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Contrasting policy advisory systems for the energy transition: a comparative study of Portugal and Denmark

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Achieving climate goals requires robust systems for organizing policy advice. This paper investigates how Policy Advisory Systems (PAS) for renewable energy are structured in Portugal and Denmark. Using a qualitative comparative case study, the research analyses four PAS dimensions: declining state analytical capacity, politicization, externalization, and corporate capture. Findings reveal contrasting models: Portugal's centralized, politicized system vs. Denmark's institutionalized, participatory one. In addition, the study includes an in-depth analysis of the development of renewable energy communities in Portugal to examine how policy advisory dynamics operate in practice. The paper contributes to comparative public policy theory by demonstrating how sector-specific advisory structures reflect broader administrative traditions and influence the integration of energy justice and citizenship into policy outcomes.

KEYWORDS

energy transition, policy advisory systems, politicization, qualitative comparative case study, renewable energy

1 Introduction

Combating climate change requires the implementation of effective energy transition policy by national governments. In this context, it is crucial to understand who influences policy design and how decision-makers mobilize different forms of knowledge and expertise on the subject (Buylova et al., 2024). This article contributes to this purpose through a qualitative comparative case study of Portugal and Denmark. The overall guiding research question is: *"How is policy advice on renewable energy organized and mobilized in different European politico-administrative traditions?."* The objective is to identify patterns and variations across advisory systems in this policy area, shedding light on how different institutional arrangements influence the quality, diversity, and independence of policy advice in the context of the energy transition.

The research is guided by four interrelated hypotheses, developed from the literature on Policy Advisory System dynamics (Craft and Wilder, 2015): the decline of the state's analytical capacity to provide policy advice (Howlett, 2015); the increase in the politicization of advisory sources (Aucoin, 2012); the growing externalization of policy advice (Veselý, 2013); and finally, the policy advice capture by private corporate interests (Evans and Vesely, 2015).

Rather than treating these dynamics as analytically independent, this article conceptualizes state policy analytical capacity as the central explanatory variable shaping the organization of policy advice. More specifically, the study examines whether differences

in internal state capacity help explain variations in the politicization of advisory sources, the externalization of policy advice, and the risk of policy advice capture by private interests.

Although these hypotheses have been tested in previous studies (for examples, see Belyaeva, 2019; Veselý, 2013; Craft and Howlett, 2013), this article brings an innovative perspective by analyzing their interrelationship within the specific policy field of the energy transition through a comparative lens. Studies that examine PAS in the energy sector remain scarce, particularly in terms of how advisory dynamics shape the formulation and implementation of renewable energy policies.

The international comparison is justified by the notion that *"the policy advisory system in any country reflects the broader and deeper political-administrative social system within that country"* (Brans et al., 2022). In this sense, the article builds on the well-established assumption in the literature that national policy styles shape the structures and dynamics of policy advice (Howlett and Tosun, 2021). Classic conceptualizations of policy styles distinguish them along two main analytical dimensions: first, the propensity of governments to adopt anticipatory rather than reactive approaches to societal problem-solving; and second, the propensity to pursue consensus-building with societal interest groups vs. imposing decisions in the face of opposition (Richardson et al., 1982).

A comparative analysis of countries with distinct politico-administrative traditions and different policy styles thus makes it possible to understand how energy transition policy advice is shaped in different institutional contexts.

The selection of Portugal and Denmark is not arbitrary. This study follows a "diverse" case selection strategy, which involves choosing cases that vary maximally along relevant analytical dimensions, while maintaining a minimum level of comparability (Gerring, 2008). Given that policy advisory systems are influenced by national politico-administrative traditions, as well as policy styles, we selected Portugal, representing the Napoleonic tradition, with a more state-centric but capacity-constrained policy style, and Denmark, representing the Scandinavian tradition, with a corporatist–consensual policy style.

The Napoleonic tradition, typically associated with France, Portugal, Greece, Italy, and Spain (as well as many of their former colonies), is characterized by a state-centric conception of governance, a legalistic and formalistic view of public administration, and weak boundaries between the political and administrative layers of government (Peters, 2008).

With regard to policy style, the literature indicates that Portugal tends to follow a centralized and predominantly reactive model of policymaking (Sotiropoulos, 2022). Although formal consultation procedures are in place, stakeholder engagement is often uneven, with implications for the effective participation of more disadvantaged segments of civil society (Falanga and Ferrão, 2021). In addition, analytical capacity within the state remains comparatively limited, constraining strategic planning and rendering policy responses more reactive than anticipatory (Organisation for Economic Co-operation and Development, 2023).

In contrast, the Scandinavian tradition, present in Nordic countries such as Denmark, Finland, Iceland, Norway, and Sweden, is marked by administrative decentralization, a strong citizen orientation, and *"a long-standing system of integrated stakeholder participation in government"* (Lægreid, 2017). Beyond its consensual and participatory orientation, the Nordic policy style is also characterized by strong long-term planning capacities, supported by a high degree of administrative capacity and institutional continuity.

Although Portugal and Denmark follow different politico-administrative traditions and policy styles, the two countries present sufficient structural and policy-level similarities to justify a focused comparative analysis. Both operate within the multilevel governance framework of the European Union, which creates common regulatory pressures, shared energy and climate targets, and convergent policy instruments.

