Climate Action and Energy Transitions: Between Opportunities and Trade-Offs*

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Abstract

This paper examines whether and where, in the decade following the Paris Agreement, the political logic of linking energy transition and climate action has delivered the anticipated transformative outcomes. I argue that, while the coupling of mitigation targets with green industrial policy has spurred rapid technological progress in renewables and electrification, it has also revealed structural tensions between the political economies of energy security and climate ambition. Through a comparative analysis of Europe, China, the United States and emerging economies in the Global South, the paper shows that material complementarities, political incentives, and institutional credibility are necessary but not individually sufficient conditions for a durable energy–climate alignment. Across regions, energy transitions have frequently advanced for reasons disconnected from climate governance, and crises have exposed the fragility of this linkage. The paper concludes that enduring decarbonization requires recognizing the distinct distributional logics behind energy versus climate politics, and designing strategies capable of integrating them without assuming automatic synergy.

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1. Introduction

The years between 2015 and 2025 significantly elevated the early 21st century debate on sustainability and green policies. This was partly due to the new international regime set by the Paris Agreement, which unleashed countries to shape their own "nationally determined contributions" to global emissions and foster their most domestically appropriate net-zero policies (Falkner 2016; Skjærseth et al 2021). An increasing global awareness of ecological fragility further captured international attention, as ever more frequent extreme weather events swept across the seven continents. Relatedly, sustainable self-sufficiency rose on the political agenda due to hard-nose realities of resource scarcity and new supply chain issues on rare earths and fuels (Colgan and Hinthorn 2023; Driscoll and Blyth, 2025).

The salience of green issues in this decade resulted, among other things, in the intertwining of the politics of two distinct domains: on the one hand, *energy politics,* through the lenses of technological advances in the so-called green energy transition; on the other hand, *climate politics,* through the lenses of climate mitigation and, increasingly, adaptation. To be clear, energy and the climate as political fields and policy objectives have not always dovetailed. In fact, they have historically been in separate government portfolios. Similarly, they have often been goals of different political coalitions. Indeed, by climate politics, we usually refer to the domain of environmental policy concerned with decreasing greenhouse gas emissions and the governance of climate externalities typically through regulatory, fiscal, and redistributive instruments such as emissions caps and carbon pricing. By energy transition politics, we refer to the domain of policy aimed at transforming energy systems through investment, innovation, and infrastructure deployment, including electrification and grid expansion.[1] This paper keeps the two analytically distinct, in order to examine when they reinforced one another—and when they came apart.

Notably, this paper notes that bundling these two areas was an active political project of the last decade (2015-2025). This project relied on the idea of actively forming a linkage between climate mitigation commitments (e.g., targets towards carbon pricing as well as fossil phase-out) with energy-transition measures (e.g., industrial electrification and energy autonomy). Along these lines, the EU directly tied funding support schemes for renewable energy to its legally binding 2030 climate targets under the Renewable Energy Directive. Similarly, the 2022 Inflation Reduction Act in the United States was essentially a climate-target-driven subsidy law designed to meet the 2030 U.S. emissions reduction target under the Paris Agreement. In China, the Renewable Portfolio Standard was also tied to CO_2-peaking and neutrality targets.[2]

Again, theoretically this interconnection between energy and climate may seem too intuitive, but in reality it is not. Climate mitigation alone imposes *concentrated, near-term costs* on powerful incumbents, while producing *diffuse long-term gains*. Energy transitions, by contrast, create *new concentrated winners*, including renewable developers, manufacturing sectors tied to electrification, segments of labour, green finance, regional beneficiaries, and *diffused losses*.

[1] This distinction parallels the environmental versus industrial policy divide: while climate politics maps closely onto environmental policy, energy transition politics encompasses a broader set of industrial, security, and competitiveness objectives that may or may not be climate-motivated. In this spirit, this paper distinguishes analytically between climate politics and energy transition politics, even when they overlap empirically.

[2] Other actors, too, have used climate goals to push green energy investments and vice versa. For example, the Danish wind energy companies Ørsted and Vestas have openly linked the need for subsidies—e.g., Contracts for Difference for offshore wind—to achieving national Net Zero goals, and manufacturers from shipping to semiconductors sectors (most notably in Europe' emissions trading scheme) have used climate targets as a core justification for accelerated cost recovery or public co-investment. Similarly, international organizations have used technological investments in energy policy as a climate policy lever.

