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Shifting to a Mediterranean Diet and the sustainable transformation Greek Agri-Food System

Phoebe Koundouri

Chloe Chua

Konstantinos Dellis

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Phoebe Koundouri[1,2,3], Chloe Chua[4] and Konstantinos Dellis[1,2]

1. *Department of IEES, School of Economics and ReSEES Laboratory, Athens University of Economics and Business; Athens, Greece, 10434*
2. *Sustainable Development Unit, Athena RC; Marousi, Greece 15125*
3. *Department of Earth Sciences, University of Cambridge, Cambridge CB2 3EQ, United Kingdom*
4. *University of Cambridge, Department of Natural Sciences*

Abstract

The Greek agri-food system faces mounting environmental, economic, and public health challenges driven by climate change, biodiversity loss, and a departure from traditional dietary patterns. This study uses the FABLE calculator to examine the potential impacts of transitioning toward the Mediterranean Diet (MD) under different scenario pathways. The FABLE Calculator is an integrated modelling tool for assessing sustainable food and land-use pathways under various scenarios including Shared Socioeconomic Pathways (SSPs). Our analysis for Greece highlights that adopting the MD could reduce agricultural greenhouse gas emissions in Greece by up to 46–60% by 2050.This occurs primarily through lower methane and nitrous oxide emissions from reduced livestock production and associated land-use change. Other key environmental benefits include enhanced biodiversity and improved land-use efficiency. The shift also delivers substantial health gains, lowering risks of cardiovascular diseases and diabetes while improving food affordability. However, our results also highlight significant economic trade-offs, including declines in production value and employment particularly within livestock-dependent sectors. Projected increases in production for crops does not compensate for losses in livestock production. Productivity improvements further accelerate emissions reduction and further reduce production costs but do not fully offset labor losses. The findings underscore the "double dividend" of dietary transitions—simultaneous climate and health benefits—whilst revealing key economic problems and evincing the need for complementary policies to ensure equity and resilience. Integrating dietary shifts into national climate, agricultural, and health strategies, supported by education, fiscal incentives, and social protection, can advance Greece toward a sustainable, healthy, and inclusive food system. But more effort is needed to match supply side measures to dietary changes, echoing very recent publications and case studies.

Keywords: Agri-food Systems, Mediterranean diet, FABLE, Agricultural Emissions, Greece

Introduction

The Greek agri-food system is at a critical crossroads. Pressures stemming from climate change, biodiversity loss, and deteriorating public health outcomes have highlighted the urgent need for a transition toward sustainable food systems. Agriculture is responsible for approximately one-third of global anthropogenic greenhouse gas (GHG) emissions and constitutes a major driver of ecosystem degradation (FAO, 2024). These challenges are compounded by economic vulnerabilities, fragmented supply chains, and changing dietary habits. Over recent decades, the traditional Mediterranean Diet (MD)—once hailed as a model of healthy and sustainable eating—has been increasingly replaced by diets high in animal-based and processed foods.

This essay investigates the potential effects of shifting toward the Mediterranean Diet on the Greek agri-food system. Using the FABLE Calculator, a modelling tool developed to assess sustainable food and land-use pathways, our analysis quantifies the environmental, economic, and social implications of alternative dietary scenarios. It explores, in the Greek context, whether the MD can simultaneously deliver health and environmental benefits—the so-called "double dividend"—and whether supply-side measures, such as improved agricultural productivity, can mitigate socio-economic trade-offs. The essay is structured around the key findings from scenario modelling and situates them within broader policy frameworks such as the European Green Deal and the Farm to Fork Strategy.

We delve into the potential of a dietary shift towards the Mediterranean diet in Greece to reduce Greenhouse Gas (GHG) emissions. We utilize the FABLE methodology, exploring the double dividend of this dietary change, addressing both climate change and food security. The mechanisms driving GHG reduction include a drop in livestock emissions (especially methane) due to lower red meat consumption, less land needed for livestock leading to reduced deforestation and increased carbon sequestration, and decreased fertilizer and pesticide use related to animal feed production. shifting to a Mediterranean diet that includes a high consumption of fruits, vegetables, whole grains, and legumes. This diet aligns with the Lancet Recommendation of a diet that emphasizes a plant-forward diet where meat and dairy constitute a small role. This is far from the current dietary behavior in Greece, as the younger generations are distancing from the traditional dietary patterns.

Key results from the FABLE Calculator indicate a transition to the MD can result in substantial drop in agricultural GHG emissions, with a projected 5% reduction by 2030 and 46% by 2050 compared to current dietary trends. Notably, livestock emissions of CH4 and NO2 are expected to fall significantly. A substantial drop in demand for livestock products has concomitant adverse implications for farmers' income and agricultural employment, which are key issues in the Greek policy dialogue. Assuming an exogenous increase in agricultural productivity further curbs GHG emissions and ameliorates the production and employment deterioration, however, does not reverse the negative trend.