Both countries are therefore influenced by processes of Europeanization, understood as domestic changes inspired by the European Union. However, existing research indicates that while the EU has exerted a substantial influence on policy content across member states, particularly in highly regulated and strongly Europeanized domains such as environmental and energy policy, its impact on national policy structures and policy styles has been more limited and uneven (Jordan and Liefferink, 2004). Europeanization thus tends to interact with pre-existing administrative traditions and governance arrangements, generating patterns of adaptation that are mediated by national analytical capacities, institutional configurations, and established policy styles, rather than overriding them (Candel et al., 2021).

They are also medium-sized states in terms of population and territory, which affects the scale and configuration of advisory systems and the capacity of governments to mobilize expertise. Moreover, in both cases, energy transition has been framed as a strategic, cross-partisan commitment rather than a polarized political issue, which reduces ideological noise and allows the analysis to focus on the institutional, epistemic and procedural dimensions of policy advice instead of partisan contestation. These convergences create a controlled setting from which differences in advisory arrangements can be meaningfully interpreted rather than attributed to contextual noise.

Therefore, the comparison provides both theoretical and empirical value: theoretically, it enables mid-level theory building by exploring how distinct politico-administrative traditions influence advisory system design and function; empirically, it sheds light on how these differences manifest in the governance of energy transition, a policy area marked by technical complexity and competing interests. The article further incorporates an illustrative analysis of the Portuguese renewable energy communities policy, aimed at exploring how the identified policy advisory dynamics materialize within a concrete policy process.

The article is organized in sections, apart from this introduction. The next two sections deepen the literature review: first, by examining the theory of Policy Advisory Systems and their dynamics, also introducing the five research hypotheses; and then by exploring the case-selected policy field of renewable energy in Portugal and Denmark. Section 4 outlines the study's methodology, while Section 5 presents the main findings related to each hypothesis and the analysis of the development of renewable energy communities in Portugal. Finally, the last section offers the study's concluding remarks.

2 Policy advisory systems and their dynamics

Policy advice can be conceptualized as a communicative act involving the transmission of a message from a sender (typically referred to as the policy adviser) to a receiver (the policymaker or policy decision-maker), through a specific channel (Brans et al., 2022). Although the practice of advising rulers is as old as the very notion of government and administration, academic interest in this topic has been revitalized both theoretically and empirically by framing it as a system. This system consists of a broad network of actors, both inside and outside government, who produce and transmit information, knowledge, and evidence to support policymakers throughout the policy process (Halligan, 1995; Craft and Halligan, 2017).

One of the main contributions of the literature on policy advisory systems has been the recognition of the plurality of actors involved in providing policy advice. Several models have attempted to systematize the location of these actors. One such model, proposed by Brans et al. (2022) identifies three advisory arenas. The first one is the government arena, where key sources of advice include senior public servants, temporary and permanent public policy units, and ministerial cabinets.

Outside of government, the model identifies two additional arenas where policy advisers may be located. In the societal arena, we find private consultants, non-governmental organizations, organized interest groups, for example. In the academic arena, policy advice is provided by scientists and researchers working in universities or research institutions. At the intersections between the three arenas, we find spaces where actors from two or more domains engage.

In addition to conceptualizing the phenomenon and mapping the location of advisory actors, the literature on Policy Advisory Systems has also progressed in identifying their dynamics: how the actors involved and the relationships among them evolve over time (Craft and Howlett, 2013).

A first important strand of literature concerns the concept of policy analytical capacity, which broadly refers to *"the ability of an organization to produce valuable policy-relevant research and analysis on topics of their choosing"* (Oliphant and Howlett, 2010). Studies from the last decades have identified a trend of declining analytical capacity within state organizations, weakening the ability of these institutions to produce and deliver high-quality policy advice to decision-makers, particularly as a consequence of public service reforms (Aucoin and Bakvis, 2005; Capano et al., 2023).

In Portugal, the past two decades have witnessed a series of administrative reforms primarily driven by the need to reduce the public deficit (Bilhim, 2021). As a result of these adjustment programs, the central government cut the number of administrative structures by 50% (Madureira et al., 2013). In Denmark, New Public Management-inspired reforms were implemented mainly during the decade of liberal-conservative government between 2001 and 2011 (Pedersen and Löfgren, 2012). However, these authors argue that these reforms did not substantially alter the universalist and public character of the Danish welfare state.

In this article, we hypothesize that state policy analytical capacity constitutes the central explanatory variable underlying the dynamics of policy advisory systems, shaping both their configuration and functioning. A decline in analytical capacity, such as that identified in the literature for the Portuguese case, is expected to trigger a series of interconnected dynamics, including an increased reliance on politicized forms of advice and a greater tendency toward the externalization of policy advisory functions.

In the case of politicization, the concept encompasses multiple analytical dimensions. A more limited understanding, widely adopted in the policy advisory systems literature, defines politicization as an increased reliance on partisan and politically driven sources of information in governmental decision-making, particularly on political appointees, to the detriment of analyses produced by permanent public officials (Bauer and Ege, 2012; Craft and Howlett, 2013; Hussain et al., 2023).

A broader perspective, however, challenges the distinction between technical and political advice. They argue that expert knowledge may be politically mobilized to advance specific agendas or justify pre-existing preferences. Therefore, technical advice is not inherently neutral. As a result, politicization extends beyond the institutional location of advisers and encompasses the content and use of policy advice, regardless of whether it is produced by political appointees, external consultants, or career civil servants (Boswell, 2009; Daviter, 2015; Parkhurst, 2017).