Linking the two expands political support by transforming climate mitigation from a regulatory burden into a programme with visible, short-term collective benefits. So, the reason to tactically pursue the interlinkage is politically noble: by cross-feeding the vision of stable energy markets and climate change prevention, proponents of green policies put forward an argument for why cleaner energy (i.e., decarbonization) is a win-win collective outcome. According to the advocates, this view would persuade various constituencies, some powered by idealistic views of political empowerment and intergenerational justice, some motivated by more materialist raisons d'etre (Gabor 2021; Tooze 2021).

In the backdrop of the events of the last decade and considering this new experimentation of policy alignments, this paper asks: *did the climate-energy interlinkage pay off?* This is an important yet so far unexplored question, and the answer is still up to debate. On the one hand, optimists would say that, however imperfectly, the nexus between energy and climate politics has been delivering. Indeed, in the past decade the linkage favoured technological progress along the lines of electrification, which made significant strides. Renewables are now the cheapest electricity in most of the world, with over 80% of new electricity capacity added globally as of 2023. Solar energy in particular is seeing gigawatts records of new installation every year (IRENA 2024). Also, electric vehicles are taking over faster than expected, with 25% and 35% of new European and Chinese car sales in 2025 being electric, respectively (IEA 2025). On the other hand, critics would argue that these two might never optimally align. Large disruptions have been revealed in the supply of critical materials needed for the energy transition, and related bottlenecks in infrastructure and permits have caused fragility in electricity markets. Furthermore, and critically, the ecological future remains bleak: fossil fuels (coal, oil and gas) still dominate global primary energy (IEA *2024*), and CO2 emissions are rising in most regions (Global Carbon Budget 2024).

In sum, as the first quarter of the century closes with a fragmented but accelerating global energy transition and suboptimal but changing climate performance, it is crucial to ask whether the political effort of bundling energy and climate politics was as successful as anticipated at the onset of the Paris Agreement, which political obstacles got in the way where, and how.

Engaging this question, this paper embarks on a systematic discussion of the recent politics of interconnecting energy transition with climate action. I first examine how the two policy realms have been made compatible, who supported their convergence, and why. I then assess the usefulness of further entrenching the energy transition narrative with climate action in view of the similarities and differences that these two realms offer politically. I finally interrogate whether this connection is likely to remain a focal point of leaders and democratic parties going forward, and who will be the likely winners and losers of further embedding these two agendas.

2. Green Energy Transition, Climate Action, And the Places Where They Do (Not) Meet

This paper's main argument is that, while it is evident that energy transition and climate action motivations can coexist and have – at least nominally - supported each other in the late 2010s (Stern et al. 2016; Bergquist et al. 2020), it is paramount to dissect the political roots of these two policy goals and, thus, their potentially different distributional implications to understand when their integration has not fully delivered.[3]

[3] Again, throughout the paper, I use climate politics and environmental policy interchangeably, and energy transition politics as shorthand for green industrial policy.

Although both energy transition and climate action lenses share the overarching objective of reducing reliance on carbon-intensive energy sources, I claim that the political conditions associated with each are not perfectly congruent. This bears important lessons for how social scientists and commentators look at, for example, China's electrostate project (Wallace 2025; Wang 2025), Europe's just transition strategies and financial derisking (Allan and Nahm 2025; Bayer, Crippa and Genovese 2025), as well as the second Trump administration's approach to energy and Global South's mitigation policy investments (Colgan and Genovese 2025; Nahm and Wallace 2025).

The paper focuses specifically on three varying political conditions that, I argue, can explain why the energy-climate nexus may fail to delivery ambitious outcomes. These are: the *material returns* of the alignment, the *ideological motivations* carrying the alignment, and the *institutional credibility* backing the alignment. The paper interrogates these three conditions of the nexus considering the distributional and inevitably political relationship between the agents behind them. The starting point is that energy politics and climate politics *can* be usefully interconnected; however, neither is an automatic political substitute for the other, so while the two agendas share overarching objectives, the differences in benefits, losses, and constituency formation necessitate a nuanced approach to interlocked policy design and strategic issue-linkage.

2.1 Complementarities and Preferential Synergies: The Optimistic View

Various strands of disciplines, from economics to physical engineering, agree that a green energy transition and climate change prevention are inherently compatible insofar the former is a way to ensure that the latter is fulfilled, and vice versa. After all, climate change denotes long-term shifts in global climate patterns caused by anthropogenic land use and, specifically, fossil fuels combustion. To promptly decrease greenhouse gases that influence temperature change and extreme weather events, the world needs to adapt to a more sustainable economic model, and the most straightforward way is by scaling down carbon assets (coal, oil, gas) and ramping up electrification through clean technology, which in the short run entails mainly renewable energy.