Background and Motivation

Growing scientific evidence underscores the deep interconnections between dietary patterns and environmental sustainability. Studies by Tilman & Clark (2014) and Leclere et al. (2020) show that diets with lower animal-based food consumption and greater reliance on plant-based foods can significantly reduce GHG emissions, slow biodiversity loss, and improve human health outcomes. Such findings have prompted the emergence of the concept of "sustainable diets," which are nutritionally adequate, environmentally benign, and socio-economically equitable. This dietary shift also provides a host of health benefits, including lower mortality rates and prevention of cardiovascular diseases and Type II Diabetes. The adoption of a Mediterranean diet can also lead to lower household grocery costs, enhancing food security (Woodside et al., 2022; Papadaki & Mavrikaki, 2015). Thus, the research highlights significant health-climate synergies from transitioning to more sustainable dietary patterns in Greece.

The European Union has integrated this concept into its key policy frameworks. The European Green Deal (EGD) sets ambitious targets for climate neutrality by 2050, while the Farm to Fork Strategy (F2F) explicitly calls for healthier and more sustainable food consumption patterns. Within this context, the Mediterranean Diet—rich in fruits, vegetables, whole grains, legumes, olive oil, and moderate amounts of fish and dairy—has been recognized as a potential cornerstone of the transition. However, adherence to the Med Diet has waned in Greece. The HYDRIA national health and nutrition survey (2013–2014) reports that only 28.3 percent of adults demonstrate high adherence to the MD, reflecting a marked departure toward Westernized dietary habits characterized by higher consumption of fats, sugars, and red meats.

A shift toward healthier and more sustainable diets such as the Mediterranean diet represents a critical strategy for reducing greenhouse gas (GHG) emissions and achieving long-term sustainability goals. The Mediterranean diet emphasizes high consumption of fruits, vegetables, legumes, and whole grains, moderate intake of fish and dairy, and limited consumption of red meat. This composition not only supports human health but also aligns with planetary boundaries, making it a powerful tool for addressing both environmental and food security challenges. From a broader sustainability perspective, the Mediterranean diet supports better land-use efficiency, enhanced biodiversity, and improved soil health, while promoting nutritionally balanced and culturally rooted food consumption. It addresses key dimensions of the food system—health, environment, and economy—simultaneously, thus delivering a "double dividend" of emission reduction and food security.

The Mediterranean diet promotes food security by offering a nutritious and affordable alternative to unhealthy food patterns, prevalent mostly in the developed world, thus contributing to SDGs 2 and 3, namely Zero Hunger and Good health and wellbeing (FAO, 2022). Studies suggest that adherence to the MD pattern can lower household grocery costs by up to 20%, further supporting food security (Saulle et al., 2013). The MD emphasizes consumption of fruits, vegetables, whole grains, and legumes, which are crucial components of agricultural practices that promote sustainable resource use (Halstrom et al., 2015), making it relevant to contributing to responsible consumption and production practices (SDG 12). Moreover, the reduction in resource-intensive animal agriculture driven by the MD contributes to sustainable land use and biodiversity goals envisioned as part of SDG15 - Life on Land (Aleksandrowitz et al., 2016). The adoption of MD encourages local economies through the support of regional food production, cultural tourism, and traditional food systems, in line with SDG 8- Decent Work and Economic Growth (Dernini et al., 2016).

Most importantly, perhaps, the MD is a potent demand-side lever for GHG emission reduction and achieving climate change mitigation objectives, directly bolstering the efforts related to SDG 13 (Climate Action). The primary mechanism for reducing GHGs is the drop in livestock emissions, particularly methane (CH4), due to the fall in red meat consumption and, consequently, ruminant populations. Shifts towards healthier diets (which include MD patterns) are estimated to lead to a reduction in cumulated forest loss of 20% over the period 2030–2050 compared to a business-as-usual scenario globally, thus implying a higher CO2 absorbing capacity through natural processes (FABLE, 2021). A systematic review of multiple studies found that adopting sustainable dietary patterns, which often align with healthy guidelines, can lead to reductions in GHG emissions (Aleksandrowitz et al., 2016). The review identified "following healthy guidelines" and "healthy guidelines plus further optimization" as common sustainable dietary patterns. The median reduction in GHG emissions across all sustainable diet types was -22%**.** Poore & Nemecek (2019) also conclude that a diet excluding (to a large extent) animal products is associated with a 49% reduction in GHG emissions, as well as a 19% drop in water withdrawals for agriculture compared to a baseline scenario.

However, current dietary trends indicate a departure from traditional Mediterranean patterns, particularly among younger generations (Matrimianaki et al., 2022). This underscores the need for targeted policies, education campaigns, and incentives that encourage sustainable consumption. Integrating dietary shifts into climate strategies can thus serve as a cornerstone for achieving net-zero emissions in agri-food systems while safeguarding human and planetary well-being.

The challenge is thus twofold: to restore the Mediterranean Diet as a dominant dietary pattern and to assess its systemic impacts. This requires understanding both the benefits—such as reduced environmental footprints and improved public health—and the potential economic disruptions, particularly for livestock sectors that may contract under reduced demand.

Methodology

The FABLE Approach

The analysis employs the FABLE (Food, Agriculture, Biodiversity, Land Use, and Energy) Calculator, an Excel-based accounting tool designed to explore sustainable food system pathways. It integrates demand, supply, and environmental indicators to project the consequences of policy or behavioral shifts. By collaborating across countries, researchers and stakeholders design strategies that are both scientifically sound and politically practical. These strategies focus on critical areas such as improving agricultural productivity, conserving biodiversity, reducing greenhouse gas emissions, and advancing socio-economic development. The Consortium emphasizes data-driven approaches and facilitates the exchange of knowledge and best practices internationally. Through collaborative efforts and integrated modeling, FABLE supports policymakers in developing sustainable and resilient food systems that can adapt to emerging challenges.