While acknowledging the relevance of this broader conceptualization, this article adopts the more restrictive definition of politicization. This choice is made for analytical clarity and comparability with a significant portion of the existing literature on policy advisory systems, which operationalizes politicization primarily in terms of the growing prominence of politically appointed advisers within government. Nonetheless, the broader perspective informs our interpretation of empirical findings, particularly in cases where ostensibly technical forms of advice may carry implicit political orientations.

In Portugal, as in other countries with a Napoleonic administrative tradition, there is a strong culture of political appointments to public administration positions (Di Mascio and Natalini, 2013; Nunes, 2023; Silva, 2017). In the case of Denmark, which is similar to other Nordic countries, there is a historical legacy of low levels of patronage, supported by a well-established merit-based civil service system within central government bureaucracies (Bach, 2025).

Building on this distinction, we hypothesize that declining state analytical capacity may contribute to higher levels of politicization within policy advisory systems, by increasing policymakers' reliance on politically appointed advisers at the expense of advice produced by permanent public administration bodies. As internal technical resources become more limited, decision-makers are more likely to turn to trusted, politically embedded sources of advice, reinforcing the prominence of ministerial cabinets and other discretionary advisory structures.

Additionally, a decline in state analytical capacity may also affect another key dynamic of policy advisory systems, widely recognized in the second wave of PAS research: the externalization of policy advice. This phenomenon is defined as the *"relocation of advisory activities previously performed inside government organizations to places outside of government"* (Veselý, 2013). In Westminster systems, externalization has been viewed as a

consequence of declining civil service capacity and is often associated with the marketization of policy advice, marked by a significant increase in the outsourcing of policy design and analysis to private consultancy firms (Raudla, 2013; Saint-Martin, 2017).

In the United Kingdom, for example, the central government increased its spending on consultancies by 33% between 2003 and 2006 (National Audit Office, 2006). Perl and White (2002) observed a 647% increase in the Canadian federal government's spending on budget lines classified as "Other professional services" (traditionally associated with external consulting firms) over a 20-year period.

In Portugal, Feio (2020) notes that during the troika period, particularly with the PREMAC (Plan for Reducing and Improving the Central Administration of the State), the proportion of jobs in Central Administration relative to the total in all levels of public administration fell by around 10% between 2011 and 2015, with only a modest recovery in subsequent years. The extent to which this internal capacity has been replaced by external policy advice in the country remains unclear.

As for Denmark, Laage-Thomsen (2022) illustrated how policy consultants have gained increasing influence within the Danish public administration, spreading policy ideas and acting as knowledge brokers. However, the author notes that rather than replacing public servants, consultants are primarily used to support and complement the work of civil servants, creating external networks and relationships that enhance the performance of the public administration.

It is important to emphasize that, although there is a growing body of research examining the participation of consultants and other external actors in the policy process in both Portugal and Denmark (Toke and Nielsen, 2015; Simões, 2022), far fewer studies have specifically addressed the substitution of internal public-sector advisory functions by external providers of policy advice. This distinction is analytically important because it moves beyond the mere presence of external actors in policymaking and focuses instead on what Veselý (2013) defines as a process in which "policy advice is outsourced by the government and internal advisory institutions are privatized, that is, the external PAS replaces the internal PAS".

The lack of studies investigating the theory of policy advice externalization in both Napoleonic administrative systems, such as those in Southern Europe, or in Nordic countries, points to a possible "Westminster bias" in research on this topic (Hustedt, 2019).

In this article, we hypothesize that changes in state analytical capacity directly shape the degree of policy advice externalization. More specifically, a decline in internal analytical capacity is expected to increase reliance on external sources of expertise, as governments seek to compensate for reduced in-house resources by transferring advisory functions to actors located outside the state. Under these conditions, externalization may emerge as a structural response to weakened state capacity.

Finally, a fifth strand of literature addresses the risk of policy advice capture by private interests. It concerns the capture of policy advice by private interests within specific policy domains, which refers to unequal access to policy advice channels and mechanisms, resulting in non-inclusive policymaking and, ultimately, policy decisions that favor particular private interests (Organisation for Economic Co-operation and Development, 2017).

In Portugal, Coroado (2020) investigated the risks of capture faced by the country's independent regulatory agencies from external stakeholders and concluded that these risks vary significantly across sectors, with the financial sector being the area where business group influence is most visible. The author also warns, however, that the influence of industry actors is often indirect, particularly in sectors that were formerly state monopolies, such as energy and telecommunications.

In Denmark, indicators of participatory public governance and public sector anti-corruption controls rank among the most advanced in the world (Transparency International, 2025). The literature suggests that this successful control is the result of Denmark's historical state-building process, characterized by the existence of a professional, well-compensated, and merit-based public bureaucracy, combined with robust auditing and regulatory systems (Mungiu-Pippidi, 2013; Johnston, 2015).

With regard to the risk of policy advice capture, the level of state analytical capacity may also constitute an important explanatory variable. When public institutions lack the technical expertise necessary to independently assess policy proposals, governments become more dependent on information produced by external actors. Under these conditions, well-resourced private organizations are often better positioned to supply specialized knowledge and maintain continuous access to decision-makers, thereby increasing their influence over advisory processes. As a result, weaker internal state capacity can reduce the government's ability to critically filter competing inputs, creating more favorable conditions for the disproportionate influence of particular private interests.

