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Explaining China’s Rapid Energy Transitions: Drivers and Implications (2020-2025)

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"On my honour as a student of the Diplomatische Akademie Wien, I submit this work in good faith and pledge that I have neither given nor received unauthorized assistance on it."

Abstract

China's energy transition accelerated enormously between 2020 and 2025. Solar installation grew fourfold, electric vehicles reached a majority of new car sales, and independent assessments suggest emissions may have peaked. All of this happened alongside a simultaneous expansion of coal capacity authorized by that very same governance architecture. Understanding what actually drove this acceleration, and what its contradictions reveal, is the central point of this thesis.

The research question is: what explains the rapid acceleration of China's energy transition between 2020 and 2025? This thesis applies four theoretical lenses, political economy, international relations, socio-technical transition theory, and an ecological perspective, to China's policy record for the time period. It uses discourse analysis of official Chinese policy texts to bridge the gap between what is said and what can be observed.

The findings assign different explanatory weight to each of these lenses. International relations explains timing and the most pressing motivation behind it. Political economy and socio-technical dynamics together explain the pace and scale. The ecological lens primarily explains domestic sustainability.

The discourse analysis shows that China's official texts operate on two simultaneous registers. Domestic governance documents embed security constraints and growth compatibility, while international documents project unconditional climate leadership. This is how China manages the gap between what its architecture can actually deliver and what its international positioning requires it to claim.

The transition is real and structurally incomplete. Coal lock-in, a missed binding intensity target, and an emissions plateau whose cause cannot be cleanly separated from economic slowdown all constrain the durability of recent progress. Making the 2060 neutrality commitment credible would require specific structural changes, most of which remain unscheduled and unannounced.

Abstract (German)

China’s Energiewende hat sich zwischen 2020 und 2025 extrem beschleunigt. Die Installation von Solaranlagen vervierfachte sich, Elektrofahrzeuge erreichten einen Mehrheitsanteil an Neuzulassungen, und unabhängige Bewertungen deuten darauf hin, dass die Emissionen möglicherweise ihren Höhepunkt überschritten haben. All dies geschah zur gleichen Zeit wie eine Ausweitung der Kohlekapazitäten, die von eben jener Governance-Architektur genehmigt wurde. Was diese Beschleunigung tatsächlich angetrieben hat und was ihre Widersprüche offenbaren, ist der zentrale Gegenstand dieser Arbeit.

Die Forschungsfrage lautet: Wie lässt sich die rasche Beschleunigung von Chinas Energiewende zwischen 2020 und 2025 erklären? Diese Arbeit wendet vier theoretische Perspektiven auf Chinas Politik in diesem Zeitraum an: politische Ökonomie, internationale Beziehungen, soziotechnische Transitionstheorie und eine ökologische Perspektive. Sie nutzt die Diskursanalyse offizieller chinesischer politischer Dokumente, um die Lücke zwischen dem Gesagten und dem Beobachtbaren zu überbrücken.

Die Ergebnisse weisen jeder dieser Perspektiven eine unterschiedliche Erklärungskraft zu. Die internationale Beziehungen-Perspektive erklärt den Zeitpunkt und die dringlichste Motivation dahinter. Politische Ökonomie und soziotechnische Dynamiken erklären gemeinsam das Tempo und das Ausmaß. Die ökologische Perspektive erklärt vor allem die innenpolitische Nachhaltigkeitsdimension.

Die Diskursanalyse zeigt, dass Chinas offizielle Texte auf zwei gleichzeitigen Ebenen operieren. Inländische Governance Dokumente betten Sicherheitsbeschränkungen und verträgliches Wachstum ein, während internationale Dokumente China als Vorreiter in Sachen Klima darstellen. So regelt China den Unterschied zwischen dem, was die Governance Architektur tatsächlich leisten kann und dem, was dessen internationale Positionierung es zu behaupten zwingt.

Die Energiewende ist echt und strukturell unvollständig. Die Abhängigkeit von Kohle, ein verfehltes bindendes Intensitäts-Ziel und ein Emissions-Plateau, dessen Ursache nicht sauber von der wirtschaftlichen Verlangsamung getrennt werden kann,

schränken die Beständigkeit des jüngsten Fortschritts ein. Die Veränderungen, die erforderlich wären, um die Verpflichtung zur Klimaneutralität bis 2060 glaubwürdig zu machen, sind konkret benennbar, aber derzeit großteils weder geplant noch angekündigt.

1. Introduction

China is the world's largest greenhouse gas emitter, which makes it the single most important variable in whether global temperature targets remain achievable (IEA, 2024; Narang, 2025). Between 2020 and 2025, its energy system changed faster than most analysts predicted. For example, solar additions more than quadrupled between 2021 and 2024 and electric vehicles reached a majority of new car sales by 2025 (Global Energy Monitor, 2025; IEA, 2024; Yang et al., 2025). Climate Action Tracker (2025) assessed that China's total greenhouse gas emissions may have reached their peak. All of this happened within five years of the September 2020 dual carbon declaration, which was a commitment to peak emission before 2030 and reach carbon neutrality before 2060. Its announcement and implementation happened while the same governance architecture authorized a simultaneous expansion of coal capacity.

This thesis asks: what explains the rapid acceleration of China's energy transition between 2020 and 2025?

The 2020 to 2025 timeframe corresponds to China's 14th Five-Year Plan cycle, the period in which the dual carbon governance architecture was designed, launched, and first evaluated. It also represents the most data-rich window currently available, as 2026 is too recent for reliable independent assessment (Xinhua, 2021).

The existing literature is substantial. Political economy accounts document state-directed investment, Five-Year Plan targets, and state-owned enterprise mandates (Khan & Wang, 2026; Zhou et al., 2022b). International relations scholarship analyzes China's climate diplomacy and energy security vulnerability (Feng, 2024; Narang, 2025). Socio-technical research applies multi-level perspective frameworks to China's solar and EV sectors (Wu et al., 2021; Xu, 2021). Empirical work tracks deployment data, emissions trajectories and policy instrument effectiveness (Li et al., 2025; Myllyvirta, 2024; Myllyvirta, 2025a; Myllyvirta, 2025b).

The gap is not a shortage of analysis on any single driver. It is the absence of a systematic account that integrates these frameworks and examines how they interacted to create both the acceleration of the green transition and its contradictions. Most existing works treat one or two drivers in depth while leaving others in the background. This thesis addresses that gap by applying four theoretical lenses to the same empirical record, using discourse analysis of official Chinese policy texts as the methodological bridge between stated intent and observable outcomes.

The findings are relevant beyond Chinese borders. The IEA (2024) found that there is a high chance that emerging market economies will be the primary drivers behind global energy demand growth through 2030. Understanding what actually drove China's acceleration is relevant for how other large developing economies design their own transitions and how international actors engage with China on climate.

2. Theoretical Grounding & Methodology

A single theoretical lens alone cannot explain China's energy transition. The transition involves state planning, corporate restructuring, strategic trade rivalry, technology development, public health, and ecological reform simultaneously (Khan & Wang, 2026; Xu, 2021). Any analysis that isolates a single dimension will miss the interactions between them.

This combining of frameworks is justified by the work of Stechemesser et al. (2024), who evaluated 1.500 climate policy interventions that happened in 41 different countries between 1998 and 2022. Their findings, published in Science and summarized in a companion OECD blog by Nachtigall and Menicacci (2025), show three things clearly: Around 70% of policy interventions that produced major emissions reductions involved two or more instruments together, not a single flagship measure. The most effective policy combinations vary between different types of economies: an effective policy for Austria does not immediately translate to something working in China. Which mix of instruments succeeds is determined by the country's political economy, governance capacity, and development stage.

China is a large, emerging market economy with a state-led industrial model, specific geopolitical vulnerabilities, a coal-dominated infrastructure inherited from rapid industrialization, and severe domestic air pollution that creates public pressure for cleaner energy (Feng, 2024; Trasi, 2025; Yang et al., 2024). No single theory captures all of these factors simultaneously. Four frameworks are therefore used: political economy, international relations, socio-technical transition theory, and an ecological perspective.

2.1. The Four Theoretical Frameworks

2.1.1. Political Economy

The political economy perspective examines how the distribution of power between the state, industry, and regional governments shapes what climate policies are adopted and how ambitiously they are implemented.

In China, this requires an understanding of the role of central planning, state-owned enterprises, and provincial governance. Khan and Wang (2026) show that China’s carbon neutrality strategy is not primarily market-driven but state-directed: the central government first sets binding targets in Five-Year-Plans. Then, it uses state-owned grid companies, subsidies, and industrial policy to execute them (Zhou et al., 2022b). Crucially, this state prioritization makes use of both state-owned and private-owned enterprises. When Beijing designates a sector as strategically important, as was the case with solar manufacturing, electric vehicles (EVs), and battery technology, private firms compete to capture opportunity alongside state entities (Li & Du, 2025; Nahm, 2021). BYD and CATL, for example, are privately owned companies that became global leaders precisely because state industrial strategy created the market conditions for their growth (Barwick et al., 2025). The public-private dynamic is central to understanding the pace and scale of the deployment acceleration documented in Chapter 4.

The top-down model enables rapid capacity expansion: China built more solar energy capacity in 2023 alone than the US installed throughout the entirety of its history (Yang et al. 2025). However, it also concentrates risk: provincial governments and state-owned coal producers have resisted full decarbonization. This creates one of the central contradictions of the 2020-2025 period: record renewable investment alongside continued approvals of coal plants (Global Energy Monitor, 2026).

The economic slowdown after 2021 adds another layer. Guan et al. (2018), Niu et al. (2024), and Zhang et al. (2022) show that structural contraction in heavy industry, construction, and private industry temporarily slowed down energy demand and emissions, even without deliberate climate policy. Myllyvirta's analyses (2024, 2025a, 2025b) confirm that part of China's recent emissions plateau reflects cyclical economic weakness rather than lasting structural change. The rapid closure of small and medium private manufacturers facing demand shocks, particularly after trade disruptions and US tariff uncertainty from 2022 onward, contributed independently to slowed growth in industrial energy consumption (IEA, 2025a; Wang & Wu, 2023). Political economy helps distinguish between these two: genuine decarbonization driven by policy, and a temporary dip driven by reduced activity in real estate and private industry (Zhang et al., 2022).

Stechemesser et al. (2024) show that regulatory standards and planning instruments, which dominate China's policy mix, are more effective in economies with similar structures than carbon pricing alone. The political economy lens explains why China's mix looks the way it does and why it may be more appropriate to its development context than a purely market-based approach.

2.1.2. International Relations

External pressures, strategic calculations, and international positioning shape China's domestic energy decisions. The international relations (IR) component captures this dimension.

Four mechanisms are particularly relevant here. Firstly, China's 2060 carbon neutrality pledge was announced at the UN General Assembly in September 2020, at a moment when the United States had withdrawn from the Paris Agreement under the Trump administration. Narang (2025) and Xiang and van Gevelt (2025) argue that Beijing explicitly framed this pledge as an assertion of global leadership, using climate action as a domain in which China could claim international credibility at a moment when the US had vacated the space. China's climate commitments are then presented as part of national strength and modernization, lending them performance-based legitimacy with their population. At the same time, the Biden administration that took office in January 2021 deliberately pursued climate collaboration with China as a strategic de-escalation channel. The Kerry-Xie bilateral track was an explicit US policy choice. China's climate engagement in 2021 was therefore not purely opportunistic positioning against an absent US; it was also a response to a genuine opening for bilateral cooperation that suited both sides (Dai et al., 2023; Ewing, 2021; Hook, 2021; Yang, 2022).

Secondly, China faces a well-documented strategic vulnerability in its energy supply. It imports roughly 80% of its oil through maritime chokepoints that it cannot control. The Strait of Malacca, which the United States Navy could theoretically block in a conflict scenario, carries the bulk of these flows, but the Strait of Hormuz is equally critical. China sources around 50% of its crude oil from the Persian Gulf, and any conflict involving Iran directly threatens that supply route (Dosson, 2023; Lindstaedt, 2026). Dosson (2023, 2025) and Paszak (2021) document the "Malacca dilemma" in detail. Beyond physical chokepoints, the Taiwan conflict escalation and the US-China trade war from 2017 onward made it clear to China that energy supply chains are also vulnerable to sanctions and secondary sanctions (Dabbar, 2023; Downs, 2019). Expanding domestic renewable energy capacity reduces how much it depends on seaborne fossil fuel imports and directly addresses this vulnerability (Meidan, 2023).

Thirdly, China displays clear dominance in clean energy manufacturing. It makes up around 80% of the solar panels production worldwide and accounts for over 70% of global EV production (IEA, 2022; IEA, 2025b). According to Andrews-Speed et al. (2023) and Wray (2025), this is a deliberate industrial strategy that is part of the broader "geopolitics of the green transition." Control over clean energy supply chains is a form of structural power in the emerging global economy. Beijing often uses bilateral deals to expand influence while responding to external pressure on coal and emissions (Feng, 2024; Trasi, 2025). The transition is therefore partly a competition for technological and economic advantage.

Fourthly, the Australia coal import ban from late 2020, which was China's retaliation for Australia's call for an international COVID-19 inquiry, directly contributed to the 2021 energy shortage. Roughly 38% of China's supply of coal was disrupted at once. The resulting power crisis and coal price spike accelerated the political case for domestic energy independence through renewables, making the energy security argument for the transition acutely concrete rather than mostly theoretical (Marinaccio, 2021).

The international relations lens is essential here because it explains both the ambition level and the timing of China’s policy commitments, two features that domestic political economy alone does not account for. It therefore helps to explain the context that Stechemesser et al. (2024) deem vital for identifying the appropriate policy instruments.

2.1.3. Socio-Technical Transition Theory

Socio-technical transition theory examines how technologies, institutions, and social practices co-evolve in China’s energy system. It focuses on the system-level changes required: new grid infrastructure, revised regulatory frameworks, changed business models, and shifting consumer behavior.

Geels (2002) provides the foundational multi-level perspective (MLP) framework used here. The MLP distinguishes between the niche level, where the development of new technologies is protected from established competition; the regime level, which describes the dominant socio-technical system that keeps the existing order alive; and the landscape level, where slow moving external pressures make it possible for niche technologies to emerge victorious and displace incumbent regimes.

Xu (2021) applies this framework directly to China’s energy system and identifies a central paradox: China has simultaneously pushed an “energy revolution” in renewables while protecting incumbent coal interests, producing a structurally uneven transition. Wu et al. (2021) apply a related multi-level perspective to China’s EV sector, mapping how state support moved the technology from a niche experiment in the mid-2000s to a dominant mainstream product by the early 2020s. By 2025, over 40% of new cars sold in China were electric or plug-in hybrid (Climate Action Tracker, 2025).

It is important to recognize that the socio-technical lens is analytically distinct from the industrial modernization argument that also runs through the political economy lens. The industrial upgrading framing clean energy as the next stage of China's development is continuous with the 1978 reform logic and is fundamentally about state-directed industrial strategy, which belongs primarily under political economy (Lampton, 2014). The socio-technical lens addresses the internal dynamics of the technology itself: cost curves, manufacturing learning rates, the niche-to-regime transition, and the feedback loops between deployment scale and export competitiveness. Both lenses illuminate the transition from different angles (Geels, 2002; IEA, 2022; Nahm, 2021; NDRC, 2022).

Castán Broto et al. (2020) show that urban transitions in China are highly uneven across regions. Coastal manufacturing cities have led the way in clean energy deployment, while inland coal-dependent provinces have lagged behind. This spatial unevenness is a product of the socio-technical system's structure.

China is also expanding its nuclear power capacity in parallel with renewables. This is a dimension of the non-fossil energy mix that falls within the landscape of this lens even if it receives less analytical attention in the thesis. Nuclear power plants provide firm power that compensates for the intermittency of solar and wind energy at scale. Its development also reflects the same state-directed industrial strategy that characterizes the push for renewables. However, due to its long construction lead time, its contribution to the 2020 and 2025 period is too limited to warrant an in depth analysis (Andrews-Speed, 2023).

Stechemesser et al. (2024) find that technology-specific support instruments, including purchase subsidies, feed-in tariffs, and public procurement, are among the most consistently effective instruments globally. China's transition relied heavily on exactly these instruments for solar energy, wind power, and electric vehicles. The socio-technical lens explains why they worked: they aligned with an existing industrial base, reduced cost through scale, and created feedback loops between manufacturing capacity and deployment (Castán Broto et al., 2020; Wu et al., 2021; Xu, 2021).

2.1.4. Ecology

The ecological perspective connects China's energy transition to concrete environmental pressures, particularly air pollution and biodiversity conservation. These pressures played a significant role in shaping the political feasibility of its climate policies.

China's air quality crisis of the 2010s was severe by any measure. Bai et al. (2024) calculated that exposure to fine particulate matter ($PM_{2.5}$) caused roughly 2.4 million premature deaths between 2001 and 2019, with pollution levels remaining well above the World Health Organization's (WHO) guidelines for a significant share of the population. Chen et al. (2013) and Ferreri et al. (2017) document the acute health costs of sustained particulate exposure. A prime example of this is the 2013 Beijing "airpocalypse" events that brought the air quality crisis to public attention in a way that was politically impossible to ignore. The government's "war on pollution," launched in 2013 as a response to these crises and backed by both the State Council Action Plan and the NPC declaration in 2014, created a political and administrative infrastructure for environmental regulation that was later extended to carbon policy (China Energy Portal, 2013; GOV CN, 2013; NPC, 2014). Cutting coal, which was the main source of both particulate pollution and CO_2, allowed Beijing to pursue climate and health goals simultaneously. Gong et al. (2025) document this co-benefit logic in detail in their synergetic mapping of carbon neutrality and clean air.