The FABLE Calculator serves as a powerful analytical tool for calculating and developing sustainable pathways, incorporating 88 indicators—both raw and processed—that cover the agricultural sector, economy, and demographics (Mosnier et al, 2020). Through a demand-driven methodology, the Calculator forecasts greenhouse gas (GHG) emission levels, land use dynamics and transformations, biodiversity impacts, product-specific agricultural output, and economic metrics including agricultural trade balances. Pathway development involves combining pre-established and customized scenarios spanning 22 thematic areas, which encompass climate change projections, policy interventions, behavioral factors, dietary trends, and trade patterns. This approach generates an extensive portfolio exceeding 1.5 billion possible pathways extending to 2050, enabling comprehensive assessments of their viability, distributional implications, and economic effectiveness.

During the 2023 FABLE *Scenathon*, the Greek FABLE team examined three different pathways in FABLE and developed the corresponding country report[1]. In accordance with Scenathon protocols, the projected pathways included Current Trends (maintaining business-as-usual practices based on past trends), National Commitments (compliance with both explicit and implicit national and EU commitments and regulations), and Global Sustainability (aligned with national commitments while recognizing Greece's economic development status within the international context). These pathways are comprehensively detailed in Koundouri et al. (2024). The Greek team utilized the knowledge base and specialized expertise of the UN SDSN Global Climate Hub (Alamanos, 2024) to develop these pathways, drawing on national and EU documentation, legislative frameworks, and official policy statements. Through an iterative methodology, FAO data was refined using domestic sources and transformed into three distinctive pathways extending to 2050. Both the

[1] More information on the Scenathon process can be found here: https://fableconsortium.org/tools/fable-scenathon/

National Commitments and Global Sustainability pathways demonstrate substantial GHG emission reductions relative to Current Trends, primarily attributable to decreased livestock emissions resulting from transitions toward healthier dietary patterns and enhanced productivity in both crop and livestock systems (Koundouri et al., 2024).

Integrating dietary shifts in the FABLE Calculator for Greece

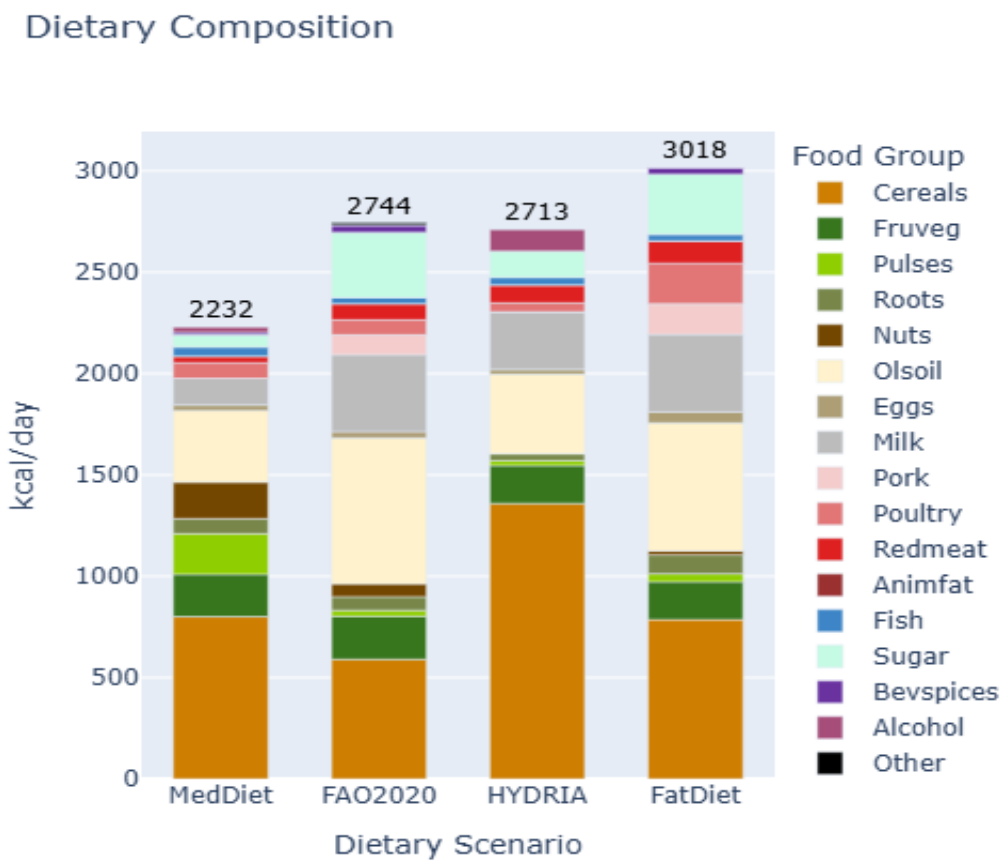
In this study, the FABLE Calculator was adapted to model four dietary scenarios for Greece through to 2050: Firstly, we investigate the *Current Trends* pathway as our baseline, using the current consumption (FAO, 2020) as the dietary pattern. We then introduce the Mediterranean diet in the FABLE calculator, thus adding a user-made scenario in the Current Trends pathway. This implies that all other aspects aside from dietary patterns are set to their baseline values. Third, we augment the set of reforms by applying a high productivity scenario for both the crop and the livestock sectors. Finally, we embed the MD into the full set of reforms underpinning the National Commitments Pathway in the FABLE Calculator, to highlight synergies and trade-offs between an array of demand- and supply-side measures.

