019, UNEP/MAP Medium-Term Strategy 2022-2027). Meanwhile, the reform of environmentally harmful subsidies (EHS) is an objective of the Mediterranean Strategy for Sustainable Development (MSSD) 2016-2025. Recognizing the negative impact of such subsidies on the environment, the MSSD promotes their reform to foster sustainable development. Strategic direction 5.6 of the MSSD advocates for a greener market by integrating the polluter-pays principle and extended producer responsibility. It includes actions for environmental tax reform and reviewing public subsidies to phase out EHS. Additionally, regional capacity building in market instruments is emphasized. Addressing climate change, strategic direction 4.4 also focuses on mainstreaming climate change in policies and reforming energy subsidies to reduce greenhouse gas emissions. By reforming EHS, the MSSD seeks to align economic activities with sustainability principles, promoting long-term ecological and economic health in the Mediterranean. Our report supports these foundational objectives.

Plan Bleu, recognizing the urgency of addressing environmentally harmful subsidies in the Mediterranean, embarked into the production of this Edited Volume report which seeks to better inform decision-makers across the Mediterranean. To produce this report, Plan Bleu launched a Call for Papers in 2023 as an open invitation to Mediterranean researchers, primarily from academia, diving into the intricacies of subsidies and their socioeconomic and environmental impacts in the Mediterranean. Eight paper proposals were selected and funded by Plan Bleu and are presented as chapters throughout this Edited Volume. Based on relevance and/or data availability, some chapters are regional while others are country-specific, and all provide recommendations relevant to the global Mediterranean context. This «by Mediterraneans, for the Mediterranean» approach offers precious insights, ideas and practices from diverse perspectives across the region.

The significance of these chapters lies in their collective ability to holistically address the challenges posed by environmentally harmful subsidies in the Mediterranean.

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### Among the Key Takeaways:

#### **The first chapter provides an understanding of the definitions, historical evolution, and impacts of EHS.**

- The identification of Environmentally Harmful Subsidies (EHS) poses challenges due to varied definitions across organizations. The World Trade Organization (WTO) and OECD offer distinct definitions, while the World Bank defines EHS as direct fiscal outlays intended to influence production or consumption. The lack of consensus complicates reform efforts. Methods for measuring EHS include inventory, price gap, and Producer and Consumer Subsidy Equivalent (PSE-CSE) frameworks.
- Existing strategies related to EHS identification and reform are discussed including France's Green Budgeting Strategy, Italy's EHS Annual Catalogue and Indonesia's Fossil Fuels Subsidies Reform. They offer valuable lessons on EHS reform, emphasizing transparency, stakeholder engagement, and a balanced approach for achieving positive outcomes.
- The adoption of a Phase-Out and Reform Framework is recommended to aid in identifying compensation measures and ensuring a harmonized approach to environmental sustainability in the region. The framework encompasses cross-sectoral indicators that enable a holistic analysis of reform impacts across various sectors. Suggested economic indicators focus on assessing the financial implications of subsidy reform, including government expenditure, employment rates, GDP impact, private sector investment, consumer price index, and international trade impact. Environmental indicators track changes in greenhouse gas emissions, resource use efficiency, environmental quality, waste management, and adoption of eco-friendly technologies. Social indicators evaluate the impact of reform on income distribution, gender and generational equity, health outcomes, access to social services and infrastructure, and community engagement. To enhance accountability, the framework suggests mechanisms such as screening and assessment of governmental budget allocation, monitoring and reporting of reform processes, and inclusive stakeholder engagement.