Based on this body of literature, the present study conceptualizes state policy analytical capacity as the central explanatory variable shaping the dynamics of policy advisory systems in the renewable energy sector. Rather than treating each advisory dynamic as analytically independent, the article examines how variations in internal state capacity influence broader patterns of policy advice across the two cases.

- Policy analytical capacity hypothesis: The first hypothesis proposes that the analytical capacity of Portuguese public administration bodies has declined over the past decades, whereas Danish public institutions have maintained comparatively stronger internal capacities for policy analysis and advice. This variation in state capacity is expected to produce important consequences for the organization of policy advice.
- Politicization hypothesis: Portugal's lower levels of state analytical capacity are associated with higher levels of politicization of policy advice, a pattern that is not observed in Denmark.
- Externalization hypothesis: Portugal's declining analytical capacity also increases the likelihood of policy advice externalization, which is not observed in Denmark.
- Policy advice capture hypothesis: Access to policy advice channels and levels of interaction with policymakers are

substantially unequal among Portuguese interest groups, revealing a process of policy advice capture by specific private interests, a phenomenon that is institutionally controlled in Denmark.

3 Renewable energy policies in Portugal and Denmark

This section provides a brief overview of the literature regarding the case study selected for analysis: the renewable energy policy sector in Portugal and Denmark.

3.1 Renewable energy policies in Portugal

Since the early 2000s, there has been a relative consensus among Portugal's major political parties on the need to advance the energy transition and pursue economic decarbonization (Delicado and Truninger, 2015). The first true wave of renewable energy expansion in the country came in the beginning of this century, following the launch of the E4 Program, which can be considered Portugal's first energy plan to prioritize decarbonization. This program marked the start of two key public policies for incentivizing investment in the Portuguese renewable sector: feed-in tariffs and public auctions.

The first operates as state-backed guarantees to renewable energy producers, ensuring they can sell the electricity they generate at fixed, above-market prices over long-term periods (Amorim et al., 2013). As for the auction system, the state offers public tenders allocating grid injection capacity for renewable energy projects, which allows investors to secure predictable revenues, while enabling the state to better plan renewable energy integration into the grid (Ferreira, 2025).

One of the main criticisms of the energy transition model adopted by Portugal is the country's heavy reliance on large-scale private sector investments, which undermines the participatory and bottom-up nature of the energy transition, effectively reducing citizens to mere consumers and passive agents of change, who often perceive more costs than benefits in the process (Carvalho et al., 2022).

Despite the critiques surrounding its political-economic model, Portugal's energy transition has yielded important quantitative outcomes. In the electricity sector in particular, the share of renewable sources rose from 27.7% in 2005 to 63% in 2023. In terms of gross final energy consumption, the country advanced from 19.2% in 2004 to 35.2% in 2023 (ADENE and DGEG, 2025). According to Eurostat, in 2024, Portugal ranked seventh among the 27 European Union member states in terms of overall share of energy from renewable sources.

3.2 Renewable energy policies in Denmark

Denmark is widely regarded as a pioneer in the adoption of renewable energy and is often cited as a case of successful transformation from an energy matrix highly dependent on imported fossil fuels to one of partial self-sufficiency with a substantial share of renewables (Meyer, 2013). Between 1990 and 2023, renewable energy production in Denmark increased by 391%, and its share of gross energy consumption rose from 5.8% to 45.9%—the third highest in the European Union (Danish Energy Agency, 2023; Eurostat, 2024).

A striking feature of Denmark's energy transition is its participatory character. By 2001, around 80% of the country's total wind turbines were owned by households (2001). Denmark's long-standing cooperative tradition strongly influenced this bottom-up development of the renewables sector (Meyer, 2007). As early as 1979, individual and cooperative investments in renewables were granted tax exemptions and the 1981 Energy Plan set long-term targets for community wind projects (Mey and Diesendorf, 2018).

Denmark has also implemented a broad array of public policies to incentivize the renewables market. These include technology-neutral procurement and public auctions for renewables, support schemes to promote renewable energy installations on rooftops and other built surfaces, public auctions for offshore wind using contract-for-difference premiums, and pay-out schemes to compensate local residents and municipalities hosting renewable energy projects (International Energy Agency, 2023).

More recently, new and more ambitious climate targets agreements were forged among Denmark's political parties. Notably, the 2022 agreement set targets for a fourfold increase in onshore wind and solar PV generation and a fivefold increase in offshore wind capacity by 2030. For 2050, the country has set the goal of becoming entirely free from fossil fuel-based energy.

4 Methodology

This study is designed as a Qualitative Comparative Case Study. This method *"is viewed as a valid form of inquiry to explore a broad scope of complex issues, particularly when human behavior and social interactions are central to understanding topics of interest"* (Harrison et al., 2017). As such, the methodology is well suited to this research topic and guiding question, given that policy advice is inherently relational and behavioral in nature, involving numerous variables that shape the dynamics under analysis and making it a highly complex phenomenon.

In this study, we used the technique of diverse case selection, which seeks to choose cases that maximize variation on the key variables of interest—here, the distinct politico-administrative traditions and policy advice dynamics identified in the literature. Accordingly, we selected Portugal and Denmark as the two cases for analysis, as typical examples of two contrasting politico-administrative traditions (Napoleonic in the first case and Scandinavian in the second), with theory-driven expectations of variation in the dynamics of policy advice.

