Περιφέρεια | Regional Integration: Politics, Economics, Governance

Τόμ. 18 (2024)

Περιφέρεια | Regional Integration: Politics, Economics, Governance: Addressing Climate Change in Turbulent Times

Ο κακοτράχαλος δρόμος προς την κλιματική ουδετερότη- τα και τη δίκαιη μετάβαση και η περίπτωση της Ελλάδας

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doi: 10.12681/ri.40699

Βιβλιογραφική αναφορά:

Δούση Ε. (2025). Ο κακοτράχαλος δρόμος προς την κλιματική ουδετερότη- τα και τη δίκαιη μετάβαση και η περίπτωση της Ελλάδας. *Περιφέρεια | Regional Integration: Politics, Economics, Governance*, *18*. https://doi.org/10.12681/ri.40699

Regional Integration | Issue 2024 (18), 59-79
Περιφέρεια | Τεύχος 2024 (18), 59-79

The bumpy road to climate neutrality and just transition and the case of Greece

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Abstract

This paper aims to present the state-of-the art of the Greek climate mitigation policy, map it in the context of the international and European legal and political framework and highlight the challenges ahead to achieve just transition and climate neutrality by 2050. It argues that in a world of increasing polarization and competition, the road to achieve these goals is not covered with roses. It will be smoother if it is combined with transformative and coordinated policies as well as strong societal support. Relevant stakeholders need to be effectively engaged in this process not simply through formal consultation processes but through an open and constructive social dialogue that will enable them to co-design sustainable solutions.

Keywords: Climate neutrality, just transition, European Green Deal, Greek national energy and climate plan, Greek national climate law

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Περίληψη

Το άρθρο αυτό στόχο έχει να παρουσιάσει την Ελληνική πολιτική για την αντιμετώπιση της κλιματικής αλλαγής, να τη χαρτογραφήσει στο διεθνές και Ευρωπαϊκό νομικό και πολιτικό πλαίσιο, καθώς και να αναδείξει τις προκλήσεις ως προς την επίτευξη των στόχων της δίκαιης μετάβασης και της κλιματικής ουδετερότητας έως το 2050. Υποστηρίζει ότι σε ένα κόσμο αυξανόμενης πόλωσης και ανταγωνισμού, η επίτευξη των κλιματικών στόχων δεν θα είναι εύκολη υπόθεση. Θα πετύχει μόνον αν συνδυαστεί με μεταρρυθμιστικές και συντονισμένες πολιτικές καθώς και υψηλό επίπεδο κοινωνικής στήριξης. Οι εμπλεκόμενοι φορείς θα πρέπει να συμμετέχουν σε αυτή τη διαδικασία όχι μόνο μέσω της τυπικής διαδικασίας διαβούλευσης αλλά μέσα από ένα ανοιχτό και εποικοδομητικό διάλογο που θα τους επιτρέπει να συν-διαμορφώνουν βιώσιμες λύσεις.

Λέξεις κλειδιά: Κλιματική ουδετερότητα, δίκαιη μετάβαση, Ευρωπαϊκή Πράσινη Συμφωνία, Εθνικό Σχέδιο για την Ενέργεια και το Κλίμα, Εθνικός Κλιματικός Νόμος

1. Introduction

Although Greece isn't historically a big contributor to the global warming, it is a country highly vulnerable to its impacts. Extreme weather events, wildfires, and floods, as well as slower environmental degradation, including sea level rise, droughts, and loss of biodiversity, continue to spread and intensify across the region. The Mediterranean is a climate change hotspot (Chandler, 2021) and it will be significantly drier in coming decades. It is a question of geography; being a big sea enclosed by continents impacts the pattern of air flow high in the atmosphere, creating a dry zone and warming up the land faster (Tuel & Eltahir, 2020, 14). Thus, intense heatwaves and devastating wildfires such as the ones we have witnessed during the last years, will be more frequent and intense in the future. The world's leading scientific authority on climate change, the Intergovernmental Panel on Climate Change (IPCC), warned that although major climate changes are unavoidable and irreversible, rapid, and drastic reductions in greenhouse gas emissions this decade can prevent further deterioration of our climate[1].

The European Union (EU) has committed to this direction and decided to further limit its emissions to 55% below 1990 levels by 2030 and to channel at least 30% of the global total expenditure of the Multiannual Financial Framework (MFF) and the Next Generation EU towards climate action. In December 2019, the EU launched an ambitious plan, the European Green Deal, which is the road map for sustainability in Europe, with the goal of making the continent climate neutral by 2050, that is zeroing its net greenhouse gas emissions[2]. This goal will be achieved by modernizing the economy through green technology, sustainable industry and transport while making the transition just and inclusive for all. A European Climate Law transformed the political target of climate neutrality into a legal obligation and regulated the next steps for the transition[3]. Moreover, an updated EU strategy on adaptation to climate change set out pathways to prepare for the inevitable impacts of climate change[4].

In line with those imperatives, Greece has taken further action to implement the coal (lignite) phase-out process, announced at the 2019 UN Climate Summit, few months before the launch of the European Green Deal. A Master Plan for

[1] IPCC (2021) Climate Change 2021. The Physical Science Basis. Summary for Policy Makers, https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf (accessed on 16/12/2024).

[2] Climate neutrality refers to the idea of achieving net zero greenhouse gas emissions by balancing those emissions, so they are equal to, or less than, the emissions removed. This can be achieved by carbon sequestration, i.e. by removing carbon from the atmosphere or through offsetting measures which involve supporting climate-oriented projects.