#### **The second chapter dissects the complex ties between fishing subsidies and marine ecosystems. It lays the foundation for understanding how the “wrong” subsidies may contribute to overfishing and unsustainable practices while the “right” subsidies may enhance income sources and improve fish stocks simultaneously.**

- Fishing subsidies can have varied impacts on socio-ecological outcomes, depending on their type and implementation. We adopt the classification system proposed by Sumaila et al. (2010) and analyze fishing subsidies through the lens of their impact on marine ecosystem health. In that respect, fishing subsidies can be classified into capacity-enhancing, beneficial, and ambiguous categories. Capacity-enhancing subsidies, like fuel subsidies and vessel construction support, often contribute to overfishing and marine degradation. Beneficial subsidies, including fisheries management measures and support for marine protected areas, can enhance both fish stocks and socio-ecological well-being. Ambiguous subsidies represent the final category of fishing subsidies, characterized by their uncertain or unclear outcomes. For instance, direct income support for fishers, vessel buyback programs and support provided for rural small-scale fishing communities can be either beneficial or detrimental for fish stocks and marine health depending on the specifics of the context and the actual implementation. Globally, environmentally harmful subsidies in the fishing sector are prevalent, with about 60% considered detrimental due to their contribution to overfishing and marine degradation. Strategic reallocation of subsidies and focused policy efforts are needed.

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- The chapter uses data from Türkiye, a country which has made progress towards a more environmentally conscientious approach in fisheries, shifting its «subsidy-mix» towards more environmentally virtuous tools, mirroring patterns observed in other EU-Mediterranean countries. Fishing subsidies in Türkiye underwent notable changes between the periods of 2000-2011 and 2012-2020. In the earlier period, capacity-enhancing subsidies dominated, particularly fuel tax concessions, comprising 63.1% of all subsidies. Beneficial subsidies accounted for 36.9%, mainly allocated to management and enforcement expenditures. In contrast, during 2012-2020, Türkiye witnessed a decrease in the share of capacity-enhancing subsidies to 43.9%, while beneficial subsidies increased to 50.4%. Ambiguous subsidies, including income support for fishers and vessel buyback programs, emerged during this period, albeit with a smaller share.
- Challenges persist, underscoring the need for further efforts. Analysis of fishery resources reveals a nuanced picture, with a decline in marine catches and notable shifts in species composition, hinting at underlying ecosystem changes. While small-scale fishing has shown relative stability, industrial fishing has seen increased activity despite initiatives like the vessel buy-back program. Although designed to reduce fleet size, such programs may inadvertently lead to heightened fishing effort per vessel, exacerbating pressure on marine resources. The intricate interplay between fishing subsidies, fleet dynamics, and ecological indicators underscores the necessity for comprehensive subsidy reforms. The chapter discusses how focus should be (further) shifted away from harmful subsidies to those incentivizing conservation, complemented by participatory adaptive governance. Supporting Local Communities is also key, meanwhile, incentivizing responsible fishing practices is needed, through supporting the designation and management of marine protected areas (MPAs) to conserve critical habitats and vulnerable fish stocks.

### **The third chapter addresses a critical gap in the understanding of fossil fuel subsidies, employing economic modeling to unravel the impact of EHS on carbon dioxide emissions in the Mediterranean region.**

- The escalating consumption of fossil fuels has led to a surge in carbon dioxide (CO<sub>2</sub>) and greenhouse gas (GHG) emissions, resulting in significant environmental pollution and climate change. Recent literature has shed light on the socioeconomic and environmental impacts of Fossil Fuel Subsidies (FFS) at both national and global levels. Studies have found that FFS increase the cost of climate change mitigation and are associated with greater emissions. But studies on the Mediterranean region are limited.
- The chapter aims to address the gap in the literature by evaluating the impact of FFS on the transition to a low-carbon economy in Mediterranean countries, using data from the OECD inventory on FFS (which covers 8 Mediterranean countries). The research allows examining the distribution of FFS among different energy sources and beneficiaries. The analysis of FFS distribution reveals that petroleum has been the most subsidized energy source in the past 12 years among OECD members in the Mediterranean, with recent increases in subsidies for natural gas and coal combustion due to energy price surges. Notably, subsidies mainly accrued to consumers, followed by producers and general services during the 2010-2021 period. Regarding the econometric analysis, the chapter employs panel data methods to assess the link between FFS and GHG emissions per capita from 1990 to 2021. The results indicate that, indeed, an increase in FFS triggers higher emissions per capita, with natural gas subsidies having a significant positive impact on emissions. Additionally, GDP is found to contribute significantly to emissions per capita, suggesting that wealthier countries emit more GHGs per person.