Various theories in the social sciences agree with this take. In this sense, the way that an energy transition and climate action are related is quintessentially the logic of *institutional "sequencing"* (Meckling et al. 2015; Finnegan, Lipscy, Meckling, and Metz 2025). Accordingly, each stage of each policy area depends on the other and only becomes effective once the other reaches a certain stage of maturity. Climate action shapes energy institutions by setting norms and standardizing ambitions of mitigation policy. In sequence, energy institutions operationalize climate action by means of incentivizing climate coalitions that can rely on cheaper green assets, accessible electrification, which further solidifies climate institutions (Edenhofer and Flachsland 2025). This logic is keen to the political argument of *clean technology experience curves*, which says that the shape of a country's climate vision, which is endogenous to its political institutions, affect which clean energy technologies are accumulated at which rate (Breetz et al. 2018; Kelsey 2018).

Based on this general view, clean tech can win the climate politics battle depending on the stage of maturity of the energy transition. Notably, here *the balance of power between clean and non-clean energy actors is fully malleable* by assumption. Hence, this argument presumes that the clean energy sector sees its role as a central climate leader, and naturally manifests a synergy with climate action.

Politically, this means that at whichever stage of clean energy maturity a country may be at, climate politics can influence the technology learning curve and steer the green transition. Consequently, different political outcomes emerge from a combination of where the country is in the technology curve and how mature the climate politics vision is; in the highest levels, their synergy becomes self-reinforcing (clean-energy actors defend climate rules; climate institutions accelerate industrial transformation). Otherwise, the energy transition can proceed without strong climate ambition, or climate goals persist rhetorically without material change, and further linkage might depend on external interventions accelerating the lagging dimension.

Practically, this should look as follows. In the early stages of technological learning, when the economic conditions for an energy transition are expensive, supportive coalitions of green advocates can collide with technology innovators and green entrepreneurs and together lobby for tools to seed the transition (e.g. state subsidies). This is where common agenda setting is crucial (Hadden 2015). At this stage in particular, the platform of clean energy advocacy needs to back the narrative of climate shocks and ecological disruptions. Repeated, multi-source messages that can indeed trickle down to votes at the electoral ballot (Valentim 2025). If the backing is weak or non-credible, the linkage may remain widely superficial.

Moving to the middle stage of technological curves, the theory suggests that this is when clean energy costs start more tangibly to fall and create a visible threat to fossil fuel incumbents. At this stage, political conflict intensifies, carbon pricing becomes more contested, and reforms become a matter of cultural wars (Colantone et al. 2024). Winning the political battle requires support from other coalitions, sometimes from other levels of government (Bolet et al. 2023), sometimes even from abroad (Bayer and Genovese 2025; Gaikwad et al. 2025). Only in a mature energy world that follows this stage the energy-climate nexus can be complete, renewables can properly compete on virtually any ground, and fossil fuels are no longer locked in. At this point, politics can shift to infrastructure coordination and fossil fuel dismantling.

This theory is not irreversible. Realistically, the status quo can regress. Indeed, climate contestation and mixed energy limbos remain threats within any era of energy dominance (Colgan 2021; Colgan and Hinthorn 2023). Still, some experts retain optimism about the narrative that marries energy and climate policy goals in that, from an incipit of climate change observations, it fixes the premise of the economic, technological and moral advantages of clean energy and catalyzes the climate-motivated goal of locking in renewables and phasing out fossil fuels.

This is, however, not the only take about how the relationship between energy and climate politics operates in modern days. Another, more pessimistic side of the literature offers a separate take on how an energy transition can gain ground disjointed from climate action, as per the discussion that follows.

2.2 Divergences and Separations: The Critical View

The view delineated above rather optimistically suggests the potential for a close alignment of ends and means between technology-led energy transition supporters and climate policy activists.

However, a growing body of work advances another political account, emphasizing how agency, institutions, and power asymmetries condition whether technological change translates into climate governance. Many of these works see a much frailer connection between energy and climate. Accordingly, *the balance of power between clean and non-clean assets is skewed and weaponized in the direction of fossil fuel asset owners* (Colgan, Green and Hale 2021; Gaikwad

et al. 2022). While green energy expansion does occur, it unfolds within a political economy still dominated by established carbon-based infrastructures, subsidy regimes, and lobbying networks that distort competition and perpetuate fossil fuel entrenchment (Mahdavi, Ross, and Simoni 2025).