[3] Regulation establishing the framework for achieving climate neutrality and amending regulations (EC) n. 401/2009 and (EU) 2018/1991 (European Climate Law), June 2021.

[4] Forging a climate-resilient Europe – The new EU strategy on Adaptation to Climate Change, 24 February 202.

a Just Development Transition[5] providing for a set of emblematic investments for the post-lignite era has been elaborated. The Greek National Recovery and Resilience Plan[6] has made the green transition a top priority, and in May 2022 a National Climate Law was adopted. Furthermore, the updated version of the National Energy and Climate Plan sets ambitious new targets to cut emissions of greenhouse gases (58% by 2030, 80% by 2040, and complete neutrality by 2050 while ensuring full energy independence) and expand the use of renewable energy sources. But are these actions enough to meet the 2030 targets and achieve climate neutrality by 2050 while at the same time ensuring a just transition where no one will be left behind? Do they ensure public support, especially from the people, businesses and the regions directly affected and/or involved?

This paper aims to present the state-of-the art of the Greek climate mitigation policy developed so far[7], map it in the context of the international and European legal and policy framework and highlight the challenges ahead to achieve just transition and climate neutrality by 2050. It is constructed in three parts. The first part draws the bigger picture and the policy challenges which shaped international responses and national commitments to mitigate climate change. The second part discusses the European Green Deal, its main characteristics, as well as its limitations. The third part delves into the Greek responses, mainly the ongoing decarbonization process and the just transition plan to explore their impact on the regions involved. It argues that the road to climate neutrality and just transition is not covered with roses. It will be smoother if it is combined with transformative and coordinated policies. Relevant stakeholders need to be effectively engaged in this process not simply through formal consultation processes but through an open and constructive social dialogue that will enable them to co-design sustainable solutions. The paper concludes with some general remarks on the challenges ahead.

2. The international framework: From top-down to bottom-up approaches

Climate change is not a local or even regional but a global problem. However, its mitigation and effective management requires the cooperation of states with very different -and often contradicting- interests, priorities, capacities, levels of development, let alone greenhouse gas emissions profiles (Bodansky et al., 2017, 13). At the same time, the protection against climate change is linked to a global public good. The most difficult challenge in dealing with global public goods is how to ensure the participation of everyone in the effort, especially those who are most responsible for causing the problem and avoid free riding. In other words, it requires a common pace and a high degree of global coordination.

[5] Just Transition Development Plan of lignite areas, September 2020.
[6] Greece 2.0. National Recovery and Resilience Plan, May 2021.
[7] Although crucial to address climate change impacts, the climate change adaptation policy will not be discussed in this paper.

Yet, long delays have hindered the progress of international cooperation (see Table 1), even though the first international agreement tackling climate change -the 1992 UN Framework Convention on Climate Change[8] (UNFCCC)- has been widely accepted and signed by almost every country in the world: 197 States and the EU. This Convention recognized the importance of the problem and its connection to human activities; it further acknowledged the need for action to minimize climate change and mitigate its impacts but left the details of implementation to be settled later through negotiations within the framework of a mechanism created by the same convention, the so-called COPs, or Conference of the Parties to be convened every year. It also recognized that different contributions to climate change result in different economic responsibilities between developed and developing countries – the so-called principle of common but differentiated responsibilities which allowed for different standards.

For a long time, negotiations focused on lobbying over long-term targets to reduce emissions in developed countries. Negotiating over national targets proved so difficult that the attempt was abandoned after COP15 in Copenhagen (2009)[9].

Table 1: Evolution of the international climate change framework: from top-down to bottom-up approaches

UNFCCC 1992	Kyoto Protocol 1997	Paris Agreement 2015
• The contracting parties committed to achieve "*stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system*"	• The contracting **developed** countries committed to reduce their emissions.	• Both **developed and developing countries** committed to draft **national plans** to mitigate climate change and adapt to its impacts
• They didn't agree what sort of measures or timeframes. Step-by-step approach.	• Quantitative goals and timeframes	• Monitoring
• Establishment of the Conference of the Parties - **COP** - to meet every year.	• Monitoring and compliance mechanisms	• Regular updating
	• Sanctions in case of non-compliance	• Obligation of non regression
		• Procedural obligations

Source: Doussis (2024)

A very important step was taken in 2015, after repeated alarming appeals from the scientific community and both exhausting and exhaustive negotiations. Some common understanding was found and was reflected in the Paris Climate

[8] The United Nations Framework Convention on Climate Change was signed in 1992 and entered into force on 21 March 1994.

[9] For an interesting discussion on the failure to negotiate national mitigation targets at the international level see S. Sharpe (2023), p. 187.

Agreement[10] which complements the UNFCCC. This Agreement modified the original idea of setting targets at the international level and called on the states themselves to draft national plans for mitigation (Nationally Determined Contributions NDCs) and adaptation to the effects of climate change in order to address the impacts that cannot be avoided; and then communicate them in a manner that facilitates clarity, transparency and understanding. Additionally, with the Paris Agreement, states should review these policies regularly, under international supervision (see Table 2). In a nutshell, this is the institutional foundation of the Agreement, which puts all states on a common path to the gradual decoupling of national economies from fossil fuels. The long-term goal of the agreement being to limit the global temperature increase in this century to well below 2 degrees Celsius above preindustrial levels, while pursuing efforts to limit the increase to 1,5 degrees. To achieve this goal, parties should take measures to achieve climate neutrality, that is "a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gas emissions" according to the wording of the Agreement, in the second half of the century.