We harness the flexibility of the FABLE Calculator, which allows the user to introduce tailor-made scenarios in most of the 22 categories underpinning the distinct FABLE pathways. We, therefore, introduce the calorie composition associated with the MD, following the respective literature (Matrimianaki et al., 2022) to augment the available list of options in the *Diets* scenario. This way we can introduce Mediterranean dietary patterns in the predetermined pathways Current Trends and National Commitments) but also explore the synergies with a sub-set of other measures.

Figure 1 shows the composition in terms of calorie intake for different dietary scenarios. The EAT-Lancet, a model diet taken from the EAT-Lancet commission (Williet et al. 2019) and the Mediterranean diets emphasize higher consumption of fruits and vegetables and moderate consumption of red meat, which are factors contributing to lower environmental footprints compared to diets high in animal products. The Mediterranean diet is more contextualized to the Greek agri-food system. The HYDRIA diet is a dietary composition calculated/estimated from empirical data provided by the HYDRIA dietary survey conducted in 2013-2014 and is thought to reflect true dietary consumption patterns of Greek people. The *FatDiet* dietary scenario provided by FABLE calculator describes a diet with an emphasis on red meats, sugar and fatty foods.

Qualitatively, various sources have suggested that actual Greek dietary patterns are trending toward a fattier dietary composition.

Figure 1: Dietary Compositions modelled in FABLE-C



Each scenario was assessed under shared socio-economic pathways (SSP2), with assumptions of no further deforestation and constant afforestation levels. The model quantified impacts on multiple sustainability indicators: GHG emissions, land use and biodiversity, total production value, production costs, and employment.

We then tested whether productivity improvements could offset potential economic losses associated with dietary shifts. These were modelled as increases in crop and livestock productivity (using the FABLE Calculator built-in scenarios), representing technological and management enhancements such as precision agriculture, ICT applications, and spatial optimization. Thus, the combination of demand-side dietary changes and supply-side productivity improvements provides a comprehensive view of the potential transformation of the Greek agri-food system.

Results

Alternative dietary patterns for Greece - Environmental and Socioeconomic Impacts

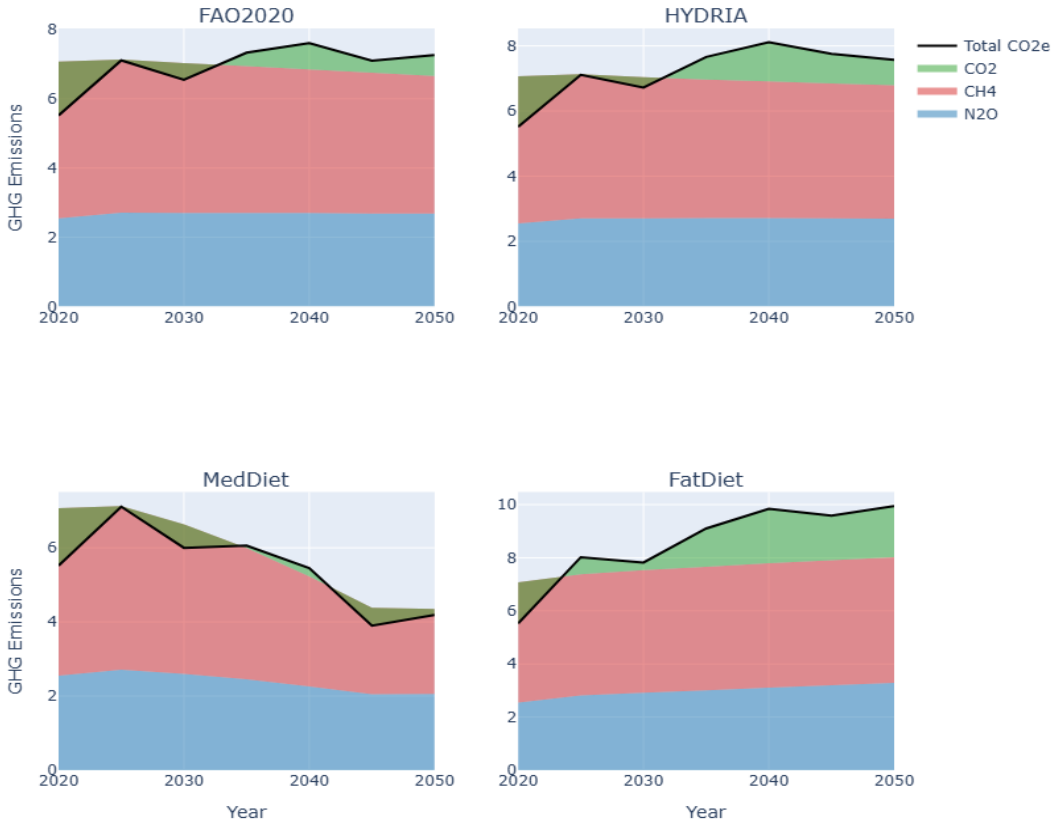
The scenario analysis produced a set of interrelated outcomes across environmental, economic, and social dimensions. The Mediterranean Diet consistently outperformed other scenarios in environmental terms but revealed significant economic trade-offs, illustrating the complexity of designing holistic sustainability strategies.