Ren et al. (2025) document a simultaneous shift in China's land conservation policy. The expansion of ecological redlines and protected areas after 2020 reflects a broader state commitment to integrating environmental protection into development planning. This matters for the energy transition because siting decisions for large solar and wind farms intersect directly with land-use and biodiversity policies.

The ecological lens matters methodologically because Stechemesser et al. (2024) find that policies targeting multiple pollutants simultaneously, as with the co-benefits approach, show higher success rates than single-target instruments. China's policy mix has been structured around this logic since the mid-2010s, and understanding that structure requires an ecological perspective.

2.2. Methodology

This thesis uses a qualitative research design. Its goal is to explain the drivers of China's rapid energy transition, not to estimate the causal effect of any single policy. Causal identification of a specific instrument's effect requires experimental or quasi-experimental conditions that are not available for a whole-of-economy transition in a single country over five years. A qualitative design is therefore appropriate precisely because the question is explanatory in nature: how did multiple factors converge to produce this outcome?

The research proceeds in four steps.

2.2.1. Step 1: Mapping China's Climate and Energy Policy Mix

The first step maps China's climate and energy policy instruments for the period 2020 to 2025 in Annex 1. This means identifying what the government actually did: which major instruments it deployed, in which sectors, and with what stated targets.

The mapping uses the OECD (2025) Climate Actions and Policies Measure Framework (CAPMF) as an organizing structure. The CAPMF grounds policy instruments into four categories. Firstly, price-based instruments, such as the national carbon emissions trading scheme (ETS) (Liu et al., 2022). Secondly, regulatory standards, such as performance requirements for power plants and fuel economy standards for vehicles (IEA, 2021; Xinhua, 2021). Thirdly, technology support instruments, such as grid-parity auctions, EV purchase subsidies, and public procurement for renewable energy (Hu et al., 2025; Yang & Lo, 2023). Fourthly, governance and planning instruments, such as the 14th Five-Year Plan targets and the 1+N carbon neutrality policy architecture (Xi, 2021; Xinhua, 2021).

This framework is appropriate because it was designed for cross-country comparisons of policy mixes and directly connects to the Stechemesser et al. (2024) evidence base. It provides a transparent structure that enables characterization of China's mix and assessment of whether its composition resembles combinations identified in the global literature as analytically relevant for similarly structured economies.

Li et al. (2025) also provide a closely relevant benchmark. Their analysis of China's post-Paris policy mix shows a "disconnect between policy density and intensity" (Li et al., 2025): China has enacted many policies on paper, but enforcement and ambition levels are uneven across sectors. This finding guides the mapping exercise: the focus is not just on counting instruments but on assessing their stringency and coverage.

This classification provides the first analytical bridge by outlining the policy landscape of the major steps implemented to accommodate a green transition, which will color the theoretical interpretations that follow. It will also provide empirical examples to support the use of certain frames as an explanation. The discourse logbook in Annex 2 will complement this.

2.2.2. Step 2: Discourse Analysis of Key Chinese Policy Texts

The second step analyzes how China's leadership has framed the energy transition in official texts in Annex 2. The corpus includes:

- The 14th Five-Year Plan (2021-2025), as translated and published by the Center for Security and Emerging Technology (Xinhua, 2021).
- China's updated Nationally Determined Contribution (NDC), as submitted in 2021 to the UNFCCC (2021), as well as the 2035 submission (UNFCCC, 2025).
- Major speeches by Xi Jinping at the General Assembly (2020), COP26 (2021), and the Leader's Meeting on Climate (2025).
- Key State Council directives on carbon neutrality, energy security, and ecological civilization, including the 1+N Working Guidance and Action Plan (NDRC, 2021a; NDRC, 2021b), the 14th Five-Year Plan for Renewable Energy (NDRC, 2022), and the 20th CPC Congress report (IDCPC, 2023).
- Indicators of a broadening in governance discourse toward the end of the analytical period, such as the Energy Law (NEA, 2024) and the Methane Action Plan (MEE, 2023).

The analysis uses Fairclough's (2003) approach to critical discourse analysis, adapted for authoritarian state policy texts following Schoenhals (1992). Drawing on

Weigelin-Schwiedrizik's (2018) application of this framework to Chinese environmental governance, it considers Schoenhals's (1992) principle that the frequency and consistency of standard formulation across documents signals their centrality as political concepts and a shift in them implies a change in political priorities. It also factors the placement of statements within policy texts into its analysis. This makes it more analytically relevant rather than drawing on the specific rhetorical mechanisms belonging to the Maoist era it describes, which have since become outdated. The process involves two phases. The first uses keyword searches and word-frequency counts to identify passages that address climate, energy, economic restructuring, security, and ecology. The second codes these passages for recurring frames, such as "energy security and import dependence," "international leadership and responsibility," "innovation and industrial upgrading," and "ecological society." It tracks how often themes appear, how they are combined, and how emphasis shifts across the 2020 to 2025 period (Hansen et al., 2018; Marinelli, 2018).

This method is particularly useful for testing arguments related to international relations. If China's leadership consistently links climate policy to national security and strategic competitiveness, that is evidence for the IR-driven explanation. If ecological civilization frames dominate instead, the ecological lens carries more weight. The discourse analysis connects the theoretical frameworks to the texts that guided policy implementation.

2.2.3. Step 3: Cross-Checking Against External Evaluations and Data

The third step checks whether the observable outcomes in China's energy system are consistent with the causal account constructed in Steps 1 and 2. This is not a policy effectiveness evaluation. This thesis does not develop its own econometric model or impact assessment, and it does not systematically ask whether every instrument achieved its stated target. The question is both broader and narrower than that: can the patterns we see in the data genuinely be explained by the drivers identified through policy mapping and discourse analysis? And where they do not, what does the inconsistency reveal?

To answer this, the thesis draws on two categories of existing evidence. First, published evaluations of China's climate policy effectiveness, including Feng (2024), Guan et al. (2018), and IEA (2024). Second, emissions and energy datasets, such as those from Climate Action Tracker (2025), the CCPI (2026), and IRENA (2025).

The analysis uses this evidence to ask whether the trends observable between 2020 and 2025 – falling emissions intensity, surging renewable capacity, plateauing fossil fuel demand in the power sector – match what the explanatory account would predict. Where the data supports the account, this strengthens the argument. Where they complicate or contradict it, this is treated as a finding rather than a problem, feeding directly into the contradictions discussed in Chapter 6, which examines the structural limits and contradictions of the transition. Therefore, target performance is used as a diagnostic tool: missed targets and unexpected outcomes are evidence about where the causal account needs refinement and where competing explanations have genuine purchase.

This approach follows George and Bennet's (2005) process tracing methodology, which supports the use of existing quantitative indicators as evidence in explanatory case studies, provided the analyst is explicit about what the numbers can and cannot show. This step is designed to provide Chapter 7's global-implications argument with a firmer empirical foundation. If the drivers identified here are reflected in the outcomes, the claim that other similarly structured economies might adapt elements of China's model rests on more than mere interpretation.

2.2.3. Step 4: Deriving Global Implications

The final step draws implications for global climate governance from the findings. This is explicitly inferential rather than predictive. The thesis does not claim to forecast China's future emissions trajectory. It asks instead: if the identified drivers are correct, what does that suggest for how international actors should engage with China on climate, and what can other states learn from China's experience?

This step first addresses international engagement directly. Essentially, it analyzes how the EU, the US, multilateral institutions, and other developing country governments should position themselves given what this thesis has found about the actual drivers of China's transition. This analysis draws on the thesis' own findings and on Trasi (2025) for information on EU-China climate relations, Andrews-Speed et al. (2023) for the general geopolitics of energy, and Wray (2025) for the strategic dimensions of the green transition.

In its final analytical push, this thesis will cautiously examine what other states can learn from China's experience. As China's specific combination of party-state institutional capacity, decades of accumulated manufacturing scale, domestic market pressure, and acute geopolitical energy security pressure does not exist in the same configuration anywhere else, direct policy transferability is relatively limited (Feng, 2024; Heilmann, 2011; Nahm, 2021). Therefore, the analysis operates at the level of geo-economic logic and design principles rather than specific instruments, drawing on IEA (2024) projections of emerging-market energy demand, Overland (2019) on the geopolitics of renewable energy, and Khan and Wang (2026) on the political economy of the neutrality strategy.

2.3. Limitations

Six limitations apply to this research design.

Firstly, the discourse analysis of official texts captures stated intent, not implementation. Chinese policy documents are carefully worded instruments of governance and diplomacy as much as genuine statements of priority. The analysis attempts to address this by cross-checking official frames against external emissions data and independent assessments, but the gap between rhetoric and enforcement is a persistent methodological challenge.

Secondly, the absence of a causal identification strategy means that the thesis cannot definitively rule out confounding explanations. The economic slowdown may explain more of the emissions plateau than the analysis suggests. The analysis explicitly addresses this risk and treats the economic slowdown as a competing explanation to be assessed alongside the policy-driven account.

Thirdly, the scope of this thesis is limited to the power sector and road transport, where the data are most reliable, and the transition is most advanced. Industrial decarbonization, which includes materials such as steel and cement, while mentioned, does not receive this systematic treatment. Li et al. (2025) show that China's industrial policy mix is particularly uneven in these sectors, and a fuller analysis would require sector-specific data that is currently not consistently available for the full 2020 to 2025 period.

Fourthly, while the concept of ecological civilization appears throughout the official corpus analyzed in Annex 2, this thesis does not attempt a deep analytical treatment of its ideology beyond its repeated mention as a legitimization tactic. The concept predates President Xi Jinping's tenure as a relict from President Hu Jintao's era. Its role in the post-2020 transition is deeply enmeshed with intra-Party dynamics and ideological debates that require specialist knowledge of CPC intellectual history to interpret with confidence. Analyzing it properly would necessitate a separate research agenda. This thesis therefore treats mentions of ecological civilization as a legitimating frame whose presence is noted and documented, but without making strong claims about its causal weight or its meaning within the broader tradition of CPC ideological development (Goron, 2019).

Fifthly, the thesis will not make in depth analysis about the reliability of Chinese emissions data. China's official greenhouse gas statistics are compiled and reported by domestic agencies. When independently verifying these figures, one quickly runs into structural constraints. Concerns have been raised in the research community about statistical practices that could affect reported emissions figures, including the timing of industrial activity relative to measurement periods. There have been cases where the official Chinese data has diverged from satellite-based emissions monitoring (Guan et al., 2018; UNEP, 2024). However, the methodology and coverage of such estimates come with their own uncertainties. The thesis relies primarily on externally compiled datasets, such as Climate Action Tracker (2025), CCPI (2026), and analyses by Myllyvirta (2023, 2024) which draw on multiple independent data streams rather than official Chinese statistics alone. This partially mitigates the reliability concern, but cannot fully resolve it. Readers should keep this in mind when reading about specific emissions figures, as these, while reliable enough for analysis, might not be precise enough to be seen as absolute numbers.

Sixthly, there are some limitations to what the discourse analysis methodology can achieve. Schoenhals (1992) repetition principle, which grounds the frequency-based reading of official Chinese texts in Chapter 5, assumes that the term recurrence is a sign of genuine political prioritization and not a tactical deployment of language for legitimation or bureaucratic convention. To partially address this, the analysis applies three additional checks beyond raw frequency, when necessary: structural placement within the document hierarchy, consistency across domestic and international registers, and institutional corroboration where discourse patterns align with observable design choices. Where these checks converge, the interpretative claims are treated as substantially stronger. Where institutional corroboration is thin, the conclusions should be weighted accordingly.

3. China's Energy Policy Before 2020

3.1. A Coal Economy by Design

China's pre-2020 energy system was quite deliberately designed around coal. From the 1980s onward, the country experienced rapid industrialization, which required cheap, domestically controlled energy. Coal provided both. By the mid-2010s, China was consuming a larger amount of coal than all other countries combined, with the fuel accounting for roughly 64% of primary energy consumption in 2015 (IEA, 2024). Some of the main sectors that drove this demand were steel, cement, chemicals, and construction. As these were the same sectors powering rapid GDP growth, any serious effort to reduce coal use carried direct economic and political costs (Zhang et al., 2022; Zhou et al., 2022b).

Coal was heavily embedded in China's political economy. Electricity generation and coal mining were both completely dominated by state-owned enterprises, while provincial governments depended on coal revenues and employment. Grid companies had specifically built their business models around dispatchable thermal power, structurally embedding themselves into the planning system that also set climate targets (Khan & Wang, 2026; Zhang, 2010). As China's CO_2 emissions were tightly tied to industrial output during this time period, emissions could not fall meaningfully without either restructuring industry or accepting slower growth (Guan et al., 2018). And before 2020, Beijing was prepared to do neither (Khan & Wang, 2026).

3.2. Incremental Climate Policy: The 11th to 13th Five-Year Plans

China's start into engaging with climate policy predates 2020 by over a decade. The 11th Five-Year Plan (FYP), which covered 2006 to 2010, introduced China's first binding energy intensity targets. It required reducing energy consumption by 20% per unit of GDP by 2010, something that represented a genuine institutional shift. This was the first time Chinese provincial officials were being held enforceably accountable for energy performance rather than just growth (Asia Society Policy Institute, 2022).

This was followed by the 12th and 13th FYPs, covering 2011 to 2015 and 2016 to 2020, respectively. They tightened these targets and added carbon intensity metrics. The 13th FYP set a carbon intensity reduction target of 18% by 2020. This was complemented by a goal of 15% non-fossil energy in primary energy consumption (Xinhua, 2021). China largely met these targets. By 2020, energy that was produced from non-fossil sources made up 15,9% of primary energy consumption, and carbon intensity had fallen significantly from its peak in 2005 (Climate Action Tracker, 2025).

The problem was the fundamental logic of the design of these policies. Intensity targets allow absolute emission to keep rising as long as the economy grows faster than the emissions rate falls. This is essentially what happened with China's economy. Even though intensity improved, total CO_2 emissions continued to climb through most of the 2010s (Myllyvirta, 2024). While the pre-2020 policies made each unit of growth less costly in terms of carbon cost, they did not put a ceiling on growth itself. This is a major reason why 2020 represented a genuine turning point rather than just the next step of a linear progression.

3.3. The Paris Agreement and China's First NDC

China signed the Paris Agreement in 2016 and submitted its first Nationally Determined Contribution. It committed to peak CO_2 emissions before 2030, to reduce carbon intensity by between 60% and 65% from 2005, and to raise non-fossil energy to around 20% of primary energy consumption by 2030 (UNFCCC, 2021). This represented China's most significant international climate commitment yet.

However, independent assessments were skeptical. Climate Action Tracker (2025) rated China's 2015 NDC as "Highly Insufficient," arguing that the targets were broadly similar to China's existing trajectory, meaning that it would not require any meaningful additional policy effort. Additionally, the peak-before-2030 commitment left room for emissions to continue rising for another fifteen years. In other words, China's international pledge only formalized what was already happening naturally rather than committing to something new. This means that for genuine acceleration to happen in 2020, something must have significantly changed in the time that passed since the Paris Agreement.

3.4. Renewable Growth and Its Limits

Even before 2020, China was already the world's largest renewable energy investor, explicitly providing industrial policy backing in the clean technology sector. Made in China 2025, which was published in 2015, identified NEVs, power equipment, and energy-saving technologies as strategic priority sectors for state industrial support (GOV CN, 2015). This confirms that the state's interest in clean energy manufacturing as an industrial strategic objective predates the dual carbon declaration by at least five years (GOV CN, 2015; Xi, 2020).

By 2019, wind capacity reached approximately 210 gigawatt (GW) and solar capacity reached around 200 GW, with wind broadly meeting the 13th FYP target a year ahead of schedule (NEA, 2020). This growth was, in large part, driven by feed-in tariffs, which guaranteed renewable generators a fixed price that was above-market and created strong investment incentives. As costs fell, the government progressively removed these tariffs and moved toward grid-parity auctions by 2019 (Yang & Lo, 2023).

This growth had a structural problem. Curtailment rates, which are the share of potential renewable energy generation wasted because the grid could not absorb it, peaked at around 17% for wind and 11% for solar in 2016 and 2015, respectively. Since coal offered more predictable revenue under the existing market rules, grid companies had limited incentive to actually prioritize renewable dispatch (Hoves, 2020; Xu, 2021). Additionally, transmission infrastructure between wind-rich inland provinces and demand centers on the coast was largely inadequate. This produced deeply uneven regional outcomes, with coastal cities advancing while inland provinces stalled (Castán Broto et al., 2020).

Wu et al. (2021) find a similar pattern in the EV sector. With the state supporting it with subsidies, preferential procurement, and charging infrastructure investments, EV technology moved from a marginal niche toward early commercialization from the mid-2000s onward. However, before 2020, adoption remained limited, with EVs accounting for only approximately 6% of new vehicle sales in 2020 (IEA, 2025b). While the pre-2020 period might have established an industrial and policy basis, the actual transition to rapid expansion did not happen before this turning point.