This alternate view suggests a strong inertia that pushes energy transition and climate action supporters to diverge. This is worthwhile unpacking. Accordingly to this view, on the one hand, the renewable energy sector's emergence offers new loci of economic and technological growth, but these gains are often captured by specific segments of capital—such as utilities, green finance, high-tech industries—rather than diffused across society (Hochstetler 2020). On the other hand, the fossil fuel complex retains deep institutional leverage, from direct subsidies to informal policy influence through trade associations and sectoral representation (Genovese 2019; Kennard 2020). As a result, the energy transition advances unevenly across and within states, creating dual economies of "green growth" and "fossil lock-in" that coexist in tension rather than in succession.

For these reasons, several scholars have started arguing that clean technology and renewable energy expansion alone do not automatically translate into climate political power. Green industries' interests—while nominally aligned with decarbonization—are not necessarily coterminous with stringent emissions regulation, carbon pricing, or consumption limits (Kupzok and Nahm 2024). In some cases, renewable firms may favor the expansion of energy demand (e.g., through electrification) without challenging the overall logic of energy-intensive growth (Newell 2021). Climate action, conversely, requires collective regulatory frameworks and redistributive mechanisms that actively constrain production and consumption—tools that are politically costlier. Hence, energy transition and climate politics can become decoupled both institutionally and ideologically, even when their material cases advance in parallel.

Among these more pessimistic voices, there are some that suggest that investments in green assets can only work if facilitated by global trade rules such as trade sanctions and international taxation. Creating a double front of domestic constituencies and international guardians can build the political power of green asset owners (Green & Healy 2022; Green 2025). Others, instead, think of "*windows of opportunity*" to level the existential battle between clean and non-clean asset holders at the advantage of the former. Accordingly, external shocks lead to politicisation that can lock-in of renewables in some contexts (Aklin and Urpelainen 2018). However, this is all conditional on the credibility of institutions to sustain green commitments over time (Gazmararian and Tingley 2023).

Indeed, institutional credibility, rather than sheer policy ambition, determines whether short-term climate-motivated progress consolidates into long-term clean energy trajectories (Edenhofer and Genovese 2024; Mares, Scheve and Toenshoff 2025). When green policy signals fluctuate due to electoral cycles and related disruptions, both investors and citizens lose trust in the durability of transition frameworks (Finnegan 2022). This problem is compounded by the tendency of governments to use climate and energy discourses for targeted political appeal—e.g., mobilizing younger, urban constituencies with "green growth" rhetoric while reassuring older industrial constituencies through continued fossil fuel accommodation. In democratic contexts, energy transition rhetoric can serve as a politically convenient narrative substitute for dealing with climate politics "on the streets" rather than a legal reinforcement of it (Barrie et al. 2024).

Lastly, the occurrence of exogenous shocks—whether geopolitical crises, pandemics, or indeed climate disasters—creates windows of opportunity for green industrial policy, but the outcomes of such shocks depend on pre-existing political power asymmetries and state capacity. External

disruptions can indeed accelerate the revaluation of carbon assets and temporarily empower renewable coalitions. Yet, as the 2020s have shown, such politicization can also reinforce nationalist energy agendas and short-term security logics. As I explain below, this is what we have seen in Europe's post-Ukraine-war mixed signals (Bayer, Crippa, and Genovese 2025) and China's emphasis on energy sovereignty (Wallace 2025; Nahm and Wallace 2025). Thus, even crises that appear to favor green politics may ultimately reaffirm the primacy of energy security over climate ambition, underscoring the fragile and contingent nature of their alignment.

In sum, and in contrast with the side of scholarly work that sees self-reinforcing synergies between energy and climate politics, a growing body of research stresses that the politics of energy transition and those of climate action, though overlapping in discourse, structurally diverge in assumptions, incentives, and temporal logics. The former is primarily driven by technological and industrial policy rationales, often framed around competitiveness and autonomy; the latter, by environmental and distributive imperatives rooted in collective welfare and intergenerational equity.

2.3 Theoretical Implications for Building Political Coalitions through Energy-Climate Bundling

The two sides of the literature discussed above shed light on apparent opportunities and pitfalls of energy-climate bundling, and points to important conditions for the successful political construction of linkages. Bring the two sets of insights together, I highlight here the three most necessary but not independently sufficient conditions to deliver green coalitions.

Firstly and foremost, it is evident that *material complementarities* need to exist where climate and energy objectives reinforce each other economically. This includes cost competitiveness or learning-curve effects that make low-carbon technologies viable; security benefits from reduced fossil-fuel exposure; and industrial upgrading opportunities through clean-technology value chains. These complementarities create the material basis for coalition formation; without clear material gains, energy transition incentives are opaque and the promises of climate policy action remain vague. In other words, in absence of material complementarities linkage remains normatively appealing but politically hollow.