In terms of greenhouse gas emissions (CH4, NO2 and CO2), the Mediterranean Diet was the only scenario capable of achieving substantial reductions relative to 2020 levels (Figure 2). These reductions were primarily driven by a sharp decline in methane emissions associated with ruminant livestock. The contraction in animal-based food consumption reduced pasture and cropland requirements, enabling a shift toward natural landscapes that functioned as carbon sinks. Empirical diets derived from HYDRIA and FAO2020 data produced intermediate results, while the FatDiet scenario led to increases in emissions .

Adopting the Mediterranean diet , while keeping all other policy parameters constant (as documented in the Current Trends FABLE pathway) results in a 24% reduction in total agricultural emissions by mid-century compared to 2020 levels. This is a sharp contrast with the 31% increase implied in the baseline scenario (FAO 2020). Unsurprisingly, this drop is attributed mostly to the sizable abatement of livestock emissions by more than 60% in the 2020-50 period, which compensates for the 32% increase in emissions from the crop sector. The reduction in pastureland following the demand-driven drop in livestock activities results in enhanced absorptions of CO2 by 40% compared to the baseline pathway in 2050.

Land-use outcomes mirrored the emissions trajectory. Under the Mediterranean Diet, extensive areas of pasture and grassland previously allocated to livestock were freed, creating opportunities for biodiversity restoration and conservation. Abandoned agricultural lands underwent naturalization processes, contributing to ecosystem resilience. These findings align with existing literature (Tilman et al., 2014; Leclere et al., 2021), which highlights the strong link between dietary composition, land demand, and biodiversity outcomes.

Figure 2: GHG Emissions

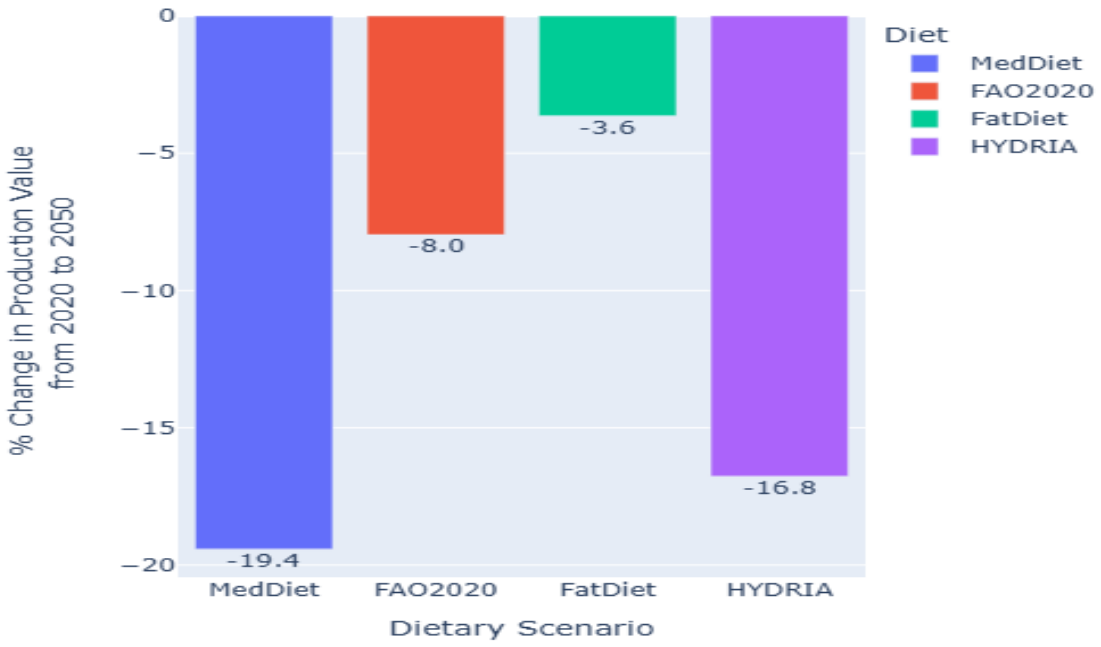


Source: Authors' calculations

Economic results were more nuanced. The total production value under the MD scenario fell sharply—approximately six times more than under the *FatDiet* scenario (Figure 3). This decline stems from the reduced demand for high-value livestock and feed products, which are central to Greece's agricultural economy. Expected gains in plant-based production could not compensate for these losses, leading to net reductions in sectoral revenues.

Production costs decreased moderately under the MD, reflecting lower input requirements. However, these savings were insufficient to offset revenue declines, resulting in net negative outcomes for producers. The HYDRIA diet scenario, in contrast, generated higher production costs due to increased labor and pesticide use, despite similar environmental performance to FAO2020.