3.5. Carbon Pricing: Pilots Without Scale

China launched seven regional carbon trading pilots between 2011 and 2014 in different cities and provinces, including Beijing, Shanghai and Shenzhen. These covered roughly 40% of emissions related to energy in China and generated real institutional learning on monitoring, verification, registry systems, and enforcement. They further demonstrated that carbon trading was politically feasible in a Chinese context (Zhang, 2015).

However, they did not produce meaningful emissions reductions. Carbon prices in the pilots were well below the level economists consider necessary to make significant changes to investment patterns. Moreover, coverage was narrow, enforcement was inconsistent, and free allocation was generous (Zhang, 2025). Khan and Wang (2026) identify similar problems in the national ETS design after 2021: fragmented governance, weak mechanisms for financing, and cross-sectoral failures in coordination. We can therefore consider the pre-2020 carbon market a proof of concept, but not a genuine driver of decarbonization.

3.6. From Air Quality Crisis to Environmental Governance

In January 2013, air pollution in Beijing reached levels over twenty times the WHO safety threshold (Ferreri et al., 2017). The political response this triggered was unusual in both its speed and scale. In September 2013, the State Council launched the Air Pollution Prevention and Control Action Plan. This included specific targets for $PM_{2.5}$ reductions across major urban regions and imposing binding obligations on provincial governments to meet them (GOV CN, 2013). Li Keqiang announced a "war on pollution" at the National People's Congress in 2014, granting the Ministry of Environmental Protection new enforcement powers and enforcing career consequences for officials who missed targets (NPC, 2014).

Cutting coal was the most direct route to cleaner air, since coal combustion was responsible for the majority of China's $PM_{2.5}$ emissions. With $PM_{2.5}$ exposure causing roughly 2.4 million deaths between 2001 and 2019, the health burden was considered severe enough that there was a push for stronger environmental regulation. Gong et al. (2025) documented how China embedded a co-benefits logic into its policy thinking across this period, meaning that reducing coal cuts both $PM_{2.5}$ and CO_2 simultaneously. The administrative infrastructure built for air quality during this time was later adapted and extended for carbon policy after 2020. In this sense, the war on pollution can be considered preparation for the more intense energy transition that would follow.

Alongside emissions-focused measures, China was simultaneously expanding the legal and territorial infrastructure of environmental governance more broadly. The revision of the Ecology Law in 2014 strengthened the legal basis for environmental enforcement across all levels of government (NPC, 2015). This development represents a parallel track of institutional capacity-building that was less visible than the war on pollution but equally consequential for what became possible after 2020.

The concept of ecological civilization, which featured prominently in post-2020 governance texts has its roots even before this period. It entered CPC doctrine at the

17th Party Congress in 2007 under then-President Hu Jintao, was embedded in Party statutes at the 18th Congress in 2012, and was included into the national constitution in 2018. President Xi inherited the framework rather than creating it and deployed it as a legitimating instrument as other pressures made the clean energy transition strategically desirable (Goron, 2019).

3.7. Energy Security and Strategic Vulnerability

In 1993, China reached the status of a net oil importer. By 2020, it imported around 80% of its oil consumption, with the majority arriving by sea through maritime chokepoints it could not control. The Strait of Malacca carried the bulk of these flows, and Chinese military and security planners recognized that in a conflict scenario involving the United States, seaborne energy supply could be blocked or disrupted (China Daily, 2022; Feng, 2024). Dosson (2023) and Paszak (2021) documented the strategic anxiety this created in detail. While diversifying import sources helped at the margin, it did not eliminate the fundamental chokepoint risk presented by the Malacca Dilemma.

A further source of such vulnerability is the Strait of Hormuz. A substantial share of its crude oil originated in the Persian Gulf, which represents a second critical chokepoint. Here, an Iran conflict or broader Gulf escalation could disrupt supply independently of anything occurring in Southeast Asian waters. By 2020, the overlap of the risks present in Malacca and Hormuz placed a significant portion of China's energy imports at risk across multiple simultaneous conflict scenarios (Dosson, 2023; Lindstaedt, 2026).

The deterioration of US-China relations from 2017 onward, and sharpening tensions over Taiwan, added another strategic risk: that access to seaborne fossil fuels imports could be curtailed through sanctions and financial mechanisms rather than naval force (Dabbar, 2023; Downs, 2019).

For Chinese planners, reducing this dependence was a priority. Expanding domestic solar and wind energy, hydropower, and electric vehicle (EV) capacity offered a direct answer to both categories of risk. It did so by lowering the volume of seaborne fossil fuel imports that needed to flow through contested waters or compliant financial systems in the first place. In other words, the energy security promised by diversification gives the transition a strategic rationale that operates independently of climate goals (Meidan, 2023).

This strategic vulnerability shaped China’s approach to domestic energy development throughout the 2010s. Many of its policies, such as expanding renewable capacity, electrifying transport, and developing domestic natural gas, were all at least partially aimed at reducing import dependence. Feng (2024) argues that energy security was weighed at least as heavily as climate goals when considering China’s clean energy investment before 2020. These two motivations reinforced each other, rather than being in competition. This shows that the security rationale for the rapid energy transition was well established before 2020 and did not actually require a new political decision after that date.

3.8. The Pre-2020 Baseline

By 2020, China had built the largest capacity for renewable energy worldwide, launched a national carbon market pilot programme, embedded environmental protection in its constitutional order, and developed an institutional infrastructure for air quality enforcement that could be repurposed for carbon regulation. The state had also identified clean energy manufacturing as a strategic industrial priority, and energy security concerns had created a durable domestic rationale for reducing fossil fuel import dependence. Simultaneously, coal still dominated the energy mix, absolute emissions were near their historical peak, carbon pricing was too weak to shift investment, and renewable generation was constrained by grid and market barriers.

This is the baseline against which the post-2020 acceleration must be measured. The pre-2020 decade was a period of genuine but insufficient change, during which the institutional, industrial, and ideological preconditions for a faster transition were assembled without the transition itself arriving. What changed after 2020, and why it changed when it did, is the subject of the following chapters.

4. The Policy Pivot and Its Empirical Record

On September 22, 2020, President Xi Jinping made an announcement at the 75th UN General Assembly about how China's CO_2 emissions would peak before 2030 and that the country would achieve carbon neutrality before 2060 (Annex 1, Category 4; Xi, 2020). This announcement built on prior FYP targets and the 2015 Paris Agreement commitment, but with new framing. Its carbon neutrality goal to be fulfilled by 2060 had not been an aspect of China's official position before this moment (Stern & Xie, 2022; UNFCCC, 2021; Xi, 2020; Xinhua, 2021).

While prior intensity-based pledges to reduce emissions per unit of GDP might have been compatible with rising absolute emissions in a growing economy, this is not the case with a carbon neutrality pledge. The 2060 commitment, therefore, required a different quality of policy response than anything the pre-2020 period had seen. It became necessary to transform the economy as a whole, which prior FYPs had very deliberately shied away from. Through President Xi's speech at the Climate Ambition Summit in December 2020, this commitment was strengthened. During this repeated statement of intent, the president added measurable targets on wind and solar capacity, non-fossil energy, and carbon intensity. These were then formally submitted as China's updated NDC to the UNFCCC in October 2021 (Annex 1, Category 4; UNFCCC, 2021).

There was a rapid institutional response to these commitments, with the 14th FYP being approved in March 2021. It embedded two significantly tighter binding national targets on CO_2 emissions and energy consumption: a fall of 18% and 13,5% from their baseline in 2020, respectively, to be completed by 2025. This plan created a non-binding guidance for an increase in non-fossil energy consumption, aiming for it to rise to 20% of primary use by 2025, which would be five years ahead of the prior plan's 2030 target. These targets had a clear distinction between them: while the target for carbon and energy intensity reductions was binding and came with formal measures to enforce accountability, the goal for non-fossil fuel energy was not (Annex 1, Categories 2 & 4; Stern & Xie, 2022; Xinhua, 2021).

In October of the same year, another highly consequential governance document was released. The CPC Central Committee and State Council jointly issued the “Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality,” which established an overarching 1+N policy framework (Annex 1, Category 4; NDRC, 2021a). Only two days later, the State Council released the “Action Plan for Carbon Dioxide Peaking before 2030,” which covered many sectors such as power, transport, and carbon sinks (Annex 1, Categories 2 & 4; NDRC, 2021b). Both documents carried the highest possible political authority. Importantly, both had a deeply embedded and explicit constraint: they stated that the transition would not be allowed to compromise the security of the energy industry, supply chains, or food (NDRC, 2021a; NDRC, 2021b). This statutory bottom line was captured in the phrase “先立后破” (eng. “construction before destruction”) (NDRC, 2021a), which demands that new infrastructure must be established before the old can be dismantled (NDRC, 2021a). The implications this has will be analyzed more thoroughly in Chapters 4.4 and 6.

In the same year, three further instruments were launched. In July 2021, the national ETS began trading, covering over 40% of China’s total CO_2 emissions from the power sector annually. This area was the largest carbon market in the world by covering emissions at the time of its launch (Annex 1, Category 1; ICAP, n.d.). The Green Trading Market launched that September and created a nationwide option for large electricity users to voluntarily go directly to generators to buy renewable power (Annex 1, Category 3; Herbert Smith Freehills, 2022). SASAC issued guidance requiring central state-owned enterprises to fill at least half of their capacity with renewable energy generation by 2025. Given the dominance of the five major state power groups in national electricity generation, this mandate represented an effective directive to reconstruct the country’s power generation (Annex 1, Category 3; Sandalow et al., 2022; You, 2021).

This policy mix only deepened in 2022 and 2023. The 14th FYP for a Modern Energy System, issued in March, added targets for non-fossil fuel power generation and explicitly embedded energy security as an objective equal to decarbonization (Annex 1, Category 4; Climate Change Laws, n.d.). The 14th FYP for Renewable Energy, issued in June 2022, formalized specific targets on renewable electricity supply, non-hydro renewables, and the percentage of renewable energy in incremental consumption growth. Those being 33%, 18%, and 50% respectively.

These targets were anticipated guidance rather than binding obligations, giving them a similar non-binding status as the non-fossil energy share target in the main FYP (Annex 1, Categories 3 & 4; NDRC, 2022). For the transport sector, the NEV dual-credit system required manufacturers to generate NEV credit equal to 14% of their conventional vehicle production in 2021, rising to 18% in 2023, and 38% in 2025 (Annex 1, Category 2; DieselNet, n.d.). These were supported by the decision to extend purchase subsidies through the end of 2022, purchase tax exemptions through 2025, and to introduce a RMB 20.000 trade-in subsidy in 2024 (Annex 1, Category 3; DieselNet, n.d.; IEA, 2025b).

Alongside wind, solar, and EVs, China also expanded its nuclear power capacity during the 2020 to 2025 period as part of its non-fossil energy strategy. China was operating approximately 57 GW of nuclear energy by the end of 2024. Additionally, they had another 24 GW under construction. The 2035 NDC explicitly includes nuclear in its non-fossil energy targets and the 14th FYP for a Modern Energy System describes it as a good power source to complement wind and solar power. It can be considered a fallback option that complements the intermittency of solar and wind energy (Andrews-Speed, 2025; UNFCCC, 2025).

In 2024, two further steps were taken to strengthen this architecture. The State Council's ETS Interim Regulations, adopted in February, tightened non-compliance penalties and raised the carbon market to State Council-level, instead of just ministry level, which increased its legal authority (Annex 1, Category 1; GOV CN, 2024). The expansion of the ETS to aluminium, steel, and cement raised its coverage of Chinese CO_2 emissions from 40% to approximately 60%, bringing somewhere around 1.300 new entities into the system (Annex 1, Category 1; ICAP, n.d.; Xuan Tan & Iyer, 2025). China's first comprehensive Energy Law, enacted in November 2024, formally prioritized renewables over fossil fuels in the entirety of the energy sector and mandated minimum renewable energy shares in consumption for the first time (Annex 1, Category 2; NEA, 2024).

The full instrument set across all four CAPMF categories is documented in Annex 1. In summary, price-based instruments expanded in coverage, but remained weakly enforced throughout the period. Regulatory standards and technology support instruments were broadly comparable in volume and drove deployment and compliance directly. Finally, governance and planning instruments were the most numerous and carried the highest political authority.

4.1. Clean Energy Deployment: Renewables and Transport

The evolution of China's energy system after 2020 is impressive. Solar and wind capacity additions rose beyond all previous Chinese achievements and any worldwide expansion projects. Annual solar additions rose from 55 GW in 2021 to 278 GW in 2024 and 213 GW midway through 2025, easily outstripping all other economies worldwide. Meanwhile, wind additions fell in 2022 after the offshore FIT deadline expired, then recovered to 80 GW in 2024. When adding announced capacity and that in the pre-construction phase, by July 2025, combined planned installation for wind and solar capacity reached over 1.300 GW, surpassing total growth in national electricity consumption (Figure 1; Global Energy Monitor, 2025; Yang et al., 2025). This also overtook the 1.200 GW target set for 2030, significantly ahead of schedule (Xi, 2020).

Figure 1 makes the scale of this pipeline visible: with 510 GW already under active construction the trajectory is no longer contingent on future policy decisions but locked into physical infrastructure commitments already underway.

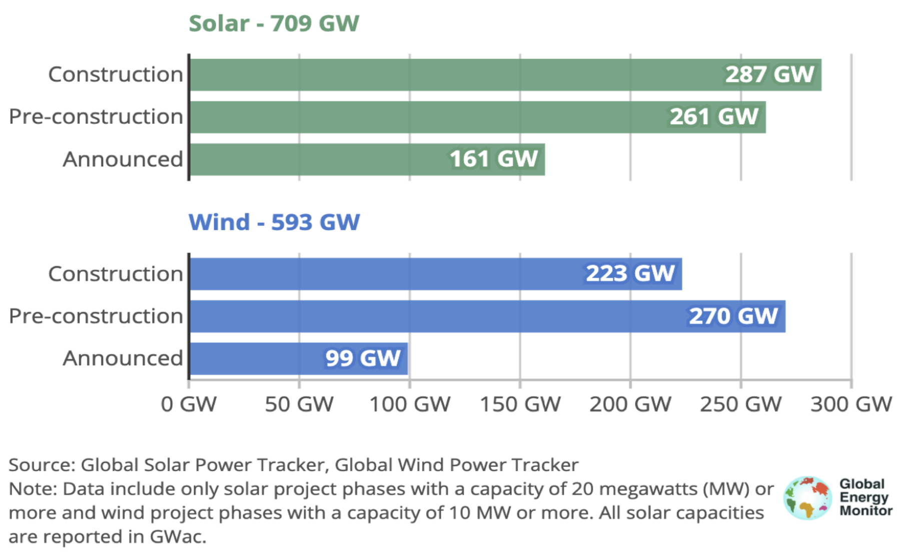

Figure 1: Prospective utility scale solar and wind capacity in China by development stage (GW)

China's combined pipeline of 1.302 GW across announced, pre-construction, and construction phases already exceeds the 1.200 GW wind and solar target set in China's updated 2030 NDC, with 287 GW solar and 223 GW wind under active construction as of mid-2025 (Reproduced from Global Energy Monitor (2025) for non-commercial academic purposes).

Furthermore, hydropower exceeded its 14th FYP target by adding around 420 GW by the end of 2024 (Climate Action Tracker, 2025; NDRC, 2022). Through this, by mid-2025, around 40% of China's total electricity consumption came from renewable sources, representing a significant shift towards more climate-friendly energy generation (Low Carbon Power, 2025).

This success came about due to the implementation of several instruments. The Desert and Gobi large-scale base programmes launched their first tranche of approximately 100 GW near the end of 2021. This allowed for easier deployment pathways for solar and wind energy in the resource-rich northwest and made it easier to move power to eastern demand centers (Annex 1, Category 3; Myllyvirta & Zhang, 2022). The grid-parity auction system replaced feed-in tariffs for new projects, keeping deployment incentives while simultaneously removing the subsidy deficit that had been common before 2020. Complementing this, state-owned enterprise (SOE) mandates gave the largest generators of electricity institutional targets that required direct action instead of a reactive approach to the market (Annex 1, Category 3; Sandalow et al., 2022).

This deployment involved both state-directed entities and private manufacturers competing within the same state-created framework. BYD, CATL and other privately owned firms became global leaders in EVs, solar, and batteries respectively by responding to the same industrial strategy signals as the state power groups. The scale-up was a product of both arms of China's hybrid economy working in the same direction simultaneously (Barwick et al., 2025; Nahm, 2021).

A similar trajectory can be followed in road transport, where EV sales rose from 6,3% of new vehicle sales in 2020 to 40,9% in 2024. They then reached a majority of sales in 2025 (Climate Action Tracker, 2025; IEA, 2025b). In 2024, China produced and sold more than 12 million NEVs, with around 31 million on the road, significantly surpassing the rest of the world (Climate Action Tracker, 2025; UNFCCC, 2025).

Figure 2 captures the absolute scale of this shift. China's battery electric vehicle (BEV) sales remained below one million annually through 2020 before tripling in 2021 alone. This break in trajectory maps directly onto the dual carbon declaration and the dual credit quota's second phase entering into force simultaneously.