In other words, the Paris Agreement does not require specific cuts to greenhouse gas emissions as did the 1997 Kyoto Protocol, which was the first complementary to the UNFCCC agreement. Instead, it creates a system that requires all parties to come up with their own responses, then monitor their progress and continue ramping efforts. The idea behind this system is that states get to choose their level of ambition and the means of its achievement, in other words how they will achieve the self-determined targets. Others will do it with regulations, others by imposing a carbon tax, other by using the emissions trading system or a combination of these. There are two conditions, however, set by the agreement: the first is regular updating (at least every five years) and the second is an obligation of non-regression (they cannot go back). The Agreement provides a dynamic mechanism to take stock and strengthen the ambition over time.

[10] The Agreement was adopted on 12 December 2015 and entered into force on 4 November 2016.

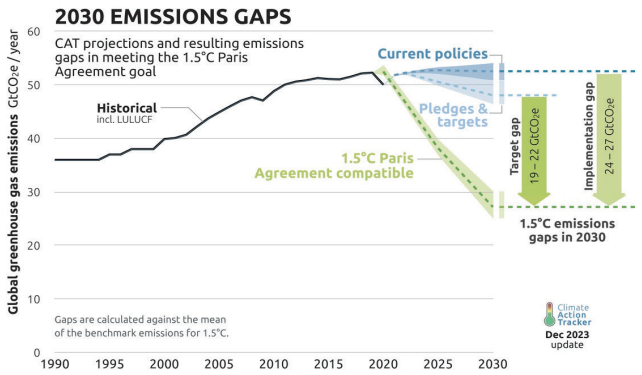
Table 2: the 2015 Paris Climate Agreement key provisions

- *Long-term temperature goal* (art. 2): to limit the increase in global average temperature to 2°C as compared with pre-industrial times and pursue efforts to limit the temperature increase to 1,5°C.
- *Global peaking and climate neutrality* (art. 4): To achieve this temperature goal parties should peak GHG emissions as soon as possible and then go down to undertake rapid reductions. Peaking will take longer for developing countries.
- *Mitigation* (art. 4): each party shall prepare, communicate and maintain a nationally determined contribution (NDC) and pursue domestic measures to achieve them. Parties shall communicate their NDCs every 5 years and provide information for clarity and transparency. Each successive NDC will represent a progression to the previous one and reflect the highest possible ambition.
- Parties will meet every five years to evaluate progress in emissions reductions, adaptation and support.
- *Adaptation* (art. 7): Parties will shape National Adaptation Plans to climate change.
- *Finance, technology and capacity-building su*pport (art. 9, 10 & 11)

Source: Doussis (2024)

Where do we stand today, ten years after the adoption of this landmark agreement? Climate change has become an issue of major public concern and governments seem to be more committed nowadays. However, the national commitments (NDCs) that states have submitted so far to the UN are not enough to avoid crossing over dangerous temperature thresholds (see Table 3).

Table 3: the world is not on track for a 1,5 C – aligned future



Source: Climate Action Tracker (2023)

In the COP 28, which took place in Dubai in 2023, one of the issues discussed was the global stocktake report. The global stocktake is a process for countries and stakeholders to see where they're collectively making progress towards meeting the goals of the Paris Agreement and where they're not. This report confirmed that we are not on track to limit global warming to 1,5 degrees Celsius. The window for meaningful change is closing and, thus, COP 28 was expected to achieve important decisions, concerning the fate of fossil fuels which is the main cause of the problem. Countries agreed to "transition away" from fossil fuels in a just, orderly and equitable manner to achieve net zero emissions by 2050 in keeping with the science[11]. They also agreed to triple renewable energy capacity and double energy efficiency by 2030. These targets remain in force. However, COP 28 failed to include a robust commitment to the phasing out of fossil fuels which is essential to limit global warming.

The COP 29, which concluded its work on 24 November 2024 in Baku, Azerbaijan (a country that produces and exports fossil fuels, as well as being the host country of the 2023 conference), had the main objective of reaching an economic agreement on the transition to clean energy and addressing the climate-related disasters in poorer countries that are most affected and least equipped to respond. An agreement was reached, but it falls short of expectations. Annual funding of $300 billion per year will be provided to developing countries by 2035, but trillions are needed. Global climate cooperation under the auspices of the United Nations, while important for maintaining a channel of communication, is neither a panacea nor a provider of substantial solutions for managing climate change.

Meanwhile, the upcoming assumption of the U.S. presidency by the most well-known climate change denier is not good news. Certainly, the circumstances are not the same as in 2016, when the same president withdrew U.S.A, the world's second-largest emitter, from the Paris Agreement. At that time, the biggest challenge was to convince the largest polluter, China, to make commitments to reduce harmful emissions. Today, while China still relies on coal as its primary energy source, it has invested heavily in expanding renewable energy, aspiring to become climate neutral by 2060 while maintaining high exports of materials essential for clean energy. Therefore, it also has an economic reason to support the green transition. India, which has risen to third place on the list of global polluters, is also heavily investing in renewables, has set ambitious targets for 2030 and leads global initiatives, such as the International Solar Alliance, to accelerate the deployment of solar energy technologies that will improve energy access and ensure energy security in participating countries.

Therefore, moving from Baku, three main challenges arise. The first is to persuade laggards to update their NDCs to be more ambitious than the previous versions to narrow the global emissions gap to a level compatible with the 1,5 degrees trajectory. The second priority is to ensure alignment of all financial flows with the goals of the Paris Agreement. The third challenge would be to accelerate

[11] Decision CMA.5, Outcome of the first global stocktake, 13 December 2023.

implementation of what has been agreed, including national climate plans for both mitigation and adaptation. It is equally important to strengthen the links between climate change and other agendas, including biodiversity and trade. Global governance in these areas should adapt with the Paris Climate Agreement temperature goal.