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- Additionally, the chapter seeks to compile a comprehensive inventory of coal subsidies and analyze their correlation with GHG emissions. Available data for Türkiye allows doing that, detailing existing subsidy mechanisms such as direct transfers, tax exemptions, and price guarantees. Policy implications are drawn, advocating for the phased removal of such subsidies and the promotion of renewable energy sources. Key steps include announcing realistic timelines to phase out fossil fuel extraction and combustion, conducting comprehensive assessments of pre-reform subsidies, and implementing supportive policies and communication strategies. The experiences of Morocco and Egypt in reforming fossil fuel subsidies are given, as they provide valuable insights and inspiration for neighboring countries. In Morocco, a phased approach allowed for gradual adjustment of fuel prices, minimizing social and economic disruptions. In Egypt, although subsidy cuts were significant, compensatory measures such as expanded social security pensions, cash transfer programs, and new taxes on wealthier households helped mitigate adverse effects on the most vulnerable.

### **The fourth chapter explores the intersection of energy policies and female employment.**

- Women's underrepresentation in the energy sector persists globally and in the Mediterranean region, with only around 15% of sectoral employment being female. Traditional energy sectors continue to receive subsidies which are detrimental to the environment but also disproportionately impact women, hindering their engagement with the sector. The chapter produces an empirical assessment of the relationship between energy subsidies and female employment in 18 Mediterranean countries from 2010 to 2021. Data on GDP per capita, female unemployment rate, fertility rates, and fossil fuel subsidies were analyzed to understand the dynamics of female employment within the energy sector. The analysis confirms indications that higher levels of subsidies are associated with lower rates of female employment.
- Additionally, a survey was conducted in Greece to assess female inclusion in the energy sector, providing qualitative insights to complement quantitative data. Greece serves as an illustrative case study from the Mediterranean region, as it is in the middle of the income distribution in the region, meanwhile, investments are increasing in all parts of the Greek energy sector, including conventional and renewable energy sources. While respondents generally expressed positivity regarding industry investments creating job opportunities for women and acknowledged the skills and competence of female candidates, they also echoed global findings suggesting room for progress in increasing female participation in the energy sector.
- Policy considerations stemming from the chapter include gradual elimination of inefficient subsidies while ensuring reforms do not hinder women's inclusion in the energy sector workforce. Redirecting funds from subsidies to support women-owned enterprises, providing mentorship and financing opportunities, and implementing gender-responsive policies are recommended. Collaboration between stakeholders, including governments, industry, academia, and civil society, is crucial for fostering gender diversity within the sector.

### **The fifth chapter seeks to provide insightful strategies by examining the influence of fossil fuel subsidies on the interplay between water stress and energy consumption.**

- The interplay between water stress, fossil fuel subsidies, and energy consumption is complex and requires careful consideration in policy formulation. The relationship involves factors such as public sentiment, water usage in fossil fuel production, and the risk of water pollution from extraction activities. The chapter focuses on data from Algeria, whose political economy has historically relied on fossil fuels to drive socioeconomic stability and promote economic

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development through subsidies. The econometric analysis shows that an increase in FFS leads to higher water stress levels, increased energy consumption, GDP growth, and inflation. This highlights the trade-off between economic activities driven by fossil fuel production and environmental impacts. Meanwhile, water stress shocks influence adjustments in FFS, energy consumption, GDP, and inflation. While there is an initial conservation effect on energy consumption, the trend shifts to a positive trajectory over time, emphasizing the importance of sustainable energy practices. Lastly, energy consumption shocks impact FFS, water stress, GDP, and inflation. Initially, there is a positive response of FFS to increased energy consumption, followed by a potential policy adjustment to reduce subsidies. Energy consumption also affects water stress and GDP, indicating a multifaceted relationship.