Figure 3: Change in Agricultural Production



Source: Authors' calculations

Employment impacts were particularly severe. The transition to the MD was associated with a 43 % drop in total agricultural jobs, with livestock employment halving. Although crop sector employment increased by 9.4 percent, this was insufficient to balance job losses in animal production. Such findings challenge assumptions that plant-forward transitions inherently support rural livelihoods and underscore the need for active labor market policies.

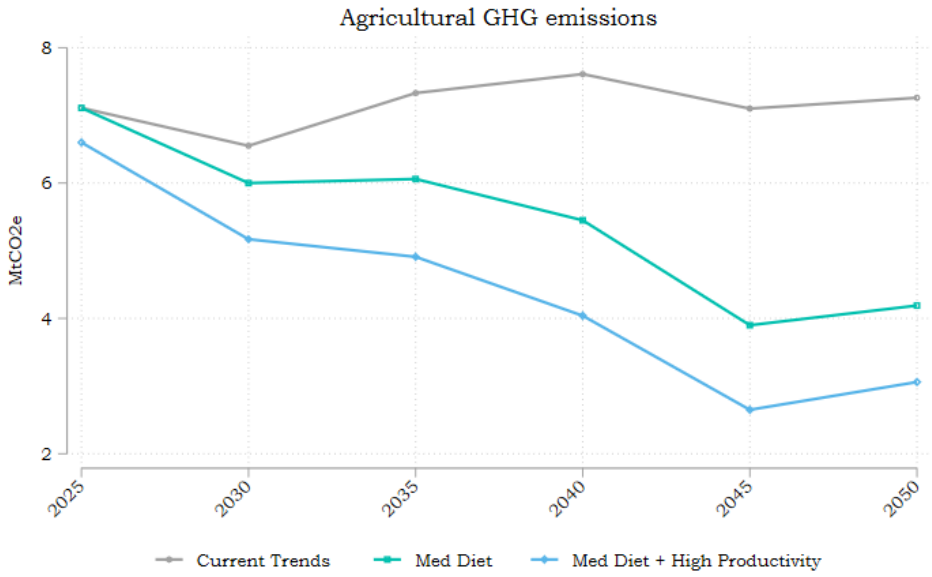
On the health front, the *MD* scenario delivers significant benefits. By reducing intake of saturated fats and processed foods and increasing consumption of fruits, vegetables, and legumes, the diet is associated with lower rates of obesity, cardiovascular disease, and diabetes. These improvements translate into reduced healthcare expenditures and enhanced quality of life, reinforcing the argument for dietary shifts as a public health strategy.

Enhancing Crop and Livestock Productivity

Whilst a shift towards healthier dietary patterns constitutes a potent demand lever for structural change in the Greek agri-food system, we enhance the analysis by considering advances in crop and livestock productivity. Specifically, we use the built-in scenarios of the FABLE Calculator to shift productivity in both sectors to the "high" scenario compared to maintaining the 2000-2010 average as implied in the FABLE Current Trends pathway (CT). All other variables are kept constant at their CT levels. For the livestock sector this shift generates a reversal of the negative average productivity growth of the 2000-2010 period except for milk from sheep and goats, whereby the 2000-2010 average of 1.42% is multiplied by a factor of 0.7. High productivity growth in the crop sector is associated with a closure of the yield gap of at least 80%, compared with stability in the CT pathway.

Adopting the supply-side reforms necessary to enhance crop and livestock productivity, which has been modest since the year 2000, contributes to a further reduction of GHG emissions from agricultural practices (Figure 4). This result highlights the synergies for different policy levers, as higher productivity further reduces the amount of land used for crop and livestock farming and leads to a substantial decrease in the use of fertilizers and pesticides along the way. By 2050, total agricultural emissions drop from 5.5 Mt of CO2e to 3.1 Mt under the combined scenario of Mediterranean diet and high productivity. This marks a 44% drop in emissions compared to almost 25% when the Mediterranean diet is used as the only lever in the mitigation strategy.