We used multiple sources of data and methods to test the five hypotheses. First, we conducted 32 interviews with stakeholders—12 from Denmark and 20 from Portugal—including policymakers such as former ministers and former secretaries of state, as well as policy advisers from across the three arenas of the Policy Advisory System, including academics, ministerial advisers, senior bureaucratic leaders, lobby representatives, and environmental

organization leaders. The interviews were transcribed and coded using MaxQDA, applying a content analysis approach.

The study employs a deductive analysis approach, comparing the collected evidence with the theoretical expectations formulated for each hypothesis, thereby identifying potential refinements to the theory as a consequence of empirical findings (Ashworth et al., 2019). The following section presents the main findings of the study.

5 Results and discussion

5.1 Comparative analysis of the policy analytical capacity of state institutions

Regarding the first research hypothesis on the policy analytical capacity of state institutions, the contrast between the two countries is particularly striking. In Portugal, interviewees were nearly unanimous in affirming a decline in the capacity of state institutions to provide policy advice in the field of renewable energy. From the perspective of policymakers, the entity that most clearly illustrates this trend is the Directorate-General for Energy and Geology (DGEG), the public administration service responsible for the formulation, promotion, and evaluation of energy policy.

"Although I relied heavily on DGEG, I had to dismiss their input on many matters due to a lack of technical capacity (...). DGEG lacked the technical expertise to produce qualified legislation and support the political leadership" [Interview with a former senior government official in the Portuguese energy sector #1].

This current lack of technical capacity to draft legislation and propose policy improvements is the result of a chronic reduction in human and financial resources over the past decades. This decline stems from the gradual retirement of staff without replacement, combined with an increasing burden of responsibilities. Administrative reforms implemented since the early 2000s focused on efficiency gains and cost-cutting have had a major impact on the institution's structure. Throughout two decades, no public hiring competitions were held for DGEG, increasing its reliance on temporary workers.

Simultaneously, the privatization of Portugal's energy sector since the 1990s created a significant wage gap between public and private professionals, undermining the public sector's ability to attract and retain qualified personnel:

"40 years ago, an engineer or a lawyer in the energy sector, whether working at the Directorate-General for Energy, EDP, REN, or Galp, would have had more or less the same salary. (...) Today, the salary of an engineer at EDP, Galp, or REN, compared to that of an engineer at the Directorate-General for Energy, is three to four times higher" [Interview with a former senior government official in the Portuguese energy sector #2].

This long process of institutional weakening has gradually pushed the public sector away from strategic aspects of policymaking and confined its role to bureaucratic tasks.

By contrast, in Denmark, interviewees consistently reported that the state's policy advisory capacity in the energy sector is perceived as solid, well-structured, and preserved. Respondents emphasized that the Danish Energy Agency (DEA), a specialist agency under the Ministry of Climate, Energy and Utilities, plays a highly influential and technically robust role in shaping public policy. Its ability to attract and retain talent, its sound budgetary situation, and its central role in the country's energy transition help explain the agency's sustained advisory capacity:

"I would not say that it [the lack of policy analytical capacity] is a big problem at this point. I actually find that the Danish state institutions are pretty strong in terms of competency. Certainly, the Danish Energy Agency is pretty strong (...)" [Interview with a former senior government official in the Danish energy sector #2].

"I would get the specific calculations from them [Danish Energy Agency], they were instrumental in operationalize ideas. (...) they would help me in formulating or executing policy, but they would also be the ones who came in with the new information to say we have problems or we have opportunities" [Interview with a former senior government official in the Danish energy sector #3].

Since its creation, the DEA has changed ministerial oversight at times, but it has never been merged with other government departments and has maintained a steady growth in staffing. Today, the agency employs around 500 people—nearly twice the number of staff at Portugal's Directorate-General for Energy and Geology. Although there is competition with the private sector for the "best minds" in the field, particularly given the state's less competitive salaries, Danish public service continues to offer non-monetary advantages that make it attractive, such as better work-life balance and the intrinsic motivation of contributing to the public good.

"Of course, it's always nice to have more resources. But I think, actually, over the last five years, we've been really well staffed, and I think we've had the capacity to do what we needed to do" [Interview with a senior government official in the Danish energy sector].

Overall, the evidence collected supports the first hypothesis of this investigation. The policy analytical capacity of Portugal's public administration bodies in the energy field has experienced a gradual decline over the past decades. As a consequence, these entities have been progressively distanced from strategic policy advising roles and relegated to more administrative and implementation-focused functions. In contrast, as hypothesized, Denmark's core public administration in the energy sector, represented by the Danish Energy Agency, has maintained a central and influential role in shaping the country's energy transition.

5.2 Comparative analysis of the policy advice politicization and externalization

Regarding the hypothesis of politicization of the policy advice function, which, as detailed in section 2, we define as an increasing reliance on political advisers to the detriment of permanent public administrators, the comparative scenario appears somewhat less ambiguous. In the case of Portugal, the erosion of the technical capacity of public administration bodies in the energy sector has led Ministers and Secretaries of State to increasingly rely on their personal cabinets for the formulation of public policy. These cabinets, composed through discretionary appointments, have gradually grown in importance in the provision of policy advice on renewable energy in the country.

"I initially tried to involve DGEG in drafting proposals, but the quality of the work was so poor that I had to centralize everything in my office" [Interview with a former senior government official in the Portuguese energy sector #1].

"The public entities whose role is supposed to be supporting public policy were of no help. (...) So who did I have? My own office, and interactions with the Regulator Authority" [Interview with a former senior government official in the Portuguese energy sector #2].