3. The European Green Deal: policy realities and political dilemmas

The European Union, which ranks fourth on the list of global polluters, has already achieved a substantial reduction in greenhouse gas emissions during the last decade, mainly due to a good performance of the commitments under the Kyoto protocol. It has further committed to limit its emissions at least 55% below 1990 levels by the end of the current decade (instead of by 40% which was the previous commitment). The European Green Deal is the EU's response to the implementation of the Paris Climate Agreement and the global call for robust measures, while transforming the European economy into climate neutral with no net greenhouse gas emissions in 2050.

The European Green Deal has multiple readings. The first one has an environmental dimension: it is a plan that attempts to protect, conserve, and enhance the climate and the EU's natural capital, while protecting the health and well-being of citizens from environmental related risks.

The second reading has an economic and a social connotation. The Green Deal aims to create a sustainable economic model, which at the same time strengthens the EU's energy autonomy. How will it be implemented? By giving a boost to green technology and development through a series of structural reforms ranging from the decarbonization of the energy sector and the promotion of green transport, to a circular economy and a new agreement on agriculture, among others. It is the beginning of a long journey that will take many years and all the reforms for the transformation of the economy should be done in a just way, especially for those who will be most affected, that is the workers and the local communities that have been trapped in polluting economic activities for decades and now should shift towards sustainable alternatives. To that end, a European Just Transition Mechanism has been set up to fund part of this effort and support EU regions most affected by the transition to a neutral carbon economy.

The European Green Deal has also a third reading, with an international dimension. If Europe becomes climate neutral by 2050, this is certainly not enough to save the planet since EU's emissions represent currently less than 10% of the world global greenhouse gas emissions. Giving the example, however, may lead other countries to follow in the same path[12]. Thus, the biggest challenge in this

[12] For an interesting overview concerning EU's leadership in climate change action see Parker, C.F., Karlsson, C., Hjerpe, M. (2017) "Assessing the European Union's Global Climate Change Leadership: From Copenhagen to the Paris Agreement", 39 Journal of European

context for the EU is to persuade other countries to follow suit, to create a large coalition for the transition to climate neutrality. The EU may facilitate this process by sharing best practices and by mobilizing its partnerships networks as well as its diplomatic capacity. It has done something similar before the Paris Agreement with positive results[13].

Despite the heightened politicization of the green transition ahead of the 2024 European elections, the European Union, remained committed to achieving the European Green Deal goal of achieving climate neutrality by 2050 (Bocquillon 2024). The 'Fit for 55 package' aiming to revise climate and energy legislation in a way that supports the objective of -55% reductions in EU greenhouse gas emissions by 2030 (an intermediate step towards the ultimate goal of climate neutrality by 2050), was originally composed of 13 legislative proposals, which were extended to 19. Until the 2024 European elections 18 out of the 19 proposals had been adopted[14] by the institutions. This legislation combines the strengthening of existing climate policies (application of the EU's emissions trading system to new sectors, increased use of renewable sources and greater energy efficiency) with new ones, such as a faster roll-out of low-emissions transport modes, measures to prevent carbon leakage (Carbon Border Adjustment Mechanism) and tools to preserve and grow natural carbon sinks. Moreover, a new Social Climate Fund has been created to support vulnerable households in energy or transport poverty, small companies and other vulnerable groups, meet the social and economic costs of the climate and energy transition. The Social Climate Fund will be mostly supplied by revenues from the new emissions trading system. The only proposal that hasn't been adopted yet concerns the revision of the Energy Taxation Directive to align energy taxation with the new EU's climate goal.

Having adopted most of the necessary legislation, attention now turns to implementation which requires Member States' cooperation to achieve the collective European goal. Implementation is far from easy given the great turmoil affecting Europe. It will only succeed if the net-zero carbon emission target is combined with Europe's economic transformation.

Therefore, two main concerns arise regarding the implementation of the European Green Deal. On the one hand, given the varied economic contexts of the Member States, any one-size-fits-all approach should be treated with caution. A balance should be found between the EU sustainable policies with the specific Member States needs and capacities. On the other hand, Member States should not use the European Green Deal as a top-down affair and blame the EU for national responsibilities. Member States should come up with their own decisions for tailor-made measures on how to achieve a common European climate goal.

Integration, 2.

[13] For further analysis see S. Oberthür, L. Groen "Explaining Goal Achievement in International Negotiations: The EU and the Paris Agreement on Climate Change", 25 Journal of European Public Policy, 2018, p. 5.

[14] For details see the Legislative Train Schedule for 'Fit for 55', https://www.europarl.europa.eu/legislative-train/package-fit-for-55 (accessed on 3/1/2025).

4. The decarbonization process in Greece: from laggard to leader?

Being a country directly affected by the impacts of climate change, Greece has every interest in advocating for robust measures and in supporting international and regional initiatives. Nowadays it is expected to align its development process with the imperatives of the European Green Deal, the new midterm and long-term climate targets, and implement the 'Fit for 55' legislation. But how does a country, considered so far as a 'laggard' in environmental policies (Sbragia 1996, Pridham 1996, Borzel 2005, Doussis 2011, Plimakis 2018, Gouglas 2024) get prepared to implement the transition to climate neutrality at a time when it is struggling to recover its economy from significant challenges, including the debt crisis, the bailout programmes and the COVID-19 pandemic?