Secondly, there must be *political incentives* to bundle energy and climate issues. Even when material complementarities exist, actors (firms, voters, politicians) must perceive strategic gains from linking rather than separating policy domains. These incentives may include mobilising new economic winners to support climate goals; coordinating fiscal, regulatory, and industrial interventions; and legitimising state intervention in strategic sectors. In the absence of a political narrative that tactically links energy and climate, the energy and climate proposals can easily be disjointed, for example, in the moment of an external shock.

Third and finally, *strong institutional platforms* are necessary for sustained and credible linkage. Linkage becomes durable only if embedded in institutions that can coordinate expectations and commit resources by ironing consistency across legislation packages and cross-funding similarly oriented governmental projects. Institutions thus perform two important functions for coalition-building: on the one hand, reducing uncertainty for potential coalition members, and on the other hand, making policy reversal more costly. Weak institutions are unlikely to provide the right signals to all the private and public actors that need to be united on a consensus of green policies.

Taken together, the three conditions outlined here—material complementarities, political incentives to bundle, and institutional credibility—define a constrained but meaningful space of possible energy–climate alignments. In what follows, I explore how these logics pan out when traced in real world cases of attempted decarbonization in the shadow of climate mitigation debates (and vice versa).

These cases follow a typology that combines the conditions described above. In the interest of simplicity, I refer to these types as follows. First, *deep linkage* is the case where material complementarities are visible, incentives to bundle are strong, and institutions integrated (with archetypal example of Europe between the 2000s and 2010s). Second, *shallow linkage* is where complementarities are strong on only one side but incentives are asymmetrical, and institutions support industrial policy more than climate (China in 2010-2015). *Volatile linkage,* instead, is where material complementarities are present but incentives are partisan and institutions reversible, so the coalitions form intermittently and may collapse under political turnover (US in 2015-2025 and Europe in 2022-2025). Finally, *thin linkage* represents the case where complementarities exist but domestic incentives constrained and institutions are evidently limited, so the energy-climate bundling is reliant on external finance or conditions and remains fragile (see emerging economies in the Global South).

These four empirical outcomes are not intended as an exhaustive typology of all conceivable configurations, but rather as the dominant patterns that have emerged under contemporary political–economic conditions. Importantly, these outcomes are mutually exclusive at any given point in time, though countries can move between them as incentives and institutions change.[4]

3. Varieties of Energy-Climate Connections

To illustrate when, and how, the three political conditions discussed above have shaped policy outcomes, I now turn to trace how the mechanics of the energy-climate nexus have manifested and the outcomes they led in various parts of the world.

Analytically, the four outcomes delineated in the previous section can be understood as combinations of two underlying dimensions: the strength of material complementarities between energy transition and climate objectives, and the credibility of political and institutional commitments sustaining their linkage. Where both are strong, deep linkage emerges. Where material complementarities dominate but institutional or political incentives to bind them to climate goals are weak, linkage remains shallow. Where complementarities exist but institutions and incentives are volatile, linkage becomes unstable and reversible. Finally, where complementarities are present but domestic incentives and institutions are constrained, linkage is thin and externally dependent.

I now move to mapping these categories onto real world cases. I start with 2000s Europe, an epitomical case to demonstrate how early climate institutionalization can foster energy transformation, and how energy sequencing can feed institutional incentives for long-term climate policy credibility ("deep linkage"); I also problematize how the Europe of the last decade may have lost this synergy. I next turn to the less clear linkages, namely: China's experience, which underscores a separate logic of industrial energy policy existing in the quasi-absence of climate governance ("shallow linkage"), and the United States, which reveals the challenges of fragmented policymaking in a high asymmetric and polarized energy playfield ("volatile linkage"). Finally, I conclude with a reflection on the emerging economies in the Global South, which highlight the "think linkage" character of energy–climate linkages under developmental constraints.

3.1 Europe

[4] Other logical combinations—such as strong climate institutions without any material complementarities, or deep material complementarities without political incentives to link—are theoretically possible but have not manifested in stable form in the cases examined here.

Europe's early trajectory is perhaps the clearest example of successful institutional layering between climate governance and energy transition. In the early 2000s, in the shadow of the Kyoto Protocol, the European Union developed one of the world's most sophisticated climate policy frameworks, combining emissions trading (EU ETS), renewable energy targets, and coordination mechanisms across member states (McNamara 2024). The EU's climate-first approach was rooted in supranational institutional design: by prioritizing binding targets for greenhouse gas reduction, it created the political and legal scaffolding for a more material energy transformation. This is exemplified by the gradual process in which the EU ETS catalyzed, with a proper protectionist phase between 2005 and 2007 that provided carrots for the regulated firms (Bayer and Aklin 2020; Genovese 2020).