Our analysis of the composition of these cabinets between 2011 and 2023 reveals that the great majority of their members did not have formal political party affiliation, and 57% were career civil servants, many of them previously employed in public institutions within the energy sector. Additionally, prior professional experience in the private sector was common (75% of cabinet members), while academic backgrounds were less prominent, accounting for under 20%.

Overall, we find that the composition of these political offices reflects a more technical than political logic in Portugal. Nonetheless, it is important to note that the political nature of these appointments inherently limits the independence of advisers, who may be dismissed at any time and without justification. A constraint that would not apply to permanent public administration bodies. This is one of the reasons behind the sense of technical mistrust observed among permanent civil servants toward the work produced by cabinet advisers appointed by political discretion.

In Denmark, by contrast, the findings are far more clear-cut. The long-standing institutional separation between political and administrative elites, documented in the literature, is confirmed in the case of renewable energy policy. Ministers have very limited discretionary appointment powers, usually restricted to two or three special advisers, and depend heavily on the merit-based permanent staff of the ministries. The position of Permanent Secretary, equivalent to a Secretary of State, is filled through internal selection processes among career civil servants.

"The Danish administration is like an hourglass where you have political level on top and you have the administration at the bottom and the point where those two meet, that's the minister on the political side and it's the permanent secretary on the public sector side" [Interview with a former senior government official in the Danish energy sector #3].

This creates a clearly defined boundary between the spaces of political decision and technical advice, leaving little room for political interference in the substance of policy analysis and recommendations, which remains under the control of autonomous public servants.

The comparison thus reveals two markedly different systems, confirming our hypothesis. In Portugal, the decline in the analytical capacity of public entities has led to the centralization of the policy advice function within the personal offices of Ministers and Secretaries of State. Even though the composition of these political cabinets was predominantly technical, at least during the period analyzed (2011–2023), this arrangement still raises important questions about the limits of adviser neutrality, since these positions are subject to political appointment and dismissal at will.

In Denmark, by contrast, the boundaries between political and administrative functions are clearly defined, and technical policy advice is delivered by the administrative branch of the system. Political decision-makers have very limited scope for discretionary appointments, and the entire process is considerably more institutionalized: macro-level decisions are made by ministers in coalition with parliamentary parties, while the technical formulation of policies is carried out by the permanent staff of ministries and public agencies, whose continuity is preserved regardless of the governing party.

This brings us to the third research hypothesis, concerning the externalization of policy advice, defined here as the transfer of policy analysis functions from internal state structures to external organizations, such as legal and management consultancies.

However, the empirical evidence provides only limited support the hypothesis of externalization. In Portugal, where a stronger reliance on external actors might have been expected, and in Denmark, where limited externalization was anticipated, interviewees, interviewees reported that outsourcing within the energy sector is limited to auxiliary functions such as information technology and does not extend to core activities of public policy support, such as the production of reports or analytical studies. These findings suggest that, while external actors play a relevant role in other dimensions of policy advice (as will be presented in the following section), externalization in the strict sense of outsourcing substantive analytical tasks remains constrained in both contexts.

5.3 Comparative analysis of the policy advice capture by corporate interests

Finally, we examined the hypothesis of capture of policy advice by private interests in the renewable energy sector, understood here as the exclusion of certain social groups from the advisory process in favor of specific interest groups or individuals. The evidence collected strongly supports the hypothesis that, in Portugal, there is a structural inequality among interest groups in terms of access to advisory channels and levels of interaction with policymakers.

Although public consultation mechanisms exist to gather input from various civil society actors, these are widely perceived as ineffective or symbolic. In practice, the most direct, continuous, and influential channels of policy advice transmission between societal actors and decision-makers, in Portugal, are dominated by private renewable energy companies and their representatives. These actors enjoy multiple channels of access, solid technical expertise, and sustained presence at different stages of the decision-making process. In contrast, environmental civil society organizations, renewable energy cooperatives and local communities affected by renewable investments face significant barriers to accessing policymakers, and their participation tends to be reactive and sporadic, often occurring only after legislation has already been drafted or even approved.

"We have developed stable working relationships not only with successive governments, but even more so with public entities that operate in this area, and that allows for collaboration and proactive proposals. The relationship is institutional; it continues because it has been built over time" [Interview with a representative of an industry association in the Portuguese renewable energy sector].

"We make a huge effort to respond to every public consultation, trying to influence the process. (...) But to be honest, our influence

is more limited (...). We don't have a lobbying office. We do what we can, but we lack the financial capacity to hire people solely for advocacy. Naturally, our proposals aren't prioritized in the same way" [Interview with a representative of a civil society organization in the Portuguese energy sector].

This imbalance is further exacerbated by the weakened analytical capacity of the public administration, which is often unable to provide a technical counterweight to corporate lobbying.

In Denmark, by contrast, while the relationship between government and industry is described as close, ongoing, and influential, it does not amount to capture but rather reflects a participatory governance model. Interviewees consistently describe a transparent and institutionalized advocacy system, especially involving large business associations, in which companies have meaningful access but are subject to clear institutional counterbalances, chief among them, the strong technical capacity of the public administration. This close relationship is also seen as instrumental to the success of the energy transition, given the scale of investments required. However, no systematic exclusion of other social groups or outright dominance of corporate interests in policy formulation was identified.