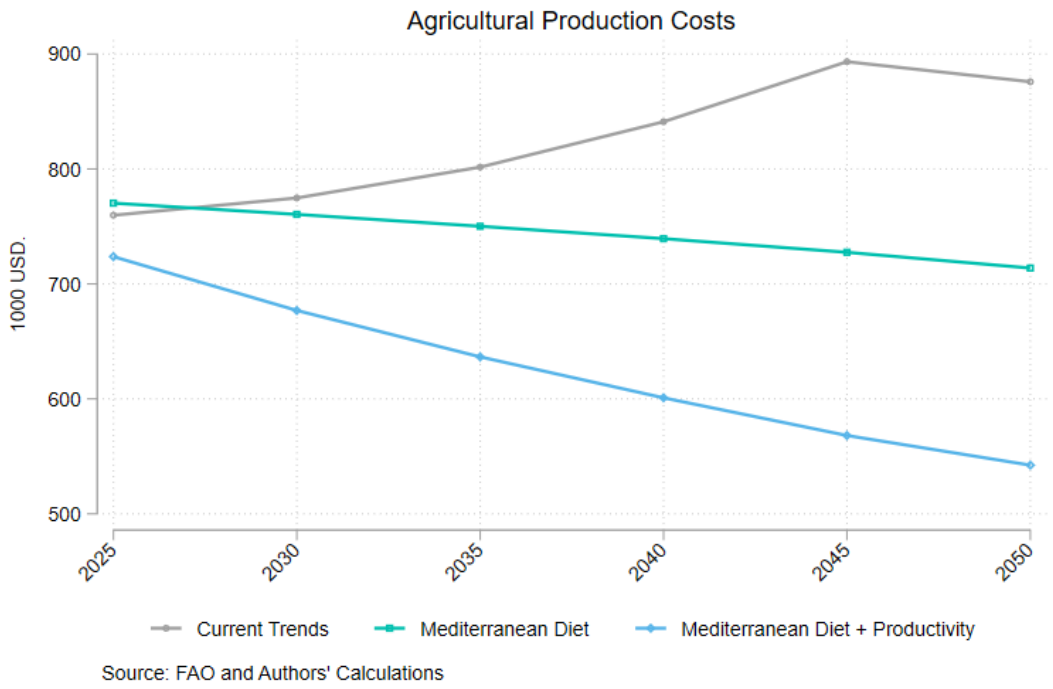
Figure 4: Agricultural Emissions Greece



Source: FAO and Auhors' Calculations

The inherent limitations of the FABLE calculator do not allow for a nuanced analysis regarding total agricultural production, as this is shaped completely by demand factors. In this case, changing our assumptions on productivity whilst keeping all demand-side factors (including diet) constant, yields no change in the value of production. Hence, an improvement in productivity under these circumstances further reduces the number and share of agricultural jobs in both the crop and livestock sector. Adding productivity enhancement results in a 44% drop in total agricultural employment by 2050 (compared to 2020 levels), exacerbating the 39% reduction observed in the MD scenario.

Figure 5: Production Costs



Commingling healthy dietary patterns with increases in agricultural productivity has a benign effect on production costs for farmers (Figure 5). Whilst changing the dietary patterns reduces total costs by 7% in the 2025-2050 interval, the productivity gains result in a 24% cost reduction over the same period. This result is mainly driven by the decline in labor costs, corroborating our findings on agricultural employment. Even though we cannot make integrated projections on farmers' revenues, this drop in cost can act as a buffer for the adverse effects on production, especially in the livestock sector.

Discussion

The findings reveal the multifaceted nature of the Mediterranean Diet transition, impacting environmental, health and economic dimensions. This is highlighted in a radar plot (Figure

6) that provides a holistic evaluation of how sustainable the adoption of the Mediterranean diet is relative to other dietary scenarios. We used the following five sustainability indicators available in the FABLE Calculator: Production quantity, percentage of jobs in the agricultural sector, percentage of land available for biodiversity conservation, GHG emissions (MtCO2e) and Caloric intake.

Environmentally and nutritionally, the Mediterranean diet constitutes an unambiguous improvement over current dietary trends (captured by the FAO2020 and HYDRIA dietary scenarios), offering a path toward lower emissions, restored ecosystems, and healthier populations. Economically, however, the picture is more complex, with substantial losses in production value and employment concentrated in livestock-dependent regions. Drops in production quantity are greater compared to the drop in percentage jobs in the agricultural sector.

Figure 6: Holistic Impact Assessment on dietary scenarios[2]

Source: Authors' elaborations

The radar plot thus summarizes two key aspects of the Mediterranean diet. The first is that the Mediterranean diet results in a "double dividend" – a simultaneous gain in health and

[2] Values for each indicator have been normalized. A larger area indicates more positive performance. (*Scale for GHG emissions have been reversed, so more GHG emissions indicate poorer performance).*

environmental outcomes. The second is that due to the socio-economic trade-offs, the Mediterranean diet on its own cannot support a sustainable transformation of the agri-food system in Greece. These benefits accrued from adopting the Mediterranean diet are unevenly distributed across stakeholders. Producers, especially livestock farmers, face income losses, while consumers benefit from improved health. Such asymmetries raise questions of equity and justice, suggesting that any transition strategy must incorporate compensatory mechanisms and targeted support.

Productivity enhancements may complement the Mediterranean diet and aid in mitigating these trade-offs. However, our scenario analysis has yield mixed results. Increases in crop and livestock productivity, achieved through technological adoption and efficiency improvements, deliver modest environmental gains and cost reductions. In addition, they exacerbate job displacement by reducing labor demand, potentially deepening social challenges. This indicates that technological fixes alone cannot resolve the systemic tensions between sustainability and livelihoods. On the supply side, agricultural policy must facilitate diversification, value chain adaptation, and access to new markets, particularly for plant-based proteins and traditional Mediterranean crops. Moreover, social protection measures—such as retraining programs, income support, and transition funds—are essential to ensure a just and inclusive shift.

More effort is also still needed on the demand side to foster adoption of the MedDiet and realize the health and environmental benefits. It is essential to formally incorporate this dietary pattern into the National Health Strategy. This involves interventions such as strengthening public engagement, rolling out education campaigns, and creating supportive food environments through school meal programs, sustainability labelling, and fiscal incentives. Public education campaigns should emphasize how this dietary transition benefits both individual health and climate change mitigation through reduced greenhouse gas emissions. These initiatives could draw lessons from successful models implemented in Canada, Denmark, and Finland. Consumer incentives play a crucial role in facilitating dietary change; comprehensive food labeling—particularly mandatory front-of-pack labeling systems—can improve consumers' awareness of nutritional content (Pineda et al., 2022). Additionally, supporting community gardens and urban farming as grassroots initiatives can improve access to fresh, locally grown food, which for Greece specifically can advance the Mediterranean diet transition and deliver the emission reductions outlined earlier (Cleveland et al., 2017).