To be clear, the sequencing of this process was asymmetric. Ambitious climate targets were decided before the energy system was structurally retooled (e.g. through the 2009 Renewable Energy Directive "20-20-20" targets). This resulted in uneven decarbonization outcomes during the 2000s and early 2010s.[5] Yet, the material reason to decarbonize, together with a growing political consensus on a green economy and a top-down approach driven by the technocratic EU institutions provided for a clear long-term plan. Climate targets were set at the EU level, and energy infrastructures only started adjusting from the mid-2010s onward, with the interplay of carbon pricing and the later 2019 European Green Deal financing beginning to close this gap.

However, the COVID19 crisis and later the Ukraine crisis created new brakes for the successful linkage of climate and energy priorities. In response to gas supply disruptions, several member states temporarily re-opened coal plants or extended nuclear lifespans, even while reaffirming long-term climate neutrality targets (Bayer, Crippa, and Genovese 2025). The tension between short-term energy security and long-term climate ambition has become the new axis of European green politics. Nonetheless, EU governance structures have proven adaptive: the "REPowerEU" plan and revisions to the ETS demonstrate institutional learning, seeking to preserve both decarbonization and energy autonomy (Green, Hadden, Hale, and Mahdavi 2022).

In sum, Europe's history shows how strong climate institutions can, over time, endogenously generate energy transition coalitions by altering market expectations, and building bridges between public behavior and investors' innovation patterns. Until recently, European energy transition policies, exemplified by the European Green Deal, aimed to ensure long-term energy independence while simultaneously promoting industrial competitiveness through innovation in clean technologies. This outcome vindicates, at least partially, the more optimistic literature described in Section 2.1: where institutional credibility and cross-border coordination exist, the linkage between climate and energy politics can become mutually reinforcing. Nevertheless, this linkage did not prove resilient enough to survive the reallocation of interests and priorities that crises like the pandemic, the war and their combined inflationary pressures brought within the European Union. In that sense, crises prove important tests that failed the EU institutions' intention to keep climate and energy constituencies strong together.

3.2. China

China represents a near-inverse sequencing to Europe. Its energy transition, seeded in a visionary policy plan in the early 2000s, has been driven primarily by industrial policy and energy security concerns rather than climate treaty commitments. Since the early 2010s, the Chinese state has

[5] Electricity generation and industrial processes remained dominated by fossil inputs, while member states differed sharply in their capacity to integrate renewables – in many ways a legacy of the 2009 sovereign debt crisis. The political consequence of this lag was a temporary gap in legitimacy in climate goals compared to energy goals.

pursued a massive build-out of renewable capacity, electric mobility, and grid modernization—a project justified less by carbon reduction and more by the pursuit of technological leadership and supply-chain sovereignty. This "electrostate" strategy placed green industrialization at the center of economic modernization, effectively promoting decarbonization as a byproduct of national competitiveness (Wallace 2025).

The subsequent integration of climate governance—via the establishment of pilot carbon markets and the 2060 net-zero pledge—came later, and has remained largely superficial and nominal. This is not to say that civil society and non-governmental organizations do not play a role in pushing the government to disclose information or improve pollution monitoring (Anderson et al., 2019). However, the broader climate policymaking in China has operated within, rather than above, the industrial energy framework, making climate leadership more performative than substantial (Ding 2022). The political consequence is that China's energy transition success does not necessarily entail climate policy leadership. Although China now leads the world in renewable installations, coal consumption has also increased in absolute terms to stabilize domestic energy supply, reflecting the persistent primacy of energy security logics over ecological ones.

This configuration illustrates the point raised in Section 2.2: energy transition politics can thrive under national development agendas even as climate institutions lag or remain nominal. The divergence between these agendas has become particularly evident in China's international diplomacy, which couples green industrial exports with resistance to binding global emissions obligations (Newell 2021; Alkon, Hadden, and Su 2025).

China's bundling of green energy and climate goals is therefore weak. Here energy transition is shaped by state-led industrial policy and the strategic objective of securing technological leadership in renewable energy sectors, thereby reducing domestic reliance on coal and imported fossil fuels. In this context, climate policy is neither necessary nor certainly sufficient to bring decarbonization forward.

The Chinese decoupled model of dealing with energy and climate has implications for the fossil fuels' trajectory within China. This is purely threatened by the state's own development and overproduction of clean technology, but not by any deeper climate pledge commitment (Yu 2020). It also has implications for how the world sees China, i.e. as a leader of clean energy but not a dove of intrinsic climate mitigation (let alone a just transition). The political implications abroad are multifarious: some climate observers seek to replicate it at whatever cost and others see in it the demise of democratic climate policy, therefore further contributing to the energy "greenlash" and recession of climate ambition in Europe (above) and the United States.