"Very well documented analysis on the part of these actors [renewables industry]. They've had a strong voice in the debate also because they have backed their arguments with relatively strong analysis. Always biased, of course, to their advantage, but relatively clear analysis (...) That's sort of a classic lobbying process" [Interview with a former senior government official in the Danish energy sector #2].

Accordingly, the hypothesis outlined in section 2 is supported by the evidence collected: the dynamics of policy advice in Portugal tend to favor more direct, sustained, and influential access by corporate actors to public decision-making in the energy sector, closely aligning with what the literature defines as a process of policy capture. In contrast, while Denmark also displays a close relationship between government and industry, this interaction is embedded in a more transparent and participatory governance framework. There, the preservation of strong in-house analytical capacity within the public administration enables a meaningful counterbalance to the particular interests of powerful groups, something that remains largely absent in the Portuguese case due to the greater fragility of state analytical capacity.

5.4 Policy advice dynamics in practice: renewable energy communities in Portugal

In order to examine how policy advice dynamics operate in practice and to further test the explanatory power of the interpretive framework developed in the previous section, this subsection analyses a specific policy process in the energy sector: the development of the legal framework for Renewable Energy Communities (RECs) in Portugal, particularly the transposition of Directive (EU) 2018/2001.

Renewable Energy Communities are non-profit collective organizations based on participation and control by citizens, communities, and other local actors, primarily focused on decentralized renewable energy projects and other initiatives related to the energy transition (Ferreira, 2025). These initiatives are characterized by two core dimensions. In process terms, RECs are conceived as open and participatory projects, driven by local actors throughout all stages, from project conception to daily management. In terms of outcomes, their benefits are expected to be distributed locally and collectively, including job creation, reduced energy bills, and place-based regeneration. As such, they embody what has been described as "a project that is both by and for local people" (Walker and Devine-Wright, 2008).

Historically, Portugal had a limited but relevant experience with collective energy initiatives. The first energy cooperatives emerged in the 1930s through small-scale thermal and hydroelectric plants, particularly in rural areas. However, as electrification became a core national policy objective from the 1940s onwards, and especially following the creation and subsequent nationalization of EDP after the Carnation Revolution, these cooperatives gradually declined or were absorbed into the state-owned utility.

The renewed interest in community-based energy initiatives was prompted by Directive (EU) 2018/2001 (Renewable Energy Directive II), which recommended that Member States adopt measures to financially support renewable energy communities, provide technical assistance, reduce administrative barriers, promote capacity-building, and ensure inclusive participation, particularly for low-income and vulnerable households. Portugal was among the first countries to transpose the Directive into national law, through Decree-Law No. 162/2019.

The Portuguese transposition largely replicated the definition of renewable energy communities contained in the Directive, but introduced two notable deviations. First, while the European Directive defined communities merely as a "legal entity", the Portuguese decree added the expression "with or without lucrative purposes". Second, whereas the Directive restricted membership to "natural persons, SMEs or local authorities", the Portuguese legislation adopted a broader and exemplificative formulation, using the adverb "namely" to list potential members, thus allowing both natural and legal persons of a public or private nature to participate.

As Ferreira (2025) notes, the inclusion of this exemplificative wording implies that actors not explicitly foreseen in the Directive, such as large private companies, may also become members of renewable energy communities. This adjustment runs counter to the original spirit of the European framework, which sought to empower citizens as central agents of the energy transition rather than facilitating new market entry points for incumbent energy actors.

Approximately 2 years later, the legal framework was substantially revised through Decree-Law No. 15/2022, which further expanded the scope for private-sector participation. The revised definition of renewable energy communities introduced an additional requirement: that members be located in proximity to a unit for self-consumption energy production (UPAC), such as a photovoltaic solar installation. Consequently, legally recognized RECs became necessarily linked to collective self-consumption activities. As Ferreira (2025) observes, this new condition not only obliges communities to invest in generation equipment, potentially excluding citizens with limited financial capacity, but also

blurs the distinction between renewable energy communities (as legal entities) and collective self-consumption (as a specific activity).

A further editorial change with substantial practical consequences concerned asset ownership. Under the 2022 decree, renewable energy projects developed within RECs may now be owned and operated either by the communities themselves or by third parties, provided that this is done "for the benefit and service of the community". The revised framework, therefore, brings renewable energy communities closer to conventional market-based models and to the operational logic of traditional energy companies.

With regard to policy advice dynamics during the formulation of the Portuguese transposition, the absence of publicly available records on formal advisory interactions constitutes an important limitation. Nevertheless, it is possible to reconstruct a plausible account of these dynamics based on qualitative interview evidence.

The most salient advisory pattern in the REC policy process concerns the pronounced influence of large corporate actors. An interview with a representative of EDP revealed that the company was involved as a technical adviser from an early stage of the transposition process, acting as a partner to the public institutions participating in the working group responsible for drafting the legislation.

In contrast, the involvement of public entities was largely concentrated within DGEG and ERSE, which acted as technical advisers to the Secretary of State's cabinet during the drafting phase. Several interviewees attributed the limited practical outcomes of the REC legislation to persistent shortages of human and technical capacity within the public administration, particularly at DGEG, which has struggled to manage the increased bureaucratic demands generated by collective self-consumption schemes.

As an ERSE official explained:

"*From the outset, there are practical aspects concerning implementation, particularly the difficulties within the administrative machinery responsible for licensing. The process is extremely complex and has proven very challenging. (...) Historically, licensing requests numbered only a few dozen per year, but with the introduction of 210 self-consumption, this figure has risen to thousands per day. (...) This has completely transformed the demands placed on the public administration, which has faced severe difficulties in responding to this new scale of operations*" [Interview with ERSE official].