Some of the key elements of this transition are:

- the strategic planning that will go beyond the limits of an electoral cycle;
- the bold financial support of the plan;
- the support of relevant stakeholders and society in general.

Significant steps have already been taken and a policy to deal with the climate crisis has gradually begun to take shape. According to the latest data provided to the UN[15], by 2022, Greece had reduced its greenhouse gas emissions by 24,69 below the 1990 levels. According to the sixth biannual report, submitted to the UN in December 2024, if emissions/removals from LULUCF[16] were to be included, then the decrease would be 28,31%[17]. Approximately half of the emissions derived from energy industries, while the contribution of transport, manufacturing industries, and construction has been also significant. Fossil fuels still dominate the energy sector, although renewables now contribute 41,8% to electricity production[18]. Emissions from agriculture that account for 10,19% of total emissions decreased approximately 24,25% compared to 1990 levels, mainly due to the reduction of N2O emissions from agricultural soils, because of the reduction in the use of synthetic nitrogen fertilizers and the increase of organic farming. Emissions from the waste sector, which account for 7,97% of the total emissions) increased by approximately 15,91% compared to 1990 levels, because of the increase of generated waste associated with living standards improvement.

The lignite phase-out process

The significant reduction of total greenhouse gas emissions in Greece is largely associated with the gradual withdrawal of lignite plans. Lignite was chosen

[15] Sixth Biennial Report under the UNFCCC (December 2024), available at https://unfccc.int/documents/645147 (accessed on 4/1/2025).
[16] LULUCF: Land Use, Land-Use Change and Forestry.
[17] Ibid, p. 3.
[18] Ibid, p. 2.

as the national energy source in the early 50s and has supported greatly the development of the economy and the electrification of the country for over seventy years (Vlassopoulos 2020)[19].

The decision to reduce the share of lignite in power generation and put a complete end to the operation of the lignite units and mines by 2028 -far earlier than other EU lignite producer countries[20]- was announced by the Greek Prime Minister in 2019. This landmark decision of rapid delignification has been further elaborated in the 2019 National Energy and Climate Plan, updated in 2024 which sets out priorities and policy measures to be attained by 2030. Among others, the new version of the Plan projects renewable electricity generation to reach 82% in 2030 in gross electricity consumption, with solar power becoming the main source of renewable electricity, and the share of wind power (including offshore windfarms) and installed capacity projected to double in 2030 compared to 2023. On decarbonization, the Plan outlines the importance of carbon removal technologies such as carbon capture and storage, while on the internal energy market the plan put forward major steps for interconnection. The plan sets higher objectives for improving energy efficiency for higher energy savings.

The rapid delignification is of great importance for improving the country's climate performance, especially considering that in the period between 1990-2017 lignite was responsible for 34% of greenhouse gas emissions coming from all sectors of the Greek economy combined[21]. It arose from the need to harmonize Greece's national energy and climate policy with the EU targets but also for economic reasons. Lignite mining and incineration was no longer profitable, following the revision of European ETS legislation which led to carbon emission allowance prices skyrocketing and subsidies being abolished. In fact, from January 2016 until June 2019 the Public Power Corporation (PPC) has accumulated net losses of 683 million euros just from the operation of its lignite units.

However, at the same time, this decision created a new status quo and significant challenges for the lignite-dependent regions, i.e. Western Macedonia (Ptolemais, Amyntaio and Florina) and the Peloponnese (Megalopolis), whose economies have revolved around lignite extraction for many decades. These areas are already facing problems, including long-term unemployment, poverty, lack of employment opportunities and skills' development (Doussis & Mantzaris, 2020). Further, they face issues of pollution and the restitution of mines and their surrounding environment after the closure of lignite plants. These problems take on a new dimension during the pandemic and the economic crisis that followed, the second serious economic crisis that the country has faced in recent

[19] For an historical overview of the evolution of the Greek energy sector see Vlassopoulos (2020).

[20] Currently, Germany, Poland and the Czech Republic are the main EU lignite producers. According to the German coal phase-out law, the use of coal to produce electricity will have to phase-out by 2038, while the early closure of lignite-fired power plants will be encouraged. The Czech Republic will also phase-out by 2038, while Poland committed to end coal production by 2049.

[21] This percentage was the third highest in the EU after Bulgaria and Poland.

years. Given the very short timeframe set by the Government for decarbonization, achieving the goal of a just transition becomes even more challenging to mitigate the effects for the regions involved.

Just transition: definition and examples

Just transition means restoring the jobs that will be lost through the elimination of polluting economic activities, while ensuring the long-term environmental and economic development of and for those areas that had based their economic survival in the former activities for decades, including mining and burning lignite[22]. In a nutshell, this is the mainstream conceptual core of just transition. The role of the state is crucial in all stages of the just transition process. State authorities should activate social dialogue with stakeholders and local communities; regulate the rules of climate, energy, and labor policy; and invest in infrastructure and social welfare, education and research and technology. In other words, to bring together the launch of appropriate measures to ensure a just outcome for those most affected.