3.3 United States

In contrast to Europe and China, the United States has experienced chronically fragmented interconnections between energy and climate politics, partly because of the long-term insularity of the environmental policy area to which climate politics has been relegated for decades. Historically, technological innovation in renewables and electric vehicles advanced through subnational and private-sector dynamics long before federal climate legislation took shape, under the remit of bureaucratic development and mission-oriented government. Environmental consciousness and news essentially ignored issues of electrification and green technology (Egan et al 2022). The "bottom-up" process of generating interest in electrification produced significant technological and market progress but also institutional inconsistencies—a patchwork of state-level renewable portfolio standards, tax credits, and court challenges without a unified climate framework (Stokes 2020). Indeed, climate policy remained a marginal issue that until the 2010s

significant institutional advancement often depended on particular administrations or policy windows (e.g., early 1990s, late 2000s) and leadership willing to push climate within the executive-branch. When that leadership shifts, institutional momentum can falter (Mildenberger 2021).

The passage of the Inflation Reduction Act (IRA) in 2022 marked a turning point in sequencing. Rather than imposing regulatory obligations, it leveraged existing market and innovation infrastructures to accelerate clean energy adoption. This was, in a way, sequencing: an industrial base had matured sufficiently for federal policy to "hook onto" ongoing market transformations. Yet, the political coalitions behind the IRA were constructed around energy transition benefits—jobs, manufacturing, energy independence—rather than around mitigation per se (Kupzok and Nahm 2024). As such, it needed to reap clear economic benefits in order to win the next election (in November 2024), which arrived too early to win retrospective voters' rewards given the lifecycle of this type of policies. Consequently, while the policy may have delivered emissions reductions in the long run, the fundamental assumption behind it was to prioritize distributive and industrial incentives over the most direct climate justice narratives. This was perhaps what made the IRA slightly less vulnerable to the return of President Trump in 2025 as some of the credits remained in place for one extra year or so.

That said, the American experience thus demonstrates how a market-first energy transition can substitute for, rather than complement, climate politics. It also reveals the fragility of such arrangements: absent bipartisan legitimacy, even large-scale decarbonization investments remain vulnerable to partisan reversal.

3.3. Emerging Economies of the Global South

Finally, it is worth selectively discuss the recent experience of emerging economies in the Global South. Mid-income developing countries (e.g., India, Brazil, Indonesia, South Africa) represent an increasingly relevant and fascinating set of cases. I argue that these are perhaps the frontier of the relationship between energy transition and climate politics, where extreme swings from integration to decoupling are potentially observed.

Developing countries face the fundamental imperative of expanding energy access as a way of development, often under fiscal and technological constraints (Hochstetler 2020). At the same time, through trade and aid conditionalities, they are faced with the task of paving a path forward that minimizes emissions.

Where energy shifts occur, they are frequently framed around industrial upgrading, foreign investment, and geopolitical bargaining rather than domestic climate advocacy (Bradlow and Kentikelenis 2024). Furthermore, electrification in these contexts is more additive than substituting, as energy streams are added to take care of increased demand (e.g., from new AI-related data centers). Climate policy, on the other hand, is handled as a weapon against Global North, often ex-colonizing states with high stake investments abroad. The result is a patchwork of green industrialization—Brazil's and South Africa's electric vehicle sector, India's solar, Indonesia's geothermal —each driven more by competitive growth and state capacity logics than by climate institutionalization, indeed closer in spirit of fossil fuel extraction than just energy transitions (Edwards et al. 2023).

To be clear, international climate funds and supply-chain standards have been important catalyzers of domestic social mobilization around energy and climate, especially through just-transition frameworks (Genovese 2020; Gaikwad et al. 2025). Yet, these cases remain fragile, dependent on donor credibility and political stability, much of which is uncertain as of 2025

(Colgan and Genovese 2025). As such, the Global South encapsulates the broader dilemma identified in this paper: energy transition can proceed materially without robust climate governance, but its durability and equity remain unclear if climate action is motivated by abroad constituencies that are neither robust nor stable.

4. Conclusion: Lessons for a Transitioning, Warming 21st Century

This paper asked the question whether, in a world confronted with a compound of technological disruptions, wealth inequalities, energy scarcity and climate abnormalities, the way forward to boost green policymaking is to interlink the motive of an energy transition with climate action.