Overall, the findings from this policy process are consistent with the broader policy advice dynamics identified earlier in the article. They reveal strong and sustained involvement of major energy companies, operating through multiple channels and leveraging superior technical and analytical resources; and a central role played by ministerial cabinets in drafting the legislative proposal. While public entities were directly involved in the formulation stage, the implementation phase exposed significant capacity constraints within the state apparatus, reinforcing previously identified patterns of limited analytical and administrative strength.

6 Conclusion

This research aimed to understand how policy advice on renewable energy is organized and mobilized across different European politico-administrative traditions, analyzing how institutional arrangements influence the quality, diversity, and independence of expertise in the context of energy transitions. To do so, it compared Portugal—representative of a Napoleonic state tradition—and Denmark—aligned with the Scandinavian model—drawing on the analytical framework of Policy Advisory Systems and four core dimensions of advice mobilization, in which state analytical capacity is hypothesized as the central explanatory variable influencing the remaining dimensions. The empirical evidence was generated through 32 semi-structured interviews with policymakers, advisers, and sectoral actors, complemented by document analysis.

The findings reveal marked contrasts in how advisory systems function across the two contexts. In Portugal, austerity-driven reforms over the last two decades eroded the state's internal analytical capacity, weakening the ability of public institutions to provide technical guidance on renewable energy. In Denmark, similar reforms did not result in the same loss of expertise, allowing public bodies to retain an advisory role with continuity and autonomy. These asymmetries have further implications: in Portugal, the depletion of internal expertise fuels the politicization of policy advice, concentrating it in ministerial cabinets where advisory roles are temporary and less independent. In Denmark, the separation between political and administrative spheres remains stronger, with career civil servants still at the center of technical policy work.

Another important consequence of Portugal's limited internal analytical capacity is the stronger influence of the private sector on policymaking. Although both countries have witnessed a surge in private investment in the renewable energy sector, in Portugal, corporate actors occupy a disproportionate space in the societal arena of policy advice, exerting more sustained, stable, and effective influence than other interest groups. This is partly due to the lack of a robust technical counterbalance from the state, as policy expertise is concentrated in private companies. In Denmark, although the private sector is closely engaged in policymaking, the public sector retains enough technical capacity to counterbalance this influence, limiting the risk of policy capture.

Viewed in light of the analytical framework developed, the analysis of renewable energy communities in Portugal provides concrete empirical support for the central explanatory role attributed to state analytical capacity in shaping policy advisory dynamics. The evidence shows how limited administrative and technical capacity reinforces the concentration of policy advice within ministerial cabinets and increases dependence on private-sector expertise. By tracing these dynamics within a specific policy process, the study demonstrates how the proposed framework operates in practice.

One important limitation is the lack of comparable policy process evidence for Denmark, which restricts the ability to assess whether similar mechanisms unfold within a markedly different policy advisory system.

The main contribution of this research to the literature is the identification of state analytical capacity as a structural variable that conditions the balance, autonomy and pluralism of policy advisory systems. Existing work on policy advice has tended either to emphasize institutional form, the role of non-state actors or politico-administrative cultures; this article demonstrates that analytical capacity is not merely a background condition but a decisive factor shaping the vulnerability of advisory systems to politicization and private-sector dominance. In doing so, it broadens comparative scholarship on policy advice beyond typological classifications and connects debates on state capacity with those on epistemic governance and energy transitions.

Taken together, the findings of this study reinforce rather than challenge the characterization of Portuguese and Danish policymaking advanced in the policy styles literature. The Portuguese case aligns closely with a centralized and predominantly reactive policy style, in which limited state analytical capacity contributes to the politicization of policy advice, heightened reliance on private-sector expertise, and weak institutionalization of scientific input.

Conversely, Denmark's experience is consistent with a consensual and anticipatory policy style, supported by a strong and resilient administrative apparatus that preserves clear boundaries between political decision-making and technical expertise, counterbalances private influence, and embeds scientific advice within stable institutional arrangements.

Importantly, the comparison shows that these differences persist despite both countries operating under similar Europeanized policy pressures and having implemented broadly comparable administrative reforms. In this sense, the study provides empirical support for the argument that national policy styles structure the organization and functioning of policy advisory systems, mediating the effects of Europeanization and shaping how analytical capacity, expertise, and interests are mobilized in critical policy areas such as renewable energy.

Methodologically, the research design can be replicated in other public policy areas and administrative traditions, offering a framework to operationalise and compare advisory dynamics in small and medium-sized states. Empirically, the findings offer insights for improving energy governance in both countries by identifying structural weaknesses that affect the quality of decision-making.

Some limitations remain. The limited number of cases analyzed makes it difficult to generalize the findings, although there are indications that similar patterns might be found in other countries with comparable political-administrative traditions. Future research could broaden the comparative scope to include other national contexts or explore the relationship between state analytical capacity and the concrete outcomes of energy transition policies, contributing to a deeper understanding of how policy advice dynamics influence public policy results.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

MD: Software, Investigation, Resources, Funding acquisition, Writing – review & editing, Formal analysis, Writing – original draft, Validation, Data curation, Visualization, Methodology, Supervision, Project administration, Conceptualization. MA: Conceptualization, Validation, Supervision, Writing – review & editing. FV: Writing – review & editing, Validation, Supervision.

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