- The responses to FFS shocks demonstrate a complex interplay between environmental and economic factors. Reducing FFS could mitigate water stress, reduce energy consumption, and stabilize national budgets, promoting sustainable economic development and reducing dependency on fossil fuels. Moreover, it could help mitigate inflationary pressures associated with high subsidies. Conclusions advocate for the gradual reduction of fossil fuel subsidies, with a reallocation of resources towards the expansion of renewable energy sources, while safeguarding vulnerable populations through social measures. Algeria's ambitious plans for solar and wind energy demonstrate a commitment to renewable energy development.

### **The sixth chapter aims to analyze the challenges and opportunities for simultaneously ensuring the long-term sustainability of water subsidies together with social equity.**

- The chapter evaluates the viability of water subsidies and their implications for the energy-intensive desalination process. Water subsidies offer advantages, including ensuring affordable water access for the entire population, promoting agricultural development, improving water quality through desalination, reducing dependence on rainfall, and encouraging sustainability in water management practices. However, these subsidies also come with disadvantages. The high cost of water management puts significant pressure on national budgets, while the subsidy system may exacerbate inequality. Moreover, there is a dependency on government investment for maintaining water resources, and continued reliance on non-renewable resources perpetuates unsustainable development. Additionally, the desalination process can have adverse effects on marine ecosystems.
- The chapter focuses on Algeria, representative of a Mediterranean country facing challenges related to water scarcity, exacerbated by climatic aridity, population growth, urbanization, and climate change. The Algerian government has embarked on ambitious initiatives, including the installation of desalination plants and the expansion of surface water storage capacity, to mitigate the impact of water scarcity. The country's commitment to water policy is evident in its efforts to increase water supply to meet the needs of its growing population. The chapter analyzes various water pricing strategies in Algeria to assess their impact on consumer welfare. Through econometric analysis, it explores multiple scenarios, including increasing average water prices, adjusting tariff blocks, and simulating seawater desalination. Results indicate that while supply limitations can modulate water demand positively, changes in pricing policies significantly affect consumer welfare, equivalent to about 2.4% of a household's monthly income. Implementing a uniform, progressive national water pricing system could balance social equity and sustainable water management, minimizing welfare loss and encouraging contributions to the real cost of water production.
- The chapter advocates for citizen involvement in bearing water production costs, promoting rationalized consumption and efficient energy use. Practical measures recommended for Mediterranean countries include strengthening water law, reassessing urbanization policies, tariff revision, implementing solidarity water tariffs, and launching public awareness campaigns.

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**The seventh chapter dissects the impacts of different tourism strategies on land use, raising questions about the potential role of specific tourism subsidies in influencing resilience to climate change.**

- The chapter examines the coastal cities of Toulon and Kuşadası, both driven by tourism as their primary economic engine. Toulon, boasting picturesque natural landscapes and historical significance, attracts over 8 million tourists annually. Kuşadası, known for its bustling cruise port and UNESCO World Heritage sites, hosts up to 2 million visitors during peak seasons. Using GIS analysis and transition matrices, the analysis assesses past and potential future changes in land cover, considering IPCC climate change predictions.
- The results indicate that Toulon's long-standing urbanization practices have led to stability in land use categories along its coastal strip, supported by proactive environmental conservation efforts. As for Kuşadası, supporting tourism infrastructure has boosted the local economy leading to significant financial gains, but further environmental investments might be needed to sufficiently mitigate the impact of climate change on its natural assets. This also seems true for Toulon, though climate change effects are projected to emerge at a later stage.
- Reflecting on the impact of tourism support reveals both common traits and disparities between the coastal cities. In Toulon, some grants and subsidies are allocated to promote sustainable tourism practices, contributing to economic development while minimizing environmental impacts. Kuşadası's tourism development seems to primarily rely on subsidies aimed at expanding the tourism sector, particularly in infrastructure development. Tentative conclusions about the relationship between subsidies and tourism development are restricted due to limited comprehensive and comparable data on financial support in both regions. Future research should prioritize acquiring detailed data sets covering direct and indirect forms of support. Establishing a clearer link between tourism support and land management trends requires comprehensive data collection efforts, longitudinal studies tracking changes over time, and qualitative research methods to understand stakeholders' perceptions and behaviors. Creating a joint Mediterranean methodology to differentiate between environmentally harmful and friendly tourism support is crucial for sustainable development.