I have argued that, theoretically, an energy policy tilted towards the green transition and a climate policy orientated towards mitigation action together strive for a low-carbon future where natural resources are abundant, economic returns are efficient, and environmental externalities are accounted for. In the backdrop of this argument, the last decade has seen an attempt to bring together the energy policy and climate policy lenses, in order to turbocharge a large supporting coalition – or, indeed, a true green movement. However, recent political turbulence, including the so-called green backlash at various democratic elections and within several international bodies of law, suggest that this interlinkage has not worked consistently. Against this backdrop, I investigate whether the rationales behind each policy domain differ in significant ways and the convergence between energy transition politics and climate mitigation politics does not systematically produce the hoped effects.

The paper sheds light on how the nexus between energy transition and climate action can provide progress towards decarbonization, and also why it might fail to do so, by focusing on *material returns*, *ideological motivations* and *institutional credibility* behind the energy-climate interlinkage. I argued that, once we trace how these vary, we can identify how different actors have had different priorities and time horizons, leading to brakes to the synergies of ambitious energy-climate outcomes.

Along these lines, I argued that the energy transition creates opportunities for the development of new industries and associated employment, providing a tangible incentive for political actors to support such policies and build institutions to sustain them. These economic, ideological and strategic considerations should create a coalition of support that spans industrial actors, labor organizations in emerging sectors, and certain environmental advocacy groups focused on technological solutions.

Climate politics, by contrast, is motivated by environmental and ecological concerns that are sequentially intertwined with socioeconomic considerations. Its core objective is the mitigation of greenhouse gas emissions. Long-term commitments are essential to reinforce the political imperative for climate action, which is not security-maximizing and profit-making in different ways than energy transitions are. Indeed, climate politics often imposes constraints on existing economic structures. Regulatory instruments such as carbon pricing, emissions caps, and mandated reductions in fossil fuel consumption generate immediate economic costs for high-emission industries and, by extension, for affected labor markets. Thus, climate politics tends to mobilize coalitions that prioritize environmental protection over short-term economic interests.

After reviewing how the literature sees the potential opportunities and trade-offs of energy transition-drive and climate action-motivation green politics, I illustrated how the intersection of energy transition and climate politics under the three conditions – i.e., energy profit maximization compatible with material returns from climate action, political elites capitalizing on merging the two narratives, and a state is capable to balance climate demands with energy

capital requests – pan out in the real world. In Europe, I argued that the EU has sought to systematically integrate energy transition with climate goals by providing long-term institutional commitments (via multilevel governance) and insulation (via coordinated industrial policy decisions). This has worked during the "deep linkage" years in the 2000s. It did not in later years, as other, not orthogonal crises like the 2009-2010 Great Recession, the 2020-2021 COVID19 crisis, and the 2022 Russian invasion of Ukraine, hit. These events effectively obfuscated the material, political and institutional case for bundling energy and climate in the European continent.

As for the rest of the world, I argued that in the United States we can mostly observe a "volatile" type of linkage. Here, largely market-driven energy transition initiatives have historically emphasized technological innovation and energy security. By contrast, US climate politics has been highly polarized and shaped by ideological divisions, as shown by the exhausting passing and then quickly dismantling of the IRA green industrial policy between 2022 and 2024. On the other side of the spectrum, China illustrates a state of "shallow" linkage. Here, energy transition is centrally coordinated, emphasizing industrial development and energy self-sufficiency, while climate-focused measures, though present, are enacted in a top-down technocratic fashion. This is not far from the model of "thin" linkage in the emerging economies of the Global South.

As the first quarter of the century closes, it remains unclear how a green energy transition shall be powered by climate action, and vice versa, in the immediate future. As more world leaders portray energy transition as an economic opportunity and climate regulations as a democratic constraint, we risk ignoring that energy transitions can be significantly regressive and, by contrast, climate action can foster democratic public good provision. Yet, this requires confronting the fact that both energy transitions and climate action need to be properly funded, but that without the right balance of capital investments and regulations the coalitions of energy-climate supporters will tend to split.

In sum, this paper concludes that neither energy politics nor climate politics can simply be placed at the forefront on their own to solve the multidimensional crises that the 21st century is presenting to a warming and more turbulent world. In democracies, putting energy concerns first while silencing climate concerns risks creating policies that shift abruptly with electoral cycles, especially when affordability pressures bite. In autocracies, decisive action may be easier, but this comes at the cost of the practical and immoral repercussions of zero-sum climate politics. Yet, placing climate politics alone at the centre risks turning it into a political weapon, as demonstrated by the cultural wars against sustainability policies in the USA and Europe. The challenge, therefore, is to advance energy and climate goals together, possibly in sequence and certainly in harmony, so that durable, legitimate, and effective transitions can take root in light of, and not despite, climate awareness and mitigation ambitions.

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