How is a just transition achieved in practice? Just transition plans have been developed and implemented in several countries that had begun carbon phasing out at earlier points in time, for reasons not linked to climate change. In Germany, for example, North Rhine-Westphalia, an area dependent on carbon for many decades, has been transformed into a region that is now active and even pioneering in various fields such as biomedicine, environmental technology, research and education, and tourism, with an emphasis on industrial tourism. The Zollverein mine in Hesse was inscribed on the UNESCO World Heritage List in 2001 and has since become one of the most important industrial heritage sites in Europe. Central to this endeavour was strategic planning that went beyond the limits of an electoral cycle and provided generous financial support, and long-lasting policy measures. From 2007 to 2018, 17 billion euros were spent on voluntary retirement programs for older workers, training, and orientation programs for younger ones in order to move to other activities, as well as on the restoration of the environment and the renovation of industrial facilities. Most importantly, an extensive and systematic social dialogue with the participation of all stakeholders preceded any action.

Another example of a successful just transition approach is Denmark. The transition from coal to clean energy, mainly wind energy, began in the 1970s (Smith, 2017). Since then, Denmark has become an energy exporter, developing an internationally competitive wind industry (which includes companies such as Vestas -the world's second-largest wind turbine manufacturer- and the mostly state-owned Dong Energy, which undertakes renewable energy sources installation plans). Today, the wind industry in Denmark employs over 33.000 people. The active involvement of the stakeholders from the earliest stages of the transition was crucial. The role of the workers' unions was decisive as they had great

[22] For further analysis see B. Galgocs, Just Transition towards Environmentally Sustainable Economies and Societies for All, Policy brief, International Labour Organization, 2018.

influence over shaping public opinion and, consequently, political, and social consensus. It should, of course, be noted that trade unions in Denmark have been pro-environmental from the outset and have supported the renewable energy sources industry as they considered green jobs as the greatest opportunity to boost employment. The unions even launched a green think tank as a lever of pressure on the government for more ambitious energy and climate goals, which also acts as regular commentator on new proposals and initiatives in the field of addressing climate change and its impact on employment.

The Just Transition Development Master Plan and its impact on local society

Of course, Greece is not Germany or Denmark. Each country has its own special characteristics and, therefore, no single model can be applied in all areas where mining activity is nearing its end. Many factors significantly influence the transition process: the specific conditions in each region, the degree of dependence of the local economy on mining activities, the adaptability of businesses, the workforce and the local community; the quality and the outcome of social dialogue. Each case should be considered separately through a transition plan that takes the specific characteristics and conditions of the regions involved into account.

The Just Development Transition Plan of lignite areas, launched by the Greek government in September 2020, revolves around three main axes: employment protection, compensation of the socio-economic impact of the transition and energy self-efficiency of lignite areas and the country in large. It includes a long list of investments supporting clean energy, the development of new industrial activities such as the manufacturing of batteries and battery chargers, smart agricultural production, and sustainable tourism. According to the Plan, these investments will create jobs in both emerging and traditional sectors of the economy, while preserving the environment and ecological stability of the regions involved. They will be supported by horizontal actions such as digital infrastructure, rapid training and reskilling of human resources, and entrepreneurship guidance among others.

At this important crossroad in time, it is especially important to consider the views and interests of the inhabitants of the lignite-dependent areas regarding the decarbonization and the Just Development Transition Plan. After all, they will be the ones who will primarily benefit from a successful transition, or suffer the consequences of wrong choices, omissions and delays. Their active involvement in both the planning and implementation of the transition plan is a prerequisite for the success of transition, as the examples of best practices from other countries show. It is worth mentioning that this requirement is also provided by the new regulation on the European Just Transition Fund which will finance part of the efforts[23].

In order to investigate the views and attitudes of the locals in the lignite areas, a quantitative survey via a questionnaire over telephone interviews was coordinated by the National and Kapodistrian University of Athens – Department of

[23] Regulation 2021/1056 of 24 June 2021 establishing the Just Transition Fund, article 11.

Political Science and Public Administration in collaboration with the think tank The Green Tank and the financial support of DiaNEOsis. The sample consisted of 802 people, aged 17 and over, in the two lignite areas (Western Macedonia and Peloponnese) during the period between 21-29 October 2020, while the public consultation for the Just Development Transition Master Plan (expiring on November 10, 2020) was on-going. The survey was conducted by 18 researchers and 3 supervisors by MARC SA polling company.

The research showed that regarding the government's decision to completely phase-out lignite by 2028 itself, the respondents understood the importance of the decision for the protection of the environment and the climate (Doussis & Mantzaris, 2020). However, they did not seem to have fully grasped the economic and irreversible impasse in which the Greek lignite industry had fallen. Nor did they understand the connection between the two, since due to the high climate ambitions of the EU, the European legislation was revised, and the cost of emission rights increased. The soundness of the decision for a complete lignite phase-out is still a matter of public debate in these areas. A significant percentage of respondents believe that the decision towards Greece's coal phase-out was imposed by the EU and that the decision was taken to serve the interests of the fossil gas industry.

The decision to proceed with coal phase-out caused negative feelings in most of the citizens who took part in the survey, while even more people are particularly pessimistic about the future of local economies, the expected rise in unemployment and the migration of young people. This view is widespread and is not limited to citizens whose family or personal income is related to lignite activity. However, it is understandable given the great dependence of the two areas on lignite activity.

Undoubtedly, the transformation of local economies in the deeply lignite-dependent regions of the country is an objectively difficult task. But one possible interpretation of the extent of negative sentiment and pessimism about the future has to do with the fact that more than 13 months after the announcement of the plan for complete decarbonization, public debate in lignite areas continued to revolve around the soundness of this choice and the possibility of a reversal of this decision, rather than around the day-after the end of lignite. This is despite the fact that about one in two citizens of lignite areas characterize coal phase-out as an opportunity to change the local development model and that the majority of citizens seem to have a clear image of the most important sectors of the economy that need to be developed in the new era, regarding local economies and their road to sustainability, including promoting agricultural production and the development of clean energy and energy storage technologies as key priorities. The Just Development Transition Master Plan includes these areas but few citizens (well below 50%) were aware that the latter was under public consultation during the period of the survey and even fewer were aware of the key proposals it contained. It is no coincidence that only 85 comments were submitted in the public consultation that ended on 10 November 2020. Most

responses came from institutions (NGOs, think tanks) and other stakeholders, rather than individuals.