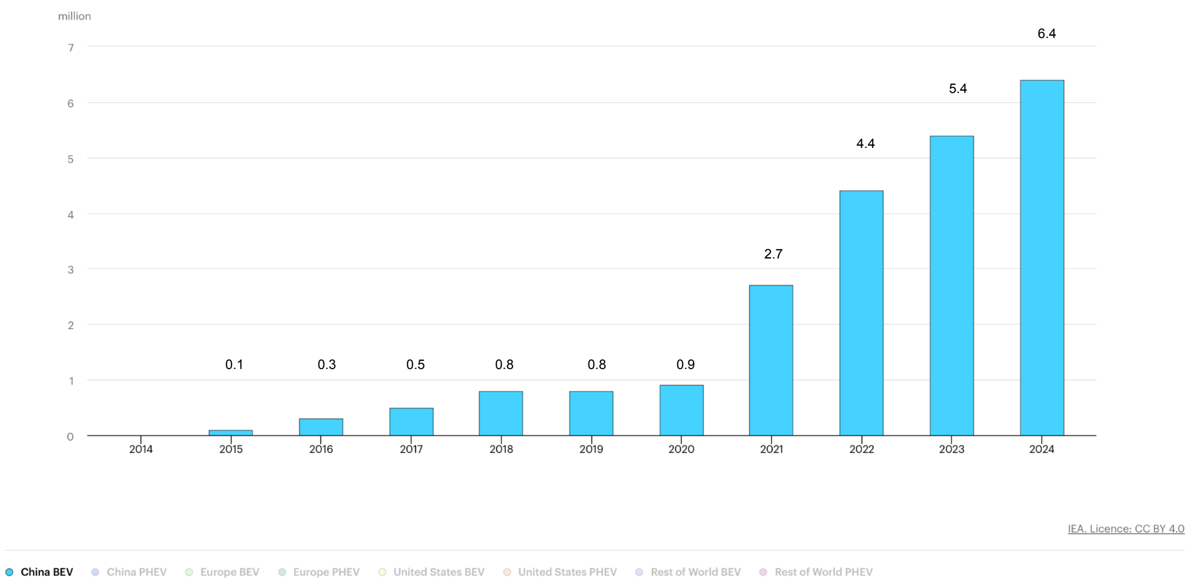

Figure 2: China BEV sales, 2014-2024 (million)

Sales remained below one million annually through 2020 (0.9 million) before tripling to 2.7 million in 2021, reaching 6.4 million by 2024. The structural break after 2020 reflects the combined activation of escalating NEV dual-credit quota requirements, extended purchase subsidies, and tax exemptions documented in Annex 1, Categories 2 and 3. Combined NEV sales including plug-in hybrids reached 40,9% of new vehicles sales by 2024 and a majority by 2025 (IEA, 2025b; Climate Action Tracker, 2025) (Adapted from IEA (2025b) under CC BY 4.0 licence; data labels added for print legibility).

This shift had implications beyond vehicle sales, with China's oil consumption for transport fuels plateauing and beginning to decline by 2024, as internal combustion engines were replaced by EVs (IEA, 2024). This change was driven by the dual-credit mandatory quota, purchase subsidies, tax exemptions, and trade-in schemes documented in Annex 1, Categories 2 and 3. The success of this combination of instruments illustrates Stechemesser et al.’s (2024) point about which policy mixes are effective in developing economies.

4.2. The Carbon Market

The national ETS completed two full compliance cycles between 2021 and 2023. During this time, the compliance rates were extremely high, rising from a starting point of 99,61% in the first cycle to 99,88% in the second. Within the system, infrastructure for monitoring, reporting, and verification across over 2.000 large power generators was built. This gave regulated entities their first direct exposure to a carbon price signal (Annex 1, Category 1; ICAP, n.d.; MEE, 2024).

However, the actual effect this had on emissions was limited. The intensity-based design made allowances proportionate to actual output and did not put an absolute ceiling on total emissions. Allowances were almost perfectly balanced by design. Carbon prices remained well below what would be expected for a successful structural fuel switch. It rose from between RMB 40 and RMB 60 in 2021 to exceeding RMB 100 in 2024, a number well below the EU ETS (Annex 1, Category 1; ICAP, n.d.; MEE, 2024; Xuan Tan & Iyer, 2025). Li et al. (2025) identify this pattern across China’s climate policy mix in general: they state that there is a structural “disconnect between policy density and intensity” (Li et al., 2025). This means that while there are many instruments on paper, the stringency of their design and enforcement is often lacking. The ETS is the clearest illustration of such a disconnect within the 2020 to 2025 period.

China has taken steps towards correcting this imbalance with the 2024 institutional upgrades, which include the Interim Regulations and the sector expansion documented in Annex 1, Category 1. They put in place a carbon market covering 60% of national emissions, governed under the State Council, with high compliance rates. However, this was not the primary driver of the deployment acceleration seen in Chapter 4.1. Instead, it was primarily driven by instruments from Annex 1, Categories 3 and 4. These planning frameworks, SOE mandates, auction contracts, and deployment subsidies had a significantly larger effect than price signals.

4.3. Emissions Trends and the Intensity Target

China's overall emissions trajectory across this period was not a clear downward trend, as Figure 3 illustrates. It shows the historical record from 2019 through 2025 against modelled domestic pathways, making the post-2020 plateau visible in its long-run context. It depicts volatility between 2021 and 2023, where CO_2 rebounded by approximately 5% as the economy recovered from COVID-19 disruptions and a surge in power demand (IEA, 2024). In 2022, emissions fell modestly, partially attributable to COVID lockdown suppression of industrial activity. In 2023, emissions rose once more when restrictions were lifted, and manufacturing recovered, before slowing down later in the year. The "policies and action" trajectory was flattened significantly after 2023. This is made more significant precisely because it occurred during a period of resumed economic activity rather than suppressed demand alone (IEA, 2024; Myllyvirta, 2024).

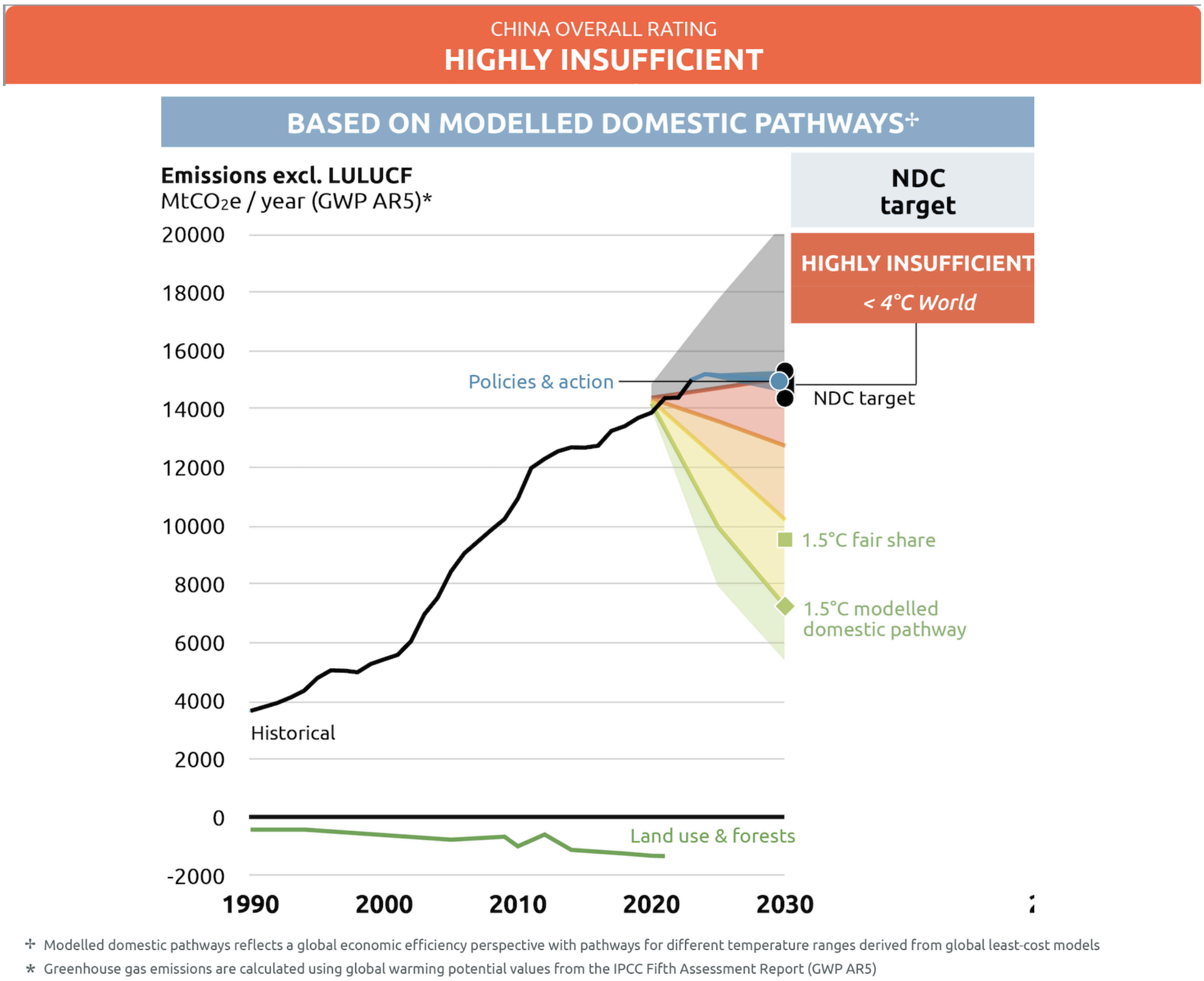

Figure 3: China's greenhouse gas emissions trajectory and modelled domestic pathways, 1990-2030 ($MTCO_2e$/ year, excl. LULUCF)

The historical record shows sustained emissions growth through 2020 followed by an emerging plateau under current policies and actions. The divergence between the current trajectory and the 1,5°C-compatible pathways illustrates the structural incompleteness of the transitions discussed in Chapter 6. Climate Action Tracker's November 2025 "Highly Insufficient" rating reflects this gap (Right panel omitted; full figure available at https://climateactiontracker.org/countries/china/. Adapted from Climate Action Tracker (2025); reproduced for non-commercial academic purposes).

The emerging emissions plateau in 2024 and 2025 reflected multiple overlapping factors. Renewable generation surpassing electricity demand growth was one. The structural contraction in real estate and construction was another. This contraction suppressed energy demand independent of policies, a phenomenon documented by Guan et al. (2018), Niu et al. (2024), and Zhang et al. (2022). Finally, there was the rapid closure of small and medium private manufacturers, facing demand shocks from trade disruption and US tariff uncertainty from 2022 onward. This development contributed a further independent reduction in industrial energy consumption (IEA, 2025a; Wang & Wu, 2023). Chapter 6 treats this economic slowdown as a competing explanation to be weighed against the political-economy driven account.

The clearest signal of structural change was observed in 2024, where Myllyvirta (2024) documented a 1% year-on-year fall in CO_2 in Q2 of 2024. This represented the first quarterly decline since COVID-19 and was mostly driven by renewable energy generation surpassing the growth in electricity demand. This was confirmed by Myllyvirta (2025a), when record solar growth led to a continued fall of CO_2 through the first half of 2025, and Myllyvirta (2025b), when 18 consecutive months of flat or declining emissions could be documented. China's own 2035 NDC submission confirmed that coal's share of primary energy had shrunken down to 53,2% by the end of 2024, which is a reduction of 14,2 percentage points from its peak in 2013 (UNFCCC, 2025). Climate Action Tracker (2025) assessed that 2025 may have marked the peak of China's total greenhouse gas (GHG) emissions if current momentum holds.

However, the 14th FYP carbon intensity target of a 18% reduction from 2020 levels by 2025 was not achieved. By the end of 2024, there had been a fall in intensity of around 12%, with projections for 16% to 17% by 2025. This represented meaningful progress, but fell short of the binding commitment (Climate Action Tracker, 2025). This failure represents a direct tension with the governance and planning instruments documented in Annex 1, Category 4, that partially demanded this outcome, giving nominal weight to Li et al. 's (2025) statements on the toothlessness of many policies.

4.4. Coal Capacity During the Transition Period

Running alongside the acceleration of renewable energy growth was a simultaneous expansion of coal capacity. In 2021 and 2022 there was a power-shortage crisis, which resulted in the provincial governments approving new coal plants at rates that had not been seen since the early 2010s, with newly started coal construction reaching its highest level since 2015. The scale of what was simultaneously being built in renewables, partially visible in Figure 1, makes the concurrent coal approval surge analytically striking rather than merely paradoxical: both records were set within the same governance architecture and the same five-year window (Climate Action Tracker, 2025; Myllyvirta et al., 2023; Patel, 2025).

During this time, the 1+N directive to strictly control new coal power capacity during 2021 and 2025 was formally in place (Annex 1, Category 2; Xinhua, 2021). However, data shows that this remained unenforced at the provincial level, where new approvals were framed as grid flexibility and energy security measures. These justifications were provided by the 1+N architecture itself, which elsewhere emphasized decarbonization (Patel, 2025).

Climate Action Tracker (2025) maintained its “Highly Insufficient” rating for China despite its acknowledgments of the renewable surge and the emissions plateau. CCPI (2026) also classified China as a very low performer. Both assessments reflect similar findings: while China’s short-term trajectory has improved, coal expansion during this period created a carbon lock-in extending well beyond the 2025 endpoint of the analytical window and directly into the carbon neutrality commitment period. This will be examined in more detail in Chapter 6.

5. Drivers of the Energy Transition

This chapter asks why the changes to China's energy system documented in Chapter 4 happened the way they did. It does so by first analyzing how China's leadership frames the energy transition in official texts using the logbook in Annex 2. What language was used, what was emphasized, and how did framing shift across this time period? It then applies the four theoretical lenses from Chapter 2 to both the empirical record and the discursive evidence, building toward a direct answer to the thesis's central question. Where necessary, the discourse analysis applies the three-check framework established in Chapter 2.3: structural placement within the document hierarchy, consistency across domestic and international registers, and institutional corroboration where textual patterns align with observable policy design choices.

5.1. How China Frames Its Energy Transition

5.1.1. Political Economy: Development and the Pace of Transition

One of the most consistent and structurally dominant frames across the entire corpus in Annex 2 is "高质量发展" (eng. "high-quality development") (IDCPC, 2023). Every major document, including the 14th FYP, the 20th CPC Congress report, and the 2035 NDC, embeds the energy transition into an overarching economic development objective rather than treating it as an independent priority (IDCPC, 2023; UNFCCC, 2025, p.1; Xinhua, 2021). It is essential to understand what this actually means in relation to climate policy here. The concept represents a deliberate shift away from growth-at-all-costs toward a model where environmental protection is framed as a driver of economic value rather than a burden to it, which is precisely why it is cited so regularly (Khan & Wang, 2026; Stern & Xie, 2022; Weigelin-Schwiedrizik, 2018). It expresses that climate policy must demonstrate that it is compatible with growth. Any instrument that is not capable of this faces the structural constraint embedded into the following phrase (Annex 2; Li et al., 2025).

The Working Guidance gives explicit instructions to "把碳达峰、碳中和纳入经济社会发展全局" (eng. "endeavors to peak carbon dioxide emissions and achieve carbon neutrality must be incorporated into the overall economic and social development framework") (NDRC, 2021a). This phrase is a structural rule that governs the entire 1+N architecture and explains how provincial governments were able to justify approving new coal plants while formally committing to a strict coal control directive (Annex 2; NDRC, 2021a). The placement of this phrase in the guiding ideology section of the Working Guidance and recurrence across subsequent documents signals its status as a central political concept: climate goals are subordinated to, not coordinated with, economic and social development as the governing framework.

Alongside the focus on development, every document also consistently embeds “能源安全” (eng. “energy security”) (NDRC, 2021a) as a hard constraint on the pace of the transition. The Working Guidance introduces it as part of the “防范风险” (eng. “guarding against risks”) (NDRC, 2021a) principle, which states that emissions have to be balanced against other issues such as energy security and food security (Annex2; NDRC, 2021a). The Action Plan converts this into an operational bottom line: “ 以保障国家能源安全和经济发展为底线” (eng. “keep national energy security and economic development as the bottom line) (NDRC, 2021b). The Energy Law then codifies this bottom line in framework legislation (NEA, 2024). Energy security as a keyword becomes even more prominent as the analytical period progresses. Comparing the 14th FYP, which focuses primarily on energy intensity and consumption reduction, with the 15th FYP recommendation published in November 2025, highlights this. Energy security has a larger structural role to play in the later document, which is consistent with the geopolitical context analyzed later in Chapter 5.2 (Annex 2; Green & Parker, 2026; Krebs, 2026; Xinhua, 2021). The 15th FYP’s trajectory confirms the trajectory of the corpus documents: accountability was slowly moved from intensity to absolute emissions, with the pace of this determined by the security constraint on the transition, which intensified throughout the analytical period (Annex 2; Green & Parker, 2026; Krebs, 2026).

The corpus also includes an explicit prohibition of “运动式减碳” (eng. “campaign-style carbon mitigation”) (NDRC, 2021a). This signals that moderate-pace implementation is centrally advised and allows the CPC to retroactively politically cover for this practice. By declaring an approach forbidden, they gain the discursive space to justify slower action without formally contradicting their targets. This means that from the perspective of the corpus, the coal approval surge documented in

Chapter 4.4 is actually a design feature of Chinese policy that is operating exactly as intended. The phrase “积极稳妥” (eng. “actively and prudently”) (Xinhua, 2021) occupies a similar function (Xinhua, 2021). It appears multiple times in most documents of Annex 2, which, following the repetition principle that Schoenhals (1992) identifies, means that it is a fixed formulation confirming that caution and gradualism are politically embedded design principles rather than just incidental hedges (NDRC, 2021a; NDRC, 2021b; Xinhua, 2021).