As mentioned before, the national strategy to promote the Mediterranean Diet needs to be supported by measures that ensure no significant harm on agricultural income in the medium and long run. That said, the resulting decrease in agricultural output (particularly, though not solely, within the livestock industry) necessitates complementary policies to support farmers. These include the technological innovations discussed in this section aimed at enhancing productivity and crop yields. Coupling a dietary shift with supply-side measures enhancing productivity yields additional benefits in the mitigation front but

exacerbates the decline in agricultural jobs. Considering the limitations of our modelling tool, this implies that a horizontal positive productivity effect will probably not suffice in countering the adverse effects of lower demand for livestock products. Therefore, this can trigger strong resistance from vested interests and agricultural groups. The concomitant additional drop in agricultural costs is an indication of supply and demand-side synergies, especially given the high production costs facing Greek and EU farmers.

A national strategy to promote the Mediterranean Diet needs to be supported by measures that ensure no significant harm on agricultural income in the medium and long run. Equally, support must be extended to farmers and workers whose livelihoods are most at risk, embedding principles of equity and justice within the transformation agenda. Accompanying support measures targeting livestock producers, including supply-side interventions and fiscal policies, are crucial to mitigate potential conflicts and ensure the economic and political feasibility of this transition. The recent EU-level strategic dialogue on the Common Agricultural Policy (Strohschneider, 2024) proposes several promising directions, such as restructuring payment systems to prioritize support for low-income and young farmers and streamlining bureaucratic requirements to facilitate the adoption of environmentally sustainable farming practices.

Achieving this shift toward sustainability requires decisive policy intervention and extensive knowledge sharing among all stakeholders. Effective cooperation among government officials, industry representatives, and local communities is vital to accelerate the adoption of sustainable methods and technologies. Cultivating domestic innovation ecosystems and strengthening connections to international knowledge and technology networks will be critical for achieving productivity improvements that are particularly important for Greek agriculture. Priority actions include increasing investment in precision farming technologies, reinforcing Agricultural Knowledge and Innovation Systems (AKIS), and bolstering cooperative structures to achieve greater economies of scale. The Common Agricultural Policy (CAP) should emphasize financial instruments that enable sustainable transformations, including targeted capital support and incentives specifically designed for young farmers. Furthermore, comprehensive training programs are essential to equip farmers with the necessary expertise and resources to navigate this transition.

Conclusion

The shift toward the Mediterranean Diet offers Greece a powerful lever for transforming its agri-food system in alignment with environmental and health objectives. This study examined how a transition toward the Mediterranean Diet (MD) could transform Greece's agri-food system in environmental, economic, and social terms. Using the FABLE Calculator, an integrated modelling framework for exploring sustainable food and land-use pathways, we assessed alternative dietary and productivity scenarios to 2050. The analysis aimed to quantify whether shifting to the MD could deliver a "double dividend" of lower greenhouse gas (GHG) emissions and improved public health, while evaluating associated trade-offs for production and employment.

We revise the impact of transitioning the Greek population toward a Mediterranean diet—reversing trends observed over the past four decades—and identify substantial emission reductions resulting from decreased pastureland requirements and dramatic reductions in fertilizer and pesticide application. Our approach followed four main steps: (1) defining baseline parameters for Greece under the Current Trends pathway; (2) designing an additional Mediterranean Diet scenario reflecting recommended calorie and food group compositions; (3) testing the MD combined with high crop and livestock productivity improvements; and (4) embedding the MD within the broader National Commitments pathway aligned with EU sustainability goals. For comparison, a FatDiet and an Empirical (HYDRIA) diet scenario were also examined to illustrate the range of environmental and economic outcomes.

Modelled results demonstrate the potential for emission reductions of up to 25–45 % in the 2020-2050 interval, enhanced biodiversity through land sparing, and significant public health improvements. The decline in CH4 emissions from the livestock sector and the reduction in the area reserved as pastureland are the main drivers of this mitigating effect. Yet these benefits are counterbalanced by economic contractions and employment losses, revealing that dietary solutions, while necessary, are insufficient in isolation. However, the transition also brings economic and social challenges. Livestock production value and employment are projected to decline substantially, while gains in crop sectors are insufficient to offset these losses. Even when paired with higher agricultural productivity, job reductions persist, underscoring the need for complementary policies to support affected workers and regions.

The dual benefits for public health and climate action that would result from this dietary transformation, despite its divergence from present Greek consumption habits, justify its prominent inclusion in policy priorities. A successful transition will require an integrated approach that harmonizes demand-side behavior with supply-side reforms. Policies must incentivize sustainable production practices, create economic opportunities in plant-based sectors, and ensure that healthy foods remain affordable for all consumers. Ultimately, the Mediterranean Diet embodies not only a nutritional model but also a vision for regenerative growth—one that reconciles human well-being with planetary boundaries. Realizing its potential demands coordinated action across policy domains, scientific disciplines, and societal actors. Through such collaboration, Greece can reclaim its culinary heritage as a foundation for a resilient, inclusive, and sustainable future.

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