In addition, there was a lot of confusion about the amount of money available for the just transition of the lignite areas, which may have intensified the residents' worries about the prospects for the success of the transition. Further, confusion and ignorance prevailed as to the timing of the completion of the lignite phase-out process. More than a third of respondents said they did not know the exact date of the planned cessation of lignite activity.

The negative attitude of the citizens may also be related to the centrally controlled way in which the Plan was drafted. The government followed a top-down approach to drawing up the Plan with a limited number of informative and consultation events with local communities. The restrictions imposed by the pandemic on the organization of such events might have also affected the outcome.

The research outcomes highlight that the interviewed citizens are interested in the implementation of the Plan and show increased confidence in the regional authorities and the municipalities in comparison to the central government on the key issue of governance. This preference may also be related to the view of most respondents that the long delays and wrong choices that led to today's challenges are mainly the responsibility of governments and not local authorities. It is worth noting that the Greek Steering Committee for Decarbonization does not include representatives of the local municipalities involved.

Based on the findings of the research, a large and systematic information campaign is considered necessary for the citizens of the lignite areas regarding the proposals that have been submitted to the public debate for the development of economic activities as well as the clarification of the amount and source of resources. It is important for citizens to receive reliable and comprehensible information about the options available and to understand the prospects for the future.

At the same time, a substantive, comprehensive and constructive dialogue with the inhabitants of the lignite areas is imperative to be launched; one that is to be direct and not involve numerous committees that would inhibit its success. Discussions and constructive consultations on a local level should take place with representatives of other local productive forces, active in non-lignite-related economic activities. If this happens, it is very possible that the "anxiety" of the locals will be alleviated to a great degree, and that the latter will be able to see themselves as active participants in the project of the transition. By extension, the strengthening of sound initiatives of local communities for the creation of energy communities based on renewable sources can also contribute towards the same direction. Consequently, a boost in such schemes (citizen-led co-ops) could contribute to the transformation of the production model of lignite areas, without the latter losing their identity as energy hubs.

Central to success of any attempt to just transition is the establishment of a permanent, multi-stakeholder governance mechanism for the transition to the post-coal era, which will operate for many years after the completion of

the planning, regardless of political affiliations or pressure. This mechanism would and should allow the various actors involved in local communities and civil society to interact, collaborate, and participate in decision-making regarding the planning and implementation of the transition. Towards this goal, examples from the experience of other European countries might be of interest.

The 2021 National Recovery and Resilience Plan: Greece 2.0 and its 2023 update

Adequate financial support is another critical factor for a successful transition to climate neutrality. Greece has been allocated approximately €18,5 billion in grants from the EU Recovery Fund and the MFF to be disbursed by 2026, while it can also have access to additional resources. It is a significant amount of funding that offers a unique opportunity for the country to reorient its post-COVID 19 economy towards a development model that is sustainable, environmentally viable and socially inclusive (Vardakoulias, 2020).

In May 2021, the Greek government submitted a Recovery and Resilience Plan (RRP) to the European Commission, describing how it intends to use those funds. The green transition alone has secured €6,2 billion in grants, with an additional €9 billion in energy-related investment loans, supported by €3,7 billion from the RRF. This includes investments in upgrading the electricity network, clean technologies, and renewable energy sources, as well as a large program of energy efficiency renovation for buildings. Furthermore, the plan supports the development of local urban plans for strengthening the climate resilience of urban areas, a national reforestation program and a strategy to strengthen civil protection and disaster management systems, such as investments in flood mitigation.

Following the 2022 REPowerEU initiative, aiming to reduce the EU's dependence on Russian fossil fuels, Greece has revised its plan in August 2023, incorporating new investments and reforms under REPowerEU, including €795 million in EU funding and a request for an additional €5 billion in loans to meet high private sector demand. The updated plan prioritizes energy efficiency for households, businesses and public institutions; renewable energy storage and innovative projects such as biomethane, green hydrogen production, and carbon capture and storage technologies. It also includes land-use optimization for renewable energy development, increased grid capacity, and energy storage expansion.

The priority given to the green transition in the RRF, by securing 38% of its total allocation devoted to reforms and investments supporting climate-related objectives, is undoubtedly a very positive step towards the road to climate neutrality. It can accelerate the decarbonization process and support other necessary reforms to reorient the Greek economy towards sustainability. Its successful implementation can make Greece a pioneer in Europe and a best practice for other countries. It can also make Greece an important force to support the implementation of the EU "Fit for 55 package" and even a more assertive actor in Brussels.

Another initiative that should be mentioned is the establishment, in 2024, of the Decarbonization Fund for Islands by the Ministry of Environment and Energy in collaboration with DG Clima and the European Investment Bank. This new financing mechanism will use revenues from the auctioning of 25 million tons of unallocated CO_2 allowances. It will support the transition of non-interconnected islands to cleaner energy systems through projects ranging from hybrid renewable energy installations with storage, accelerated electrification and grid interconnection to infrastructure for electric vehicle charging. The fund will provide approximately €2,3 billion in funding from 2024 to 2030, with an estimated total expenditure of €5,6 billion depending on carbon prices.