The 14th FYP did the same work quantitatively by making a distinction between targets that were “约束性” (eng. “binding”) (Xinhua, 2021) and “预期性” (eng. “anticipated”) (Xinhua, 2021). While carbon intensity reduction was binding, renewable deployment targets were anticipated, meaning that only the first carried any accountability (Annex 2; Xinhua, 2021). This provides a direct explanation for the overperformance of the deployment target and the underperformance of the intensity target. The institutional design produced the exact results that this framing anticipated. This is also what Weigelin-Schwiedrizik (2018) identifies as the implementation gap: China’s problem has historically not been that the legislation was inadequate. Instead, local governments consistently failed to implement central directions when cadre assessment prioritized growth over compliance. The distinction between binding and anticipated follows that same structural logic.

The 20th CPC Congress report then legitimized this framing at the highest possible level. “先立后破” (eng. “construction before destruction”) (IDCPC, 2023) was elevated to Congress doctrine, giving an explicit green light to continued coal use alongside the 2060 neutrality commitment. Its five-sphere plan declared “生态文明” (eng. “ecological civilization”) (IDCPC, 2023) to be equally as important, but not superior, to economic construction/ development (Annex 2; IDCPC, 2023). Economy (2018) and Lampton (2014) both identify this as a pattern of President Xi’s broader governance approach: ambitious statements and commitments are accompanied by institutional designs that allow the Party to set its own pace. This corpus confirms this reading directly. Across most documents in this analytical period, climate policy is not evaluated on its own terms. Instead, it is assessed first against its potential impact on economic growth. An instrument that threatens growth, even if it advances decarbonization, faces the structural constraint embedded in the “把碳达峰、碳中和纳

入经济社会发展全局” (eng. “endeavors to peak carbon dioxide emissions and achieve carbon neutrality must be incorporated into the overall economic and social development framework”) (NDRC, 2021a) formulation and the “能源安全” (eng. “energy security”) (NDRC, 2021a) bottom line from the outset (Annex 2; NDRC, 2021a). This governing filter explains both what the policy mix produced and what it consistently failed to deliver.

5.1.2. International Relations: Leadership, Strategic Positioning, and Security

The international relations frame operates differently depending on the type of document being analyzed. Domestic documents such as the Working Guidance, the Action Plan, the 14th FYP, and the Energy Law treat international positioning as secondary and energy security as a hard constraint. Meanwhile, International documents, such as the NDCs and Xi’s speeches, invert this: ecological civilization and global leadership come first, energy security is deliberately played down, and the language that leaves room for a slower transition is systematically absent (Annex 2). This gap reflects a standard distinction between international commitment and domestic operational governance that is typical for a large emerging market economy such as China, not purely hypocrisy. In actuality, both layers are equally real. The international commitments are genuine, as we can see with the 1.200 GW target being met six months early, the 2035 NDC introducing the first absolute emissions reduction target, and the ETS covering 60% of national emissions (ICAP, n.d.; UNFCCC, 2025). Simultaneously, the domestic constraint is just as genuine, with the security bottom line and the reserve coal function being mentioned repeatedly (NDRC 2021a; NDRC 2021b; NEA, 2024). To understand the acceleration of the transition, both must be understood. This dual-register finding rests more heavily on cross-document consistency rather than frequency alone, and is institutionally corroborated by the Energy Law’s explicit coal reserve provision sitting alongside the 2035 NDC’s first absolute reduction target.

A further keyword here is “共同但有区别的责任” (eng. “common but differentiated responsibilities”) (UNFCCC, 2021; UNFCCC, 2025), which is a principle embedded in the UNFCCC framework that appears consistently across China’s NDC submissions. This phrase allows China to assert global leadership while also maintaining its status as a developing country with historically lighter obligations than industrialized states (Annex 2; UNFCCC, 2021; UNFCCC, 2025). Following Schoenhals (1992), its consistent repetition marks it as a fixed formulation. It is a politically stable concept that signals China's determination to preserve developmental rights while also claiming a leadership position. Its appearance in both the 2021 and 2035 NDC, with no change in wording despite the tone escalating between documents, confirms that it is a non-negotiable anchoring phrase in China's international climate positioning.

The three speeches by President Xi Jinping show a clear trajectory of China using climate policy as a way to position itself internationally. In September 2020, the 2060 commitment was emphasized in a speech criticizing unilateralism while the United States was formally outside the Paris Agreement (Haskett, 2025; Xi, 2020). Placing a climate commitment into a speech advocating for multilateralism over unilateralism signals its function as evidence of an ideological position. China's climate pledge is therefore a way of proving its active multilateral engagement, in part as a contrast to a perceived rival, rather than a primarily domestic policy decision (Xi, 2020).

The Biden administration's re-entry in January 2021 shifted this dynamic. The Kerry-Xie bilateral climate track was a deliberate US policy choice, and China's engagement in 2021 was partly a response to that opening rather than purely filling a vacuum (Dai et al., 2023; Ewing, 2021; Hook, 2021). By COP26, in a less inflammatory speech, the pledge was upgraded to concrete actions taken by the Chinese government: the 1+N architecture was officially named in an international speech, which was a first. This refers to the overarching framework of a Working Guidance and a series of sector-specific action plans, which were jointly issued by the CPC Central Committee and State Council in October 2021 to govern China's path to carbon neutrality (Annex 1). Its mention created something to which China could be held accountable, rather than leaving this policy instrument as something purely domestic (Xi, 2021). By 2025, the register had become measurably more assertive. "丛林法则" (eng. "law of the jungle") (Xi, 2025) and "双重标准" (eng. "double standards") (Xi, 2025) were directed at unnamed Western countries. Meanwhile, China repositioned its clean energy manufacturing dominance as a global public good (Annex 2; Xi, 2025).

This stance was strengthened by the 2035 NDC. Here, the phrase “破坏应对气候变化国际合作、损害包括中国在内的各方应对气候变化努力的国家，需要承担责任” (eng. “countries that undermine international cooperation on climate change and damage the climate efforts of all parties including China must bear responsibility”) (UNFCCC, 2025) is used. This introduces a conditional commitment clause that is directed outward instead of inward, which is absent from the 2021 NDC (UNFCCC, 2021; UNFCCC, 2025). It inserts a political escape clause into language that had been unconditional up to this point. This is shored up by its continued repetition, showing it is a genuine shift in political priority (Schoenhals, 1992). The changed geopolitical context, such as the US re-withdrawing from Paris and CBAM, led China to start framing climate policy more defensively by the end of the analytical period (BEE, n.d.; Haskett, 2025).

The energy security dimension of the international relations frame is most explicitly visible in the 14th FYP for Renewable Energy, which uses the phrase “逐步实现能源独立” (eng. “gradually achieve energy independence”) (Annex 2; NDRC, 2022). This would mean that China’s vulnerabilities regarding seaborne fossil fuels, such as the maritime chokepoints in the Straits of Malacca and Hormuz, as well as the risk of sanctions, are a structural driver of its energy strategy (Dabbar, 2023; Dosson, 2025; Lindstaedt, 2026). Such a dynamic was further confirmed in expert analysis: China’s energy transformation has far more to do with an imperative to reduce import dependence than climate concern as such (Weigelin-Schwiedrizik, 2025b, 31:00-33:00). The renewable FYP confirms this at the level of official doctrine: renewable energy is justified, on page 4 of the document, first as a way to reduce import dependence before it is then justified as a climate instrument in later sentences (NDRC, 2022).

The supply chain dimension should also not be forgotten. By 2020, China controlled 76 % to 96% of global solar manufacturing across all key stages (NDRC, 2022). Using these technologies locally both allowed China to sustain those manufacturing positions created, but also functioned as a proof of concept for the technology it wanted to export through BRI channels (IEA, 2022). The Action Plan’s international cooperation section explicitly links domestic transition to BRI green exports (NDRC, 2021b). As mentioned above, with time, China's dominance in manufacturing is reframed as a global public good in the 2035 NDC and President Xi's 2025 speech. It claims that China's overcapacity would allow developing countries to access affordable clean energy that would have otherwise remained out of their reach (UNFCCC, 2025; Xi, 2025). Finally, the Energy Law's Article 78 reciprocity clause against "discriminatory restrictions on Chinese clean energy exports" (NEA, 2024) adds a further dimension. It explicitly links trade strategy and strategic sovereignty in a framework legislation aimed at supporting a green transition (NEA, 2024).

5.1.3. Socio-Technical Transition: Growth and Modernization

The socio-technical frame in this corpus is expressed through the language of industrial modernization and market transition rather than environmental policy (Annex 2). The 14th FYP for Renewable Energy marks 2021 as a "历史性拐点" (eng. "historic tipping point") (NDRC, 2022) while referring to grid parity (Annex 2; NDRC, 2022). This way, the transition from feed-in tariffs to competitive auctions is framed as a structural historical moment instead of a policy adjustment. This situates clean energy within the CPC's own historiography of economic development milestones.

The subsidy phase-out is consistently treated as both an achievement and a design principle at once (Annex 2). Section 7 of the renewable FYP explicitly acknowledges that in the pre-2020 period, there was a subsidy deficit that constrained the deployment scale and left the previous system financially unsustainable – a constraint that the grid parity era lifts, removing a restriction that had been limiting growth (NDRC, 2022). This corroborates Chapter 4's finding that deployment accelerated due to subsidies ending.

The 20th CPC Congress report lists renewable energy as one of the strategic emerging industries alongside artificial intelligence, biotechnology, and high-end equipment (IDCPC, 2023). The 2035 NDC reports that solar module output has tripled since 2020, and lithium battery output has become six times higher since then. This is presented as evidence of China's active and successful commitment to global climate goals (UNFCCC, 2025). Across the corpus, clean energy is consistently framed as a vector of industrial modernization. It is the next stage of the development trajectory that began with the 1978 reform and opening (Annex 2; Lampton, 2014).

The “新质生产力” (eng. “new quality productive forces”) concept appearing in the MEE carbon market report links the ETS explicitly to President Xi’s post-2023 economic development framework. This appearance of a Xi-era economic development concept in a climate governance document marks it as an emerging politically fixed formulation. As such, it domesticates the international climate commitment within current ideological priorities (MEE, 2024; Weigelin-Schwiedrizik, 2018). Its presence signals that the socio-technical and political economy frames are not wholly separate in the corpus: clean energy modernization and new quality productive forces are frequently constructed as one and the same project (Annex 2).

5.1.4. Ecology: Health and Green Legitimacy

While the ecological frame is present throughout the corpus, it tends to be structurally subordinate. “生态文明” (eng. “ecological civilization”) is a guiding principle in every major document, but its positioning in the governance hierarchy, such as co-equal with economic construction in the 20th CPC Congress report, gives it less political legitimacy for the transition (Annex 2).

The most significant expression of the ecological frame is the co-benefit formulation “降碳减污扩绿增长” (eng. “advancing carbon reduction, pollution reduction, ecosystem expansion, and growth in tandem”) (IDCPC, 2023), which appears verbatim in both NDCs, the 20th CPC Congress report, the Working Guidance, and the MEE methane plan (Annex 2; IDCPC, 2023; MEE, 2023; NDRC, 2021a; UNFCCC, 2025). According to Schoenhals (1992) this verbatim repetition across multiple documents marks it as a formulation that is politically fixed and has, over time, been elevated to official doctrine. The four-element coordination formula does something very important: it positions carbon reduction, air quality improvement, ecological restoration, and economic growth as things that can be achieved simultaneously. This framing is directly continuous with the air quality emergency policies of the 2013 to 2017 period documented in Chapter 3 and neutralizes objections based on cost to climate policy.

The binding air quality targets in the 14th FYP, which wants 87,5% of all days annually to have high air quality, are written into the same binding indicator table as the carbon intensity targets. This means that the political accountability system treats air quality and carbon reduction as parallel obligations (Xinhua, 2021). Gong et al. (2025) quantify an estimation of the benefits that can be expected from the renewable FYP's targets: a reduction of around 2.6 billion tonnes of CO_2, 500.000 tonnes of SO_2, and 600.000 tonnes of NOx each year by 2025. If the air quality can be considered a believable goal of the green transition, then these figures can be considered a justification for the transition instead of a secondary consequence of it.

The methane plan included policy measures to reduce "甲烷" (eng. "methane"), which represents a meaningful expansion of the scope of the ecological frame (Annex 2; MEE, 2023). The MEE (2023) Methane Emission Control Action Plan was the first time the 1+N architecture was expanded to GHG outside of CO_2. This shows that the governance scope of climate policy began to broaden beyond just carbon, taking other emissions into account. This inclusion of new vocabulary into standalone governance documents is a clear sign of a change in political priority. The expansion of the governance lexicon to cover non-CO_2 gases by November 2023 is a good indication that the ecological frame was becoming more applicable throughout the analytical period, even if enforcement stayed aspirational and the monitoring baseline remained inadequate (MEE, 2023).

While the "生态文明" (eng. "ecological civilization") (IDCPC, 2023) features in the corpus, its origins and use predate President Xi, as established in Chapter 3. It entered CPC doctrine under President Hu Jintao and was inherited rather than created by the current leadership (Goron, 2019). Across the corpus, it functions as an occasional tool to legitimize the transition, but cannot be considered a driver in its own right (Annex 2).

5.2. What Drove the Acceleration?

5.2.1. Political Economy

The political economy lens intends to ascertain whether the acceleration was driven by state-economy relations. Specifically, it asks if the interests of the state, state-owned enterprises, and industrial actors were structurally aligned with the transition's pace and design.

The evidence from Chapters 4 and 5.1 strongly supports a political economy explanation for several features of the acceleration. The SOE mandate effectively directed the five major state power groups to restructure their capacity mix. This was done through an institutional directive and not market signals, imposing the will of the state on the companies in question (Annex 1, Category 3). The desert base programme bypassed market mechanisms entirely, with a planning authority directing transmission investment and the government approving many GW of power (Annex 1, Category 3; Myllyvirta & Zhang, 2022). The green finance facility channeled hundreds of billions of RMB directly into credit for clean energy projects through the People's Bank of China (Annex 1, Category 3; Fu, 2022; Lee, 2024). These instruments share a similar structure: all three of them see the state directing where investments go by using institutional channels.

Heilmann (2011) identifies this as China's adaptive governance model. The government sets ambitious national targets. Then, their implementation is delegated to lower levels, experimentation is permitted, and results are evaluated before scaling. One of the prime examples of this is the Action Plan for Carbon Dioxide Peaking Before 2030, which was the first of the N-sector plans in the 1+N architecture and included a 100-pilot-city programme. With it, designated zones were created where low-carbon urban governance could be tested before it was rolled out nationally (NDRC, 2021b). The binding/ anticipated target distinction is another part of China's model: the state focuses the highest possible pressure on areas where enforcement is manageable, while directing softer pressure to areas that would require confronting entrenched industrial interests. Li et al. (2025) call this the "disconnect between policy density and intensity" (Li et al., 2025). As explored in 5.1, the corpus shows that this disconnect is a deliberate choice rather than a flaw in the design. A reading through the lens of Heilmann (2011) recognizes this as the CPC's standard method for navigating situations where there is tension between policy ambition and necessary caution.

The political economy lens further explains a dimension of the acceleration that is often underestimated: the speed with which costs for solar manufacturing and EV production were reduced. By designating a sector as a strategic priority, it triggers a race among private firms to capture the opportunity first. Many companies enter the designated sector and start an aggressive competition for state-directed credit, procurement contracts, and market shares. This competitive dynamic generates production at a pace that could not be achieved with an individual state plan (Barwick et al., 2025; Nahm, 2021). China's solar manufacturing sector reached production volumes domestically before these products were brought onto the world market, which drove down unit costs through sheer scale of competition among Chinese producers. The same dynamic is visible in EVs, where manufacturers competed simultaneously, compressing margins and accelerating cost reduction much faster than the market-driven systems of other countries. This competitive overcrowding, which is itself a product of state prioritization, likely explains much of the speed of the price collapse (Barwick et al., 2025; Nahm, 2021; Weigelin-Schwiedrizik, 2025a; 39:07-39:44).

The political economy lens, read through Heilmann's (2011) adaptive governance model and the competitive dynamics unleashed by state prioritization therefore explains both the institutional conditions for the rapid deployment and the technological pace addressed in Chapter 5.2.3. Logically, we must then assume that the political economy and socio-technical lenses are actually complementary accounts of the same phenomenon that operate on different levels of analysis.This reading is supported by all three checks: the growth-compatibility constraint appears in the guiding ideology sections of the Working Guidance rather than implementation annexes, recurs across both domestic and international documents, and is institutionally corroborated by the binding versus anticipated target distinction that produced exactly the deployment-over-intensity outcome the framing anticipated (Annex 2).

5.2.2. International Relations

The IR lens reads submissions made by NDC and speeches by President Xi as expressions of China's external commitments and strategic positioning. Then, it asks whether external factors drove the acceleration. This means the influence of international pressure, strategic positioning, energy security, and the geopolitics of energy industrial domination.