**The eighth chapter is forward looking and aims to answer the question of how to effectively and efficiently use the best mix of fiscal policies to speed up the energy transition process in the Mediterranean. A particular attention has been given to the decarbonisation of the electricity supply industry because electricity is the main energy used for not only industrial production but also for the heating and transportation sectors.**

- Even though one of the focus points is the European Union (EU) Legal Framework on State Aid because it is mandatory for Member States to comply with the EU State Aid Rules, the incentive schemes supported for renewable energy generation in this chapter are applicable in all Mediterranean countries. Regarding (virtuous) fiscal incentives, feed-in tariff (FIT) schemes seem to be the most efficient and effective support schemes for promoting and supporting renewable electricity. However, not all FIT programmes are successful, some could increase the financial burden on tax/rate payers. The political feasibility of schemes varies between countries; for example, RPS programs in the USA directly burden the electricity industry, while higher taxes are preferred in the EU.
- It can be argued that no scheme, on its own, would be sufficient to achieve the best outcomes for RE transition goals. In this sense, a crucial point is also pricing negative externalities thanks to carbon taxes. Findings stress how effective carbon taxes could be introduced for carbon-intensive industries. Some countries may easily introduce and apply environmental taxes, in the same manner that Finland, Sweden, Norway and Denmark introduced carbon tax

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in the early 1990s. But introducing new taxes can cause resistance. To prevent this, incentive mechanisms should also be brought together with the introduction of new taxes

- When designing fiscal incentives in the Mediterranean, the Barcelona Convention and its protocols can provide a comprehensive framework. Support for renewables seems to be the way forward, provided issues of pollution, of promoting green economy, sustainable energy, and consumption and production are always taken into account.

**A conclusions chapter offers some additional reflections on how to move forward with EHS reform, and the key axes that need to be considered, and that could be further studied in future reports.**

- First, there is a need to replace environmentally harmful subsidies with green economic instruments. These instruments, such as taxes, subsidies, grants, and regulatory measures, aim to internalize environmental costs, promote sustainability, and drive innovation and job creation. The transition from harmful subsidies to green instruments is crucial for correcting market distortions, promoting social equity, and stimulating sustainable economic growth in the Mediterranean region. Additionally, reform is crucial for securing the necessary financial resources for sustainable development, especially amid renewed budgetary pressures in the public sphere.
- Second, strengthening CSR among businesses operating in the region is another avenue to address challenges. CSR entails voluntary actions by companies to promote social, environmental, and economic sustainability beyond legal obligations. Governments, businesses, and civil society need to collaborate to create an enabling environment for promoting CSR through standards, incentives, and transparency.
- Lastly, Intersectoral cooperation and enforcement of regulations are crucial for successful policy implementation. Aligning with the MSSD and establishing a Green Taxonomy specific to the Mediterranean can guide investments towards environmentally sustainable projects and promote transparency and accountability in financing sustainable development initiatives. UNEP/MAP can play a leading role in developing this taxonomy by convening stakeholders and designing criteria tailored to the region's unique challenges and opportunities.







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