The 2022 National Climate Law

In May 2022, a National Climate Law[24] has been adopted to better organize the transition to climate neutrality, focusing on those areas that need more coordination. The law provides the framework for the reduction of greenhouse gas emissions and achieve carbon neutrality by 2050, in line with the EU climate goals. Apart the goal of reducing greenhouse gas emissions at least 55% by 2030 compared to 1990 levels, it sets an interim target to reduce GHG emission 80% by 2040. Among others, the law provides the establishment, in 2024, of a five-year carbon budget for the most polluting sectors of the Greek economy, namely power production, industry, transportation, agriculture, buildings, forestry, waste and land use.

A central point is the coal phase-out, such as lignite in electricity production, by 2028. However, this target might be reconsidered in 2025, depending on security supplies.

The law determines that from 2023 specific corporations, such as banks, telecoms, power suppliers, water and waste utilities, logistic companies and retail businesses with over 500 employees, will need to submit annual reports for their carbon footprint of the previous year. It also includes important provisions about electric mobility, in particular for businesses. From 2024, at least a quarter of new private car leases acquired through leasing or purchase will be purely electric or hybrid electric vehicles. From 2026 all new taxis as well as one third of the new rental vehicles will be zero emission vehicles. Moreover, from 2030 new passenger and light commercial vehicles registered will be only zero emissions vehicles. New provisions for buildings are also included, such as the prohibition of installation of heating oil boilers from January 2025, while from 2030 only the sail of heating oil mixed with at least 30% by volume of renewable liquid fuels will be allowed.

By introducing this law, Greece followed the good example set by other countries inside and outside of the EU. Although they are not the same, these legal frameworks tend to draw on a set of common elements, including targets, carbon budgets, monitoring, public participation processes and scientific bodies. Certainly, there is still a lot to be done as the implementation of important

[24] Law 4936/ GG105 27/5/2022.

provisions is delayed, such as the obligation for municipal authorities to draw up five-year emission reduction plans due in March 2023. It is obvious that another way for central government to engage with local authorities is needed, rather than simply shifting responsibility to municipalities.

5. Conclusions: the way forward

Although significant steps have already been taken towards the implementation of the international and European climate goals, there are, however, several challenges and critical choices to be addressed in the near future. A very first challenge is how to replace the electricity that lignite provided so far. Will dependence from lignite be covered by renewable energy sources with energy storage technologies or by fossil gas which could lock the energy system in a high carbon intensity plan for many decades? A reconsideration of the national development plans in all economic sectors is needed to avoid wrong decisions (like those taken with lignite plants) and prevent investing in energy sources that will be deemed redundant or, even, useless in the long run, such as those related to (the projected) hydrocarbon extractions. These critical choices do not seem to be addressed in the updated version of the National Plan for Energy and Climate which considers fossil gas as "an increasingly important fuel in Greece"[25] (report p. 60) which has doubled its share in total final consumption over the last decade[26]. Most gas was imported from Russia, and Greece "is planning to improve the security of supply … by enhancing liquefied natural gas (LNG) imports and expanding its role as a gas hub for the South Eastern Europe gas market"[27] (ibid).

The NPEC considers the fossil gas as a 'transitional' energy source while it is ambigious on the time limit for the total phase out of fossil fuels. For instance, it is not mentioned how the ongoing hydrocarbon extraction programme (i.e. new fossil fuels extraction)[28] is compatible with the international obligation of "transitioning away" of fossil fuels as well as the European goal of achieving climate neutrality by 2050.

Another challenge relates to the implementation of the Just Development Transition Plan of the lignite areas and the restoration of their surrounding environment. Given the very short timeframe, the need for a successful delignification process as well as the restoration of the environment is imperative to mitigate the effects on the local economy and society. Closely related to this issue is to find ways to track private financial flows to increase climate finance

[25] Sixth Biennial Report under the UNFCCC (December 2024), p. 60, available at https://unfccc.int/documents/645147 (accessed on 6/1/2025).
[26] Ibid.
[27] Ibid.
[28] For further information, see Doussis et al. (2022), Hydrocarbon extraction vs offshore wind: can Greece become a green energy hub in the Mediterranean?, Policy paper, The Green Tank.

aiming at securing the just transition and other related climate goals. So far Greece's current emphasis is on tracking public financial flows associated with climate change[29].

Finally, the support of society is absolutely necessary. The transition to climate neutrality where no one will be left behind will fail if society is not effectively integrated in this effort. This can be achieved by building better bridges of communication between science, politics, and citizens. The coronavirus pandemic has been an indisputable lesson in the need of systematic, targeted, and official information in collaboration with science, and the same applies to climate change. There is a need to find a common language of communication to inform citizens as to why the transition to climate neutrality is necessary and to keep them "in the loop" regarding the dilemmas that arise in this process. Moreover, the government must explain that there are no "magic" solutions to address climate change, inform them about the opportunities and how citizens can contribute to this effort. The formal consultation process has shown its limits and it is time for new participatory and more inclusive arrangements to be provided to enable relevant stakeholders and citizens to co-design sustainable solutions.

What the coronavirus pandemic has shown is that there is a need to rely more on scientific knowledge for policymaking and legal frameworks. However, the implementation of the relevant decisions and legal frameworks presupposes the cooperation of society. To achieve the goal of climate neutrality, it is not enough for governments to take measures and the administration to be committed to the implementation of these objectives, nor the individual awareness of the private sector and organized civil society. The coordinated mobilization of all actors and citizens for the part that corresponds to each one is essential.

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