The timing of the September 2020 announcement supports an IR explanation. President Xi made the dual carbon declaration while the US had formally exited the Paris Agreement, where China was experiencing sustained pressure on multiple fronts (BEE, n.d.; Haskett, 2025; Xi, 2020). This commitment to climate protection was a strategically wise move for several reasons. It allowed China to stake a claim to the global leadership space that had been left empty by the US, counter narratives of Chinese irresponsibility in multilateral institutions, and create favorable conditions for China's relationship with the EU and developing countries (Annex 2; Feng, 2024; Trasi, 2025). Xiang and van Gevelt (2025) further document empirical evidence of a correlation between domestic support for climate policy in China and the way it positions itself as an international leader. However, it is important to keep the geopolitical situation of the time in mind. China's intensified engagement through 2021 was not purely unilateral positioning. Instead, it was partly a response to the US-China dynamic shift that happened at the time. The Biden administration actively pursued climate collaboration as a de-escalation channel, which China was motivated to reciprocate (Dai et al., 2023; Ewing, 2021; Hook, 2021). China's commitment was likely made partly because of geopolitical pressure and strategy, not in spite of it.

The consistent presence of “共同但有区别的责任” (eng. “common but differentiated responsibilities”) (UNFCCC, 2021) across both NDCs adds an important dimension to this explanation. Through it, China can make a play for global climate leadership while also reminding the world of its technical status as a developing country that thus has lighter climate obligations (Schoenhals, 1992; UNFCCC, 2021; UNFCCC, 2025; Weigelin-Schwiedrizik, 2018). The IR lens therefore necessitates an accounting of both dimensions: China as a leader stepping into a vacancy and China as a developing country protecting its developmental rights.

The energy security argument complements this explanation with domestic strategic rationale. China imports around 80% of its oil through chokepoints it cannot control, primarily the Straits of Malacca and Hormuz. These extremely narrow straits lie outside China’s territory. The former is permanently on the US’ radar, while the latter is located in the extremely volatile Persian Gulf region. This makes China extremely vulnerable to sanctions or a conflict that might impede its oil imports (Dosson, 2025; Feng, 2024; Lindstaedt, 2026). The threat of sanctions also goes beyond China’s most active transport routes. The escalation in Taiwan and the trade war that China experienced with the US in 2017 make it clear that these vulnerabilities are not limited by geography (Dabbar, 2023; Downs, 2019). As noted in expert analysis, China is primarily motivated by a desire to reduce, if not outright eliminate, this vulnerability, with climate concern factoring far less in its calculations (Weigelin-Schwiedrizik, 31:00-33:30). The renewable FYP’s explicit energy independence language confirms this reading at the level of official doctrine (Annex 2; NDRC, 2022).

The supply chain argument rounds out the IR picture. Domestic deployment at scale enables manufacturers to learn quickly and reduce costs, thereby sustaining their competitiveness internationally. Each additional gigawatt that can be installed domestically contributes to more cost reduction. This makes Chinese clean energy technology cheaper globally, expanding their export market, and providing them with more funds to reinvest in the industry (Nahm, 2021). The Action Plan’s international cooperation section links this logic explicitly to BRI green exports (Annex 2; NDRC, 2021b). Andrews-Speed et al. (2023), Overland (2019), and Wray (2025) find that this industrial strategy is beginning to reshape global clean energy supply chains, creating long-term strategic dependencies. As explored in Chapter 5.1, this is precisely the criticism that the corpus’s formulation of manufacturing dominance as a global public good is designed to pre-empt.

5.2.3. Socio-Technical Transition

The technology support instruments in Annex 1, Category 3, are the primary empirical basis for the socio-technical interpretation. These instruments include the grid-parity auction system, Desert and Gobi programmes, the NEV purchase subsidies and tax exemptions, the SOE renewable mandate, the green finance facility, and the charging infrastructure programme. They are the exact mechanisms that the state uses to shape how technologies move from niche to a more mainstream deployment. The socio-technical lens asks how the technological and industrial dynamics of the clean energy sector made the observed acceleration possible, and why it so dramatically exceeded planning targets.

Its design fits the structural framework for transitions that Geels's (2002) MLP framework describes: earlier instruments, such as FITS and purchase subsidies served as protection during the development phase, when renewable energy was still considered niche (Annex 1, Category 3). The regulatory standards in Annex 1, Category 2, particularly the NEV dual-credit quota and the CAFC standards, provided pressure on manufacturers to make them assist with the mass-market deployment of the accumulated technological capacity, pushing them away from the coal-dominated electricity regime that existed before. The landscape pressures in the form of geopolitical energy security imperatives, international competitiveness concerns, climate commitments, industrial policy competition, and the acute shock of the Australia coal ban intensified sharply around 2020, creating the necessary conditions for a niche breakthrough at the regime level (BEE, n.d.; Haskett, 2025; Marinaccio, 2021; Mechling & Nahm, 2019).

When looking at the transition in MLP terms, the key turning point was grid parity. Once solar crossed below the coal tariff threshold, the niche no longer had to be protected by the regime. The corpus confirmed this as the "平价" (eng. "parity") (NDRC, 2022) era, which began in 2021 (NDRC, 2022). The FIT was the institutional bridge that protected the niche while it was still in development. Its removal was not the regime withdrawing its support. Instead, it was a clear signal that the niche had evolved into a regime-level competitor. The grid-parity auction system then replaced niche protection with market integration. This system guaranteed long-term contracts at competitive prices rather than continuously subsidizing this energy (Annex 1, Category 3). This is the consolidation stage that Geels (2002) describes as regime configuration: instead of destroying the incumbent regime all at once, it slowly restructures it from the inside.

The core reason behind the climate transition's overperformance was the interaction between deployment, manufacturing learning rates, and cost curves. China's solar manufacturing sector had been accumulating scale since the mid-2000s (IEA, 2022; Nahm, 2021). The more solar energy was installed, the lower production costs fell, enabling more exports and further capacity expansion (NDRC, 2022). By 2023, China was installing more solar in a single year than the entire world had installed in 2022 (Global Energy Monitoring, 2026). The IEA (2022) solar supply chain analysis rightfully predicted that China would expand its global manufacturing even as competitors attempted to build domestic supply chains. This dynamic operates at the level of technological learning and cost curves and is complementary to the competitive overcrowding dynamic that Chapter 5.2.1 identifies as the political economy explanation for the same price collapse.

The EV transition followed a structurally similar trajectory with a longer incubation period. Experts date China's strategic decision to invest in battery technology to 1995, well before any serious domestic EV market existed (Weigelin-Schwiedrizik, 2025a, 34:13-35:44). Chinese planners are said to have observed the decline in battery R&D in the West from the mid-1990s onward, identified an opening, and began investing in energy storage research even before EVs became politically relevant (Weigelin-Schwiedrizik, 2025a, 34:12-36:34). By 2020, twenty-five years of accumulated industrial capacity could be activated at scale. The acceleration after the dual carbon declaration was, in reality, the mobilization of a manufacturing and deployment capacity that had been developing throughout the prior period (UNFCCC, 2025; Xi, 2020).

In MLP terms, this was a deliberate niche creation (Geels, 2002). The state built technological and industrial conditions for an eventual regime transition in transport (Weigelin-Schwiedrizik, 2025a, 34:13-35:44). The dual-credit system, entering its second phase in 2021, was the regulatory mechanism that triggered the niche-to regime transition: through compliance pressure on manufacturers combined with sufficient infrastructure and consumer familiarity, EVs were pushed across the threshold from protected niche to mainstream market (Annex 1, Category 2; Wu et al., 2021). The resulting shift in vehicle sales reflects the dynamics Geels (2002) describes as normal when a niche reaches the breakthrough stage: self-reinforcing adoption dynamics that planning models had not fully anticipated (IEA, 2025b).

The landscape pressure in MLP terms did not create the technological capability. It opened the window for capabilities that already existed to scale. This explains why the deployment exceeded targets so dramatically: the industrial ecosystem had accumulated more capacity during the niche development phase than the planning models accounted for. Then, the dynamics caused by state prioritization documented in Chapter 5.2.1 amplified this effect further once the window opened.

5.2.4. Ecology

The regulatory standards in Annex 1, Category 2, and the governance and planning instruments in Category 4 define the policy landscape for the ecological interpretation. The binding air quality targets in Category 2 sit alongside the carbon intensity targets in the same FYP indicator table, and the coal retirement and fuel standards both carried air quality justifications independent of climate motivation. (Xinhua, 2021). The ecological lens asks whether environmental legitimacy drove the acceleration or shaped its political sustainability. This means the influence of health concerns and the co-benefit framing linking carbon reduction to improved air quality.

Based on the corpus, the ecological frame had little effect on the transition's pace or design, but it did shape its domestic political sustainability. The repeated use of the co-benefits formulation provides the Chinese government with a narrative framework that allows it to present it as good for the economy, the environment, and public health. This makes it palatable to its population (Annex 2). Chen et al. (2013) and Ferreri et al. (2017) document the scale of health costs associated with China's air-quality crisis, and Bai et al. (2024) trace $PM_{2.5}$-attributable mortality across the previous decade. The political salience of air quality, especially during the 2013 crisis, created a desire for a clean energy policy independent of climate concerns. The renewable transition reduced these particulate emissions, directly improving air quality in a way that Chinese citizens could observe.

The question is, whether ecological protection went beyond rhetorical devices. Between 2021 and 2023, China also passed a series of ecosystem-specific laws: the Yangtze River Protection Law in December 2020 (MEE, 2020); the Wetland Protection Law in December 2021 (NPC, 2021), which was the first such law in Chinese legal history; the Black Land Protection Law in August 2022 (MEE, 2022a); the Yellow River Protection Law in October 2022 (MEE, 2022b), and the Ecological Protection Law for the Qinghai-Tibet Plateau in April 2023 (GOV CN, 2023).

However, Weigelin-Schwiedrizik (2018) documents a pattern that runs through China’s environmental governance history: China has long maintained one of the most comprehensive bodies of environmental legislation in the world. Simultaneously, it experiences significant implementation gaps between legislative intent and actual enforcement. This legislation is therefore not straightforward evidence that ecological concern drove the energy transition. It does, however, show that the ecological frame continued to generate institutional output during the analytical period, even if it was more directional than absolute. Combined with the air quality co-benefit logic, this made the transition politically sustainable domestically even where enforcement remained uneven. Ren et al. (2025) documented this expansion of protected areas in China after 2020 as showing a sustained state commitment to integrating the protection of nature into development planning.

The ecological lens can therefore explain why the transition was well-received domestically, allowing it to be sustained even in the face of short-term economic cost. The co-benefit framing aligned with observable public health improvements, the binding air quality targets gave it institutional teeth, and the ecosystem legislation demonstrated a directional state commitment to ecological governance that extends beyond rhetoric even if implementation remained uneven. However, despite explaining its legitimacy, it cannot explain why the acceleration happened when it did or why it happened so rapidly. For that, the other three lenses are needed. As such, the ecological lens can be considered a legitimizing frame, but not really a primary driver.

5.3. Explanatory Weight Across the Four Lenses

The four analyses in Chapters 5.1 and 5.2 do not carry equal explanatory weight. As such, treating them as interchangeable would misinterpret both the evidence and the argument. Table 1 summarizes what each lens explains, what it cannot explain, and what the role it plays in the causal account developed across this chapter.

Lens	Explains	Does not explain	Role in causal account
Political Economy	Scale and pace of deployment; competitive cost compression; coal expansion as authorized design feature	Why the trigger came in 2020 specifically	Primary mechanism: state prioritization activated both public and private industrial dynamics simultaneously
International Relations	Timing of the September 2020 declaration; ambition level of initial commitments	Pace and scale of deployment; why costs collapsed so rapidly	Necessary condition: created the political trigger and sustained external accountability
Socio-Technical	Manufacturing learning rates; cost curve dynamics; niche-to-regime transition in solar and EVs	Governance choices; timing of political commitment	Amplifying mechanism: accumulated industrial capacity meant deployment exceeded all planning targets once the window opened
Ecology	Domestic political sustainability; co-benefit framing linking transition to observable health improvements	Timing, pace, or design of the transition	Enabling condition: gave the transition domestic legitimacy without driving its architecture

Table 1: Explanatory weight of the four theoretical lenses applied in this thesis

Roles are not mutually exclusive; the political economy and socio-technical lenses in particular represent complementary accounts of the same phenomenon operating at *different levels of analysis, and should be read accordingly (Based on conclusions drawn from Chapters 5.1 and 5.2).*

Two clarifications follow from this synthesis.

First, the political economy and socio-technical lenses are analytically separable but empirically inseparable in the Chinese case. The state designated clean energy as a strategic priority, which is a political economy argument. This is what activated the manufacturing learning dynamics and competitive cost compression, which is a socio-technical argument (Barwick et al., 2025; Nahm, 2021; Weigelin-Schwiedrizik, 2025a, 39:07-39:44). This dynamic is visible in both the solar manufacturing sector, where Chinese producers competed aggressively within a state-created framework to drive down unit costs, and in the EV sector, where twenty-five years of accumulated investment in batteries was mobilized at scale once the dual-credit quota created sufficient market pressure (Weigelin-Schwiedrizik, 2025a, 34:13-35:44; Wu et al., 2021). Analyzing them as independent explanations is more formally tidy. However, presenting the conclusions drawn from them as such would be less accurate.

Second, the international relations lens explains the trigger without explaining the mechanism. China's governance architecture could not have produced the overserved deployment scale purely through external positioning. The industrial and institutional preconditions, which are documented in Chapter 3, are what made the response possible at the speed it occurred (Feng, 2024; Khan & Wang, 2026; Narang, 2025). International relations explain why this happened in 2020 rather than in 2018 or 2023. Political economy and socio-technical dynamics together explain why the response was as large as it was once that moment arrived. Meanwhile, ecology is primarily a tool used to legitimize these changes domestically (Nahm, 2021; Xiang & van Gevelt, 2025).

What the four lenses together leave unresolved will be addressed directly in Chapter 6: the coal expansion, the missing intensity target, and the ambiguity between policy-driven and slowdown-driven emissions reductions all represent outcomes that the explanatory account predicts as likely but cannot fully characterize from the outside (Climate Action Tracker, 2025; Li et al., 2025; Myllyvirta, 2025b).

The synthesis here is therefore the point from which the contradictions that follow become legible.

6. Challenges and Contradictions

This chapter examines the gaps in the explanations of Chapters 4 and 5. It explored the areas where the policy architecture produced outcomes that were inconsistent with its stated objectives, where the empirical record can’t be cleanly attributed to a specific policy, and what the contradictions for the 2020 to 2025 period mean for the decades ahead.

6.1. Enforcement Gaps and Implementation Failure

As the previous chapters show, the most consistent challenge across the 2020 to 2025 period is the gap between some instruments’ stated targets and what they actually delivered in practice. Li et al. (2025) refer to this as the “disconnect between policy density and intensity." During this time period, China put more climate-protecting policies in place than any comparable economy. However, the stringency with which these policies were designed and the consistency with which they were enforced was a different story (Lo, 2013).

The clearest case for this is the ETS. Due to its nature as an intensity-based instrument, allowances were allocated proportionally to output. This meant that the number of allowances in circulation rose with electricity production, instead of being fixed at a declining cap. In 2022, around 5.104 billion tonnes of allowances were issued while 5.091 billion tonnes were verifiably emitted. This leaves a surplus of 0,25% (MEE, 2024). As this carbon market issues allowances in near-perfect proportion to actual output, we can conclude that it was not designed to actually reduce emissions. Instead, it seems designed to price carbon at the margin while leaving the underlying incentive structure of coal-dominated generation untouched. Carbon prices reaching above RMB 100 per tonne in November 2024, which was around double the price from the first cycle, still fell significantly short of the price levels that would be necessary for a genuine fuel switch (ICAP, n.d.; MEE, 2024; Xuan Tan & Iyer, 2025). While the 2024 ETS expansion to other steel, cement, and aluminium might have raised the coverage, it did not resolve the fundamental problems with the design. Those sectors face even stronger “political economy” resistance to strict carbon pricing than the power sector. Additionally, the initial allocation for new entrants was designed to be free of charge, with a tightening only planned for 2027 and the following years (ICAP, n.d.; Xuan Tan & Iyer, 2025).

The dynamic between provincial and central governments produced an additional category of enforcement failure. China used an adaptive governance model, where it set ambitious central targets and delegated their implementation to provincial governments. This works wonderfully when provincial and central interests are aligned. However, when they diverge, the model's built-in flexibility becomes a structural vulnerability (Khan & Wang, 2026). The most visible example of this is the coal control directive in the 1+N Action Plan. The directive to strictly control new coal power capacity between 2021 to 2025 was issued at State Council level with the highest possible authority. Provincial governments systematically overrode it by framing new approvals as grid flexibility and energy security measures (Climate Action Tracker, 2025; Khan & Wang, 2026; NDRC, 2021a; NDRC, 2021b). In response, the central government adjusted enforcement guidance to be more flexible rather than impose sanctions, which is consistent with Heilmann's (2011) observation that the CPC uses non-compliance as a basis for policy revision rather than something to be punished (Asia Society Policy Institute, 2022).

These challenges were compounded by the binding/ anticipated distinction. Carbon intensity reduction was binding and carried formal accountability. Renewable deployment targets were an anticipated guidance without enforcement mechanisms. The 14th FYP's 18% carbon intensity reduction target was missed. Approximately 12% was achieved by the end of 2024 against the binding commitment, with projection for 2025 still falling flat. Meanwhile, non-binding renewable targets were dramatically exceeded (Climate Action Tracker, 2025; Xinhua, 2021). As explored in Chapter 5, this was a deliberate institutional design meant to maximize pressure where it was easy to enforce and minimize it in areas where pushback was likely. The result was a policy mix that overdelivered on deployment and underdelivered on emissions reduction, which is the exact pattern Li et al. (2025) observe across China's policy landscape.

6.2. The Coal Paradox and Its Authorized Logic

As we explored in Chapter 5, the simultaneous expansion of renewable capacity and coal capacity during the 2020 to 2025 period is not actually a contradiction between stated policy and actual behavior. Instead, it is a contradiction that is directly built into the policy architecture itself. The 1+N Working Guidance and Action Plan explicitly authorized continued coal operations until supply security could be guaranteed with renewable replacement capacity (NDRC, 2021a; NDRC, 2021b). Even later policies, such as the Energy Law enacted in 2024 preserved coal as a strategic reserve (NEA, 2024). As such, provincial governments approving new coal plants were not defying the central policy framework. They were actually operating within its explicitly authorized provisions (Annex 1; Guan et al., 2018).

The scale of what this produced is nonetheless striking. China approved about two new coal power plants every week in 2022 and new coal construction (Myllyvirta et al., 2023). New coal construction starts reached 94,5 GW in 2024, which is the highest level seen since 2015 (Climate Action Tracker, 2025; Partel, 2025). The Global Energy Monitor (2026) data shows that across this thesis' analytical period, China accounted for most new coal capacity additions globally. This happened while China was simultaneously meeting its 2030 wind and solar NDC target six years early (Climate Action Tracker, 2025). Both of these records happened within the same five-year timespan (Climate Action Tracker, 2025; Global Energy Monitor, 2026).

This expansion can be justified by arguments around energy security. In 2021 and 2022 there was an extended power shortage crisis that came about through a large number of factors: drought reduced hydropower output, heatwaves pushed cooling demand, and China placed an import ban an Australia in response to their inquires about COVID-10, which led to a loss of roughly 38% of its coal imports from late 2020 onward. This demonstrated concretely that grid stability could not be guaranteed without firm dispatchable power. However rapidly renewables could be deployed, they are still somewhat intermittent. Until storage and grid flexibility can be scaled up sufficiently, coal remains an insurance against supply disruptions (Marinaccio, 2021; Myllyvirta et al., 2023; Myllyvirta et al., 2025). Chinese planners are not necessarily wrong to see coal as having a part to play in the energy transition. The analytical problem is whether the volume of new coal capacity approved between 2022 and 2024 is consistent with a transitional role or whether it reflects a deeper “political economy” resistance to the phase-down required by the 2030 to 2060 pathway (Global Energy Monitor, 2026; Xi, 2020).

The answer is probably both. Some of the new coal capacity approvals stem from genuine grid management needs (Myllyvirta et al., 2023; Patel, 2025). Some of them come about due to provincial governments protecting revenues and employment (Heilmann, 2011; Khan & Wang, 2026). Some only happen because state-owned coal enterprises deliberately make use of the security rationale to further their own economic agenda (Khan & Wang, 2026; Sandalow et al., 2022; Zhou et al., 2022a). Disentangling these motivations is difficult from external observation. However, the direct outcome of this combination of factors are new coal plants with operational lifetimes extending to 2050 and beyond being approved. This creates a structural problem that 6.3 will attempt to address directly.

6.3. Stranded Assets and Carbon Lock-In

Going by normal operating assumptions, the coal plants that were approved and constructed between 2022 and 2024 will not retire before 2050. With the way coal plants are currently constructed, their standard technical lifetime is between 30 and 40 years. This would place the retirement date of any new coal plants between 2050 and 2065. This would be directly within the period by which China has committed to reaching climate neutrality. This is not just a minor scheduling error. It is a substantial commitment of capital and infrastructure that makes it economically logical to continue using coal at the exact moment when the transition would require its elimination (Bos & Gupta, 2019; Global Energy Monitor, 2026; Xi, 2020).

For these resources, Bos and Gupta (2019) distinguish between two distinct categories: stranded assets, which refers to infrastructure that loses its economical value because of changes in the market or policy landscape; and stranded resources, which refers to fossil fuel reserves whose use would exceed carbon budgets. China is currently generating both simultaneously. To reach carbon neutrality in time, the coal capacity additions of 2022 to 2024 would have to be retired early, which would destroy the capital invested in them and generate large financial and political costs that the Chinese government is explicitly trying to avoid. The other option would be to continue operating this infrastructure past the date where their use becomes economically irrational, which requires a higher carbon budget than China's neutrality pathway allows for (Bos & Gupta, 2019; Global Energy Monitor, 2026; Xi, 2020).

The extent of this problem is quantifiable. Global Energy Monitor (2026) data shows that China was operating or constructing coal plants with a capacity of over 1.100 GW as of 2024. In order to hold the course toward carbon neutrality, the Chinese government would have to ensure that a large portion of this capacity is retired before 2060. The steepest retirements would be necessary between 2035 and 250 (Climate Action Tracker, 2025). The construction costs for many of the recently approved plants will not be fully recovered for over a decade. This leaves the state-owned enterprises and provincial governments that own them financially vulnerable (Bos & Gupta, 2019). BloombergNEF (2025) documents this phenomenon in emerging markets: when coal plants are retired early, the resulting stranded asset costs tend to fall disproportionately on the public. Logically, the people most affected would be the ones living in the communities close to the coal plants in question. As a result, the provincial governments in these areas are further disincentivized to retire these structures early. The fiscal pressure created by this scenario further slows phase-down decisions (Wang & Lo, 2021).

The trajectory of these coal plants' utilization rates illustrates this problem. Renewable energy generation has expanded its capacity significantly, which leads to coal plants being operational for fewer hours annually. This reduced their revenue against their fixed capital costs (Yang et al., 2025). Plants approved in 2024 are being added to this equation while China simultaneously constructs more infrastructure to generate cheap renewable energy (Global Energy Monitor, 2025; Global Energy Monitor, 2026). The rational response to this would be to retire these coal plants early and to stop approving new ones. However, this is made difficult by the political economy of provincial governments and state-owned enterprises (Khan & Wang, 2026; Zhou et al., 2022b).

There is also another possibility that the stranded asset framing cannot fully capture. Perhaps China has simply concluded that it cannot dispense with coal even in the long term without risking the stability of its energy system. This would make coal a structural feature of a grid that must guarantee supply security across a large economy with an extremely uneven renewable resource distribution (Heilmann, 2011; Khan & Wang, 2026). Should this reading be accurate, the coal expansion is not purely a failure to internalize future stranded asset costs, nor entirely a product of provincial "political economy" resistance. This may reflect a deliberate judgement by the central government that grid stability requires a permanent firm power base that renewables and storage cannot yet guarantee at the necessary scale. This reading is supported by the Energy Law's explicit preservation of coal as a strategic reserve in framework legislation support (NEA, 2024).

There appears to be a direct conflict between short-term logic, which dictates that coal plants are necessary to guarantee energy security and long-term neutrality commitments that require the rapid closure of these same plants (Bo & Gupta, 2019; Myllyvirta et al., 2023; Xi, 2020). China is currently essentially taking out a loan from its future carbon budget to ensure energy security at present. The interest of this loan will compound over time, especially as its 2030 and 2060 approach. Should this contradiction between coal expansion and the 2060 neutrality commitment actually be a structural feature of Chinese energy planning, it would require a direct confrontation before China's climate neutrality goals can be reached. As of now, the current architecture is designed to defer this confrontation rather than resolve them.

6.4. The Economic Slowdown as a Competing Explanation

Chapter 4 documents emissions plateauing and targets being met across the 2020 to 2025 period. This seems to suggest that China's energy transition is producing real results. However, as hinted at in Chapter 5, it is unclear how much of it came about due to deliberate climate policy, and how much of it is simply a reflection of an economic slowdown that would have reduced emission independently from policy action. Each of these explanations would have different implications for durability. Policy-driven emissions point to a structural change that would persist even when the economy recovers. However, slowdown-driven reductions are cyclical and would just reverse once economic growth resumes. Depending on which explanation applies, the transition may be more fragile than it seems. Though, as this chapter argues, the boundary between these two explanations is less clear than it might initially appear (Guan et al., 2018; Myllyvirta, 2025b; Weigelin-Schwiedrizik, 2025a).

Three distinct mechanisms contribute to the 2022 to 2025 emissions trajectory, which should be seen as separate phenomena and not a singular monolith.

The first mechanism is that renewable energy is slowly displacing coal in the electricity system. As Myllyvirta (2024) confirms, renewable generation is surpassing electricity demand growth. This represents a genuine structural shift. With each giga watt of coal that is replaced with a renewable alternative, it changes how energy is generated permanently. The installed capacity will remain operational regardless of economic conditions, meaning that the change to how energy is generated is permanent. The scale of deployment that was documented in Chapter 4 is large enough that renewable displacement of coal is now a genuine structural feature of the electricity system rather than just a marginal contribution (Climate Action Tracker, 2025; Yang et al., 2025).

The second mechanism is the structural contraction of heavy industry and construction. Guan et al. (2018) postulated that China's emissions trajectory is tightly linked to the construction industry and its use of cement, steel, and related materials. In 2021, there was an accelerated downturn of the real estate industry, which was driven by the Evergrande-crisis as well as a broader tightening of credit in the property sector. This reduced the demand for construction materials such as cement and steel substantially while being completely independent of any climate policies. Niu et al. (2024) and Zhang et al. (2022) both document this contraction and the consequences this had for emissions. The scale of it should not be understated: it represents one of the largest single-sector demand collapses in China's post-reform history, and its emissions consequences are significant. This mechanism is both structural and cyclical. On the one hand, China's construction boom was always going to plateau at some point, as urbanization could not go on forever. On the other hand, some of these changes might reverse once construction demand recovers. However, due to the sheer scale of the collapse, it is unlikely that emissions will completely return to the previous status quo.

The third mechanism is the rapid closure of small and medium private manufacturers. As documented in Chapter 2, the combination of US tariff escalation from 2022 onward, trade uncertainty, and broader domestic demand weakness resulted in many small and medium export-oriented enterprises closing rapidly. These closures reduced industrial energy consumption without any influence from climate policy and independently of the contractions witnessed in the heavy industry seen in the prior paragraph. This mechanism could be largely cyclical, as firms that close did not actually decarbonize, they just stopped operating. This means that their contribution to an emissions plateau could potentially be reversed if trade conditions were to stabilize and these firms then proceeded to reopen (IEA, 2025a; Wang & Wu, 2023; Weigelin-Schwiedrizik, 2025a, 1:01:00-1:03:30).

However, the cyclical framing employed here requires qualification. Firms that have closed will not simply reopen in the same sector. Some will not return at all. Others will face a different regulatory environment than when they first began operating. More broadly, China may be entering a period of prolonged economic stagnation rather than a temporary cyclical trough (Khan & Wang, 2026; Li & Du, 2025; Liao & Zhang, 2024; Weigelin-Schwiedrizik, 2025a, 1:05:00-1:09:00). Should this interpretation be correct, the emissions reductions attributable to the closure of small and medium manufacturers are more durable than a purely cyclical account would suggest, completely independently from decarbonization policy. The uncertainty here is genuine and should be acknowledged rather than resolved artificially.

It is difficult to disentangle the relative contribution of each of these mechanisms with the data available. However, the oil and gas import trajectories do offer a useful independent check. China’s crude oil imports fell from 11.3 million barrels per day in 2023 to 11.1 million barrels per day in 2024. Total consumption of oil-based transport fuels dropped 2,5 % below 2021 levels. This is only marginally above pre-pandemic 2019 figures (EIA, 2025). Myllyvirta (2025a, 2025b) claims that the main reason for this sustained emissions plateau witnessed in 2024 and 2025 is renewable electricity growth. However, he also acknowledges that the contraction in the real estate sector represented a significant tailwind to the energy transformation.

Additionally, the closures in the private manufacturing sector is not something that can be separately quantified. The honest assessment based on the available data and Myllyirta's (2025a, 2025b) expert analysis is that all three mechanisms were operating near-simultaneously: EV displacement reduced transport fuel demand, industrial contraction reduced diesel and heavy fuel use, and small manufacturers' closures cut manufacturing energy consumption. While this does not allow for attribution between them, it means that the renewable displacement effect is demonstrably real and growing. It is reflected in China's external energy trade data. However, the plateau's full magnitude also reflects the economic conditions of the time which cannot be assumed to persist indefinitely.

This has direct implications for assessing China's 2035 NDC target: it has committed to reduce GHG emissions by between 7% and 10% from its peak levels across the entire economy. That peak year has not yet been formally declared (UNFCCC, 2025). If the peak is declared to be a year of cyclically suppressed emission such as 2022, when COVID lockdowns and the beginning of the real estate contraction depressed industrial activity, the target becomes considerably easier to achieve (Niu et al., 2024; Weigelin-Schwiedrizik, 2025a, 1:01:00-1:03:30; Zhang et al., 2022). UNEP (2024) explicitly flags this baseline ambiguity as a systematic problem across multiple NDC submissions globally. For China, specifically, the time that is declared the peak could mean a difference of several hundred million tonnes of emissions in the implied reduction target. This is genuinely analytically significant for assessing whether the 2035 commitment can be considered genuinely ambitious or something designed to be met comfortably.

Climate Action Tracker (2025) maintained its "Highly Insufficient" rating for China throughout the analytical period. CCPI (2026) classified China as a very low performer. Both of these assessments reflect a particular underlying judgement: the short-term trajectory may have improved and the deployment record is genuine. However, the structural commitments remain inconsistent with 1,5 or even 2 degree pathways. The contradictions and challenges documented in this chapter are not just incidental features of an otherwise completely successful transition. Instead, they are structural characteristics of a governance architecture that was designed to accelerate deployment while managing, rather than completely eliminating, the political economy of fossil fuel dependence.

7. Implications for Global Climate Governance

The implications developed in this chapter are inferential extrapolations from the explanatory findings of Chapters 4 and 5, synthesized in Table 1, rather than independently verified policy recommendations. They are offered as analytically plausible directions given the driver identified and should therefore require further empirical testing before implementation.

7.1. How International Actors Should Engage with China

The central analytical result of this thesis is that China's acceleration was driven primarily by political economy, international relations, and socio-technical dynamics, instead of climate convictions. China deployed renewables at record scale because this aligned with state industrial strategy, reduced strategic vulnerability to fossil fuel import disruptions, and generated globally competitive manufacturing capacity. Climate goals provided international legitimacy and domestic co-benefits framing. However, they were not the primary driver of these changes. This finding has direct practical implications. External actors who engage China through the language of climate ambition are engaging with the legitimating frame rather than the actual drivers. This includes moral pressure, insufficiency ratings, and demands for faster target tightening. Engagement that touches China's real motivations is likely to have greater effects. What follows identifies where engagement with those real motivations is most likely to find purchase, drawing directly on the causal account rather than on normative assumptions about what China should do.

This does not mean that external pressure is irrelevant. The September 2022 dual carbon declaration was partly a response to sustained international pressure and the strategic opportunity created by US absence from the Paris climate accords (Haskett, 2925; Narang, 2025; Xi, 2020; Xiang & van Gevelt, 2025). The 2035 NDC's first absolute emissions reduction target represents a genuine step forward that would likely not have manifested without external accountability mechanisms. International pressure and cooperation works, when it engages China's strategic interests alongside its normative positioning. It is less successful when it is perceived as disguised trade protectionism or as a challenge to China's developmental rights under the principle of common but differentiated responsibilities (Annex 2; Chen et al, 2025; Trasi, 2025).

7.1.1. The EU

The EU's relationship with China on climate is the most developed and the most complicated of any bilateral pair. Trasi (2025) characterizes it as convergence rather than alignment. Both sides broadly share directional goals, but diverge on pace, governance, and competitive framing.

The structural basis for this dependency is visible in Figure 4. China accounts for 29% of all prospective utility-scale wind and solar capacity globally, and a striking 74% of all capacity currently under construction. This means that the manufacturing and deployment ecosystem underpinning Europe's own clean energy supply chains is disproportionately concentrated in a single counterpart whose strategic interests do not fully align with European climate governance ambitions.

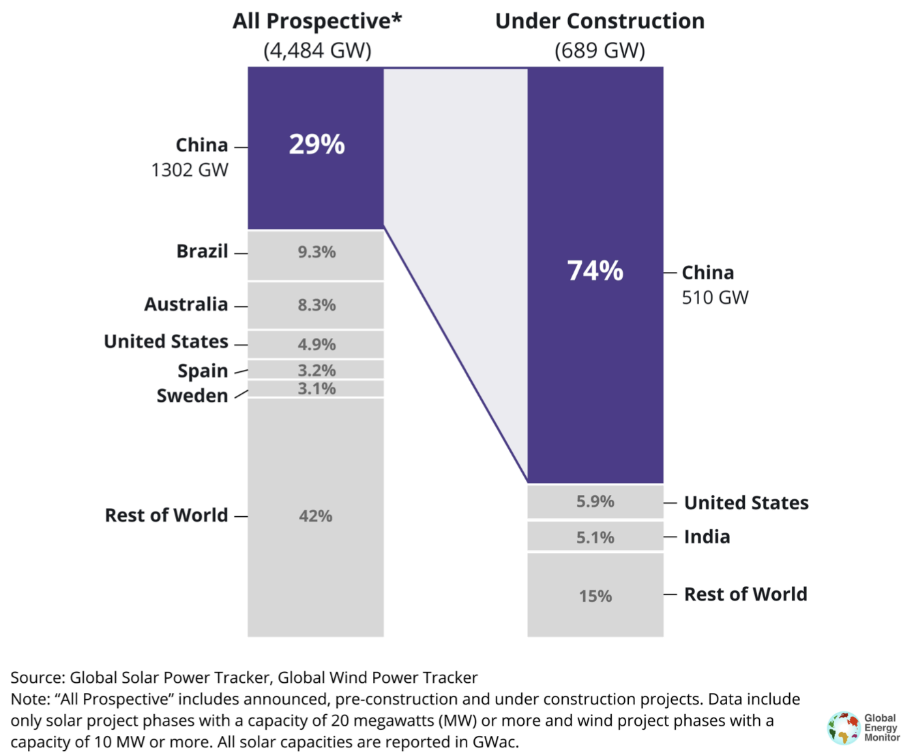

Figure 4: China's share of prospective and under-construction utility-scale solar and wind capacity percentage of global total (GW)

China’s 510 GW under construction represents 74% of the global construction pipeline, against a next-largest share of 5,9% for the United States. The concentration has direct implications for European clean energy supply chain dependency, discussed in this section (Reproduced from Global Energy Monitor (2025) for non-commercial academic purposes).

The CBAM illustrates this tension clearly. It was designed as a climate tool to prevent carbon leakage, but Beijing increasingly perceives it as a protectionist measure in environmental packaging. China, along with Brazil, South Africa, and India, criticized CBAM at COP-28 as a unilateral trade restriction incompatible with the principle of common but differentiated responsibilities. Since then, it has pushed for UNFCCC agenda items on climate-related trade measures at the following COPs (Chen et al., 2025, Trasi, 2025). The 2035 NDCs conditional responsibility clause, which claims that “countries that undermine climate cooperation must bear responsibility,” is partly a direct response to this dynamic (UNFCCC, 2025). Whether or not the criticism is justified, the potential consequences are real: CBAM is shifting China’s international climate posture from cooperative positioning toward defensive assertion. This is happening at a moment when its deployment record makes technical cooperation incredibly important (Trasi, 2025).

This creates a genuine dilemma for the EU. Abandoning CBAM would undermine the EU’s own carbon market integrity and remove a genuine incentive for trading partners to price carbon. However, maintaining it in its current form risks entrenching the adversarial framing that China’s 2035 NDC already reflects (Chen et al, 2025; Mehling, 2025; Trasi, 2025). Trasi (2025) recommends that the EU prioritize diplomatic outreach alongside CBAM implementation. She declares that it is important to frame the mechanism in ways that create pathways for convergence rather than confirming a West-versus-rest narrative. This is presented as the more productive path, though it would require the EU to acknowledge that the instrument has geopolitical consequences that it did not fully anticipate during its design.

The broader risk in EU-China climate engagement is dependency. Europe’s clean energy supply chains already depend structurally on Chinese components (Andrews-Speed et al., 2023). Chapter 6.3 documented that China’s coal expansion during the transition period creates a long-term carbon lock-in within China. The flip side of this dynamic is that China's manufacturing dominance in renewables creates a long-term supply chain lock-in for European clean energy infrastructure. Andrews-Speed et al. (2023) and Wray (2025) document how this dependency is deepening as Chinese manufacturers capture greater market shares in EU clean energy deployment. European policymakers face a genuine trade-off: accepting this dependency accelerates the EU's own transition at lower cost and encourages China to keep investing in renewables. At the same time, it creates the type of strategic vulnerability for the EU that China seeks to eliminate through its own transition.

7.1.2. The United States

The Kerry-Xie bilateral climate track showed that de-linking climate from broader geopolitical contestation can produce concrete results. Dai et al. (2023) demonstrate how this framework generated coordination on methane, deforestation, and NDC ambition signalling between 2021 and 2025. It was successful because it treated climate as a domain of mutual interest rather than strategic competition, even within a relationship that was otherwise defined by rivalry.

The post-2025 re-withdrawal from Paris closed that window of opportunity again, with direct consequences for global climate ambition. The practical implication of this is that maintaining a distinct cooperative climate channel within a relationship defined by broader competition elsewhere produces better climate outcomes than treating climate as just another arena of strategic rivalry. This is not an argument for strategic accommodation. It is an observation about which instruments are effective for which goals (Dai et al., 2023; Ewing, 2021; Hook, 2021). The US' current posture conflates the two and is likely to produce worse outcomes in both dimensions: less climate cooperation and no meaningful reduction in strategic competition.

7.1.3. Developing country governments

China's BRI green energy engagement has experienced a substantial shift since 2021. China pledged to stop building new coal plants abroad in September 2021 and has dramatically increased renewable energy financing from around 4.4 billion USD in the first half of 2024 to around 9.7 billion USD in the first half of 2025 (Trasi, 2025). For developing country governments this creates both opportunity and a structural risk. They can accelerate their own transitions through access to affordable Chinese clean energy. However, if these countries build their infrastructure with Chinese components and financing, they risk creating long-term supply chain dependencies that limit policy autonomy (Andrews-Speed et al., Timmons Roberts, 2017; Wray, 2025).

Multilateral institutions and other bilateral donors cannot compete with China on price (Wray, 2025). What they can offer instead are governance frameworks, technical standards, and financing structures that preserve the recipient country's policy autonomy. They allow developing states to avoid being locked into Chinese standards and supply chains, while not requiring them to forgo affordable Chinese technology (Gao, 2026; Timmons Roberts, 2017). This is a more viable competitive strategy than attempting to match China's scale of infrastructure financing (Andrews-Speed et al., 2023).

7.1.4. Multilateral institutions

Chapter 6.4 identified a structural governance problem: the 2035 NDC's baseline peak year has not been formally declared, and a cyclically suppressed year would make the 7 to 10 percent reduction target considerably easier to achieve. UNEP (2024) flags this as a systemic problem across multiple NDC submissions globally.

The UNFCCC currently has no robust mechanism for ensuring that peak emissions baselines are established in ways resistant to cyclical manipulation (UNEP, 2024). Developing agreed methodologies would strengthen the credibility of global NDC architecture and reduce the incentive to time peak declarations strategically. A possibility would be to use multi-year rolling averages rather than single-year declarations. This would be a technical governance reform with consequences that extend well beyond China.

7.2. Geo-Economic Design Principles

China's specific combination of party-state institutional capacity, manufacturing scale, domestic market size, and acute geopolitical energy security pressure does not exist anywhere else in the same configuration, as demonstrated in Table 1. The mechanisms that explain China's acceleration are partly contingent on preconditions that took decades to assemble (Feng, 2024; Heilmann, 2011; Nahm, 2021). Direct polity transferability is therefore limited. What this thesis can offer at a higher level of abstraction are geo-economic observations and design principles rather than specific instruments.

7.2.1. Energy independence as a transition driver

China's experience shows that renewable development offers a pathway to genuine energy independence for an economy dependent on imports. Diversifying fossil fuel suppliers can reduce exposure to specific counterparties but maintains structural dependence on global fossil fuel markets, seaborne supply chains, and price volatility. Domestic renewable deployment eliminates this dependence at its root. This logic can be applied regardless of the political system. Additionally, by framing this transition in energy security terms instead of primarily in climate terms, countries may be able to generate more durable domestic political support than purely with climate concern (Feng, 2024; Overland, 2019).

The limits of this observation matter equally. China achieves energy independence through a pragmatic approach that includes maximizing all domestic energy resources, including coal and nuclear, alongside renewables, rather than excluding any on ideological grounds (Andrews-Speed, 2023; NDRC, 2022; NEA, 2024). Most EU member states explicitly reject this type of pragmatism in their policy debates (Agora, 2025). Whether other societies are willing or able to replicate China's approach is a political question that this thesis cannot answer. What it can establish is that the energy security framing can be separated from the specific energy mix choices China makes. Therefore, it is available to states regardless of which domestic resources they choose to employ.

7.2.2. Growth compatibility as a framing choice

China's transition demonstrates that deploying renewables at scale does not necessarily place constraints on GDP growth. A green transition can be structured as an engine of economic expansion that generates manufacturing employment, reduces energy import costs, and builds export-competitive industrial capacity simultaneously. Rhetorically, this reframing remains underutilized in Western policy debates. There the transition is more commonly presented around cost, disruption, and intergenerational burden-sharing (Khan & Wang, 2026; Stern & Xie, 2022). China's experience does not prove that the transition is completely cost free: chapter

6 documented substantial structural contradictions and enforcement gaps. However, the case of China does demonstrate that the transition can be part of a growth strategy instead of a sacrifice of growth. Framing it in such a way makes sustained policy commitment more achievable.

The question of how to frame and sequence energy transitions in states with significant but not unlimited institutional capacity is analytically urgent. IEA (2024) projections state that the largest remaining growth in energy demand can be expected to come from emerging market economies. However, the existing literature offers limited guidance on what works in these contexts beyond replicating instruments designed for advanced economies. Hochstetler (2020) shows through the example of Brazil and South Africa that elements of the sequencing logic documented in this thesis – niche protection, institutional mandates, gradual market integration – operate in other emerging markets even where outcomes are substantially different. China's transition offers the most extensive available data points for the question of framing. Its scale, pace, and documented contradictions make it analytically irreplaceable, even accounting for all the transferability caveats this thesis has established.

7.2.3. Sequencing and the Assembly of Preconditions

China's 2020 acceleration was the activation of industrial, institutional, and technological capacity that had been assembling for decades before the dual carbon devaluation made it politically visible. Battery technology investment dates to the mid-1990s, well before any serious domestic EV market existed (Weigelin-Schwiedrizik, 2025a; 34:13-35:44). Feed-in tariff infrastructure was in place by the mid-2000s, which created the financial conditions for early solar deployment even before grid parity was technically feasible (Yang & Lo, 2023). The administrative apparatus for environmental enforcement was built during the air quality crisis of 2013 and was later repurposed for carbon regulation after 2020 (GOV CN, 2013; NPC, 2014). When the political trigger arrived in September 2020, what looked from the outside like an unprecedented surge, was actually a mobilization of preconditions that had been quietly accumulating across three separate policy generations (Khan & Wang, 2026; Nahm, 2021).

The implication for similarly structured emerging economies is that the relevant policy question may not be which deployment targets to set for 2030, but whether the preconditions for a future acceleration are being assembled now. Niche protection for technologies not yet commercially viable, institutional capacity for monitoring and enforcement that exceeds current regulatory demands, and manufacturing investment that anticipates export markets are categories of patient capital that China's experience suggests matter most in the long run (Geels, 2002, Nahm, 2021). None of them produce visible results on the timescales that electoral cycles or donor reporting frameworks typically reward, which is precisely why they tend to be systematically underinvested in comparable contexts (Hochstetler, 2020; IEA, 2024).

This observation carries the direct implications that financing frameworks that prioritize immediate deployment metrics over institutional capacity building may be optimizing for the wrong variable (Timmons Roberts, 2017). China's experience implies that the constraints on future acceleration is rarely the availability of technology itself. Instead, acceleration is hindered by the absence of industrial, regulatory, and financial infrastructure needed to deploy at speed once political conditions finally align.

8. Conclusion

While the Chinese green transition has many flaws that are part of the system rather than being a bug, it is still one of the most consequential energy stories of the first half of the twenty-first century. Understanding it accurately, both as a data point for other emerging economies assembling their own preconditions and as a subject of international engagement, matters more than either celebrating it uncritically or dismissing it as insufficient.

To accomplish this goal, this thesis asked what explains the rapid acceleration of China's energy transition between 2020 and 2025. The answer to this is not simple, requiring multiple factors converging to push the acceleration.

The September 2020 dual carbon declaration was strategically motivated. During this time, the US had vacated their position as a climate leader, which left the multilateral space left by their absence ripe for the taking. China's motivation was then sustained through 2021 by a genuine bilateral dialogue with the Biden administration that China had strategic reasons to reciprocate. This commitment came before the domestic governance architecture was fully designed to implement it. That sequencing in and of itself is evidence that external positioning played a major role in the timing of the initial pivot.

The international relations lens was further relevant through the influence of China's worries around their dependence on imports. A succession of shocks throughout the 2020 and 2025 time-period made this strategic vulnerability more clear to the Chinese government. Motivated by the threat of sanctions, blockades, or similar methods to stop their import of coal, oil, and gas, China was highly motivated to diversify its energy sources. This directly led the green transitions extreme rise as a priority.

Political economy and socio-technical dynamics together explain the pace and scale of the transition. As Table 1 in Chapter 5.3's clarifying paragraphs make explicit, these two lenses represent two sides of the same coin and while they can be separated analytically the same cannot be cleanly done for the conclusions that can be drawn from them. The state prioritizing clean energy sectors triggered competitive overcrowding among private and state firms simultaneously, which meant that thousands of companies entered solar manufacturing and EV production because the state had designated these as strategic priorities. This reaction to that designation compressed costs at a speed no planning model anticipated. The resulting dynamic is simultaneously a political economy argument about how Chinese industrial strategy works and a socio-technical argument about manufacturing learning curves and deployment feedback loops. Separating them would be a misrepresentation of the mechanism. The scale China achieved domestically, for example installing more solar in 2023 alone than the entire world installed in 2022, was only possible because both dynamics operated synergistically.

Ecology is part of the reason that the transition was domestically sustainable rather than explaining why it happened. The co-benefit framing that runs through every major policy document linked the transition to observable public health improvements in a country where the 2013 air quality crisis had created genuine and politically significant public pressure for cleaner energy. While China has one of the most comprehensive bodies of environmental legislation in the world, both Weigelin-Schiwedrizik (2018) and Li et al. (2025) document that there is a significant difference between comprehensive legislation and consistent implementation. The ecosystem laws passed between 2021 and 2023 are real institutional output. However, they do not bridge the implementation gap that has characterized Chinese environmental governance for decades. The ecological frame gave the transition domestic legitimacy. It did not significantly drive its design or pace.

The discourse analysis contributed something that data alone could not show. China's official texts operate on two simultaneous registers. Domestic governance documents embed the security bottom line, the growth compatibility constraint, and the moderate-pace design signals that authorize continued coal use alongside the climate neutrality commitment. Meanwhile, international documents project climate leadership, ecological civilization, and unconditional ambition. This dual register is not proof of contradiction or hypocrisy. It is how China manages the gap between what its governance architecture can operationally deliver and what its international positioning requires it to claim. The gap between these two registers narrowed between 2020 and 2025. The 1+N architecture was named internationally at COP26, and the 2035 NDC introduced the first absolute reduction target. However, the gap was not fully closed. The conditional responsibility clause in the 2035 NDC signals that by the end of the analytical period, China was also beginning to build a defensive exit from its own international commitments in response to what it perceived as Western bad faith on trade and climate.

While the transition is real, it is also structurally incomplete. The 14th FYP's target on binding intensity was missed. The ETS remained too weakly designed to drive fuel switching. Coal plants approved between 2022 and 2024 will not retire before 2050 under normal operating assumptions, creating a carbon lock-in that extends directly into the neutrality commitment period. The emissions plateau of 2024 and 2025 complicates this picture further. Renewable displacement of coal in the electricity system is real, but it operates almost simultaneously with an economic slowdown whose contribution cannot be cleanly separated from the policy effect with available data. Whether the plateau represents a durable structural change or a partially cyclical phenomenon will only become clear as the economy recovers and the stranded asset problem forces decisions that the current architecture is explicitly designed to defer. However, current evidence leads to the conclusion that it is unlikely that the economy will be rebuilt in the form it had before. As such, some level of reduction is likely to remain independently of any potential economic recovery.

There are specific things that would need to change for the 2060 neutrality commitment to be fully credible. The intensity-based ETS design would need to shift to absolute caps with genuine fuel-switching price levels. The binding/ anticipated target distinction that produced the asymmetry between deployment overperformance and intensity target failure would need to be resolved in favor of binding absolute emissions obligations. And the central government would need to impose early coal retirement costs on provincial governments and state-owned enterprises that the “construction before deconstruction” principle currently defers indefinitely. None of these changes are impossible. However, with the exception of some progress being made on a shift from intensity-based to absolute, none of them are currently scheduled or even realistically aligned with China’s current political and economic priorities. A full green transition without caveats would therefore require a similarly extreme shift as the one seen in 2020.

Whether those conditions converge again will depend on whether the structural contractions documented in Chapter 6 force a direct confrontation with the coal lock-in before 2035, when new coal plants come to the natural end of their lifespan, and whether the international accountability mechanisms that partly triggered the 2020 pivot remain functional enough to sustain external pressure. Both are open questions. What this thesis has established is more precise than a general optimism about convergence: the drivers capable of producing another acceleration are identifiable, their interactions are documented, and the industrial preconditions for a future shift are already committed in the construction pipeline. What remains uncertain is whether the political conditions will arrive before the coal lock-in forecloses that capacity entirely.

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Annex 1: China's Climate & Energy Policy Mix, 2020-2025 (CAPMF Classification)

This annex maps China's main climate and energy policy instruments deployed between September 2020 and the end of 2025, relevant to this thesis, into the four categories of the OECD's (2025) Climate Actions and Policies Measurement Framework (CAPMF): price-based instruments, regulatory standards, technology support instruments, and governance and planning instruments. Every entry includes the instrument itself, its key parameters, and its source. The annex is organized by category, within which the instruments are listed chronologically by date of adoption or entry into force. Some instruments span multiple categories. This is a non-exhaustive list, detailing only major relevant instruments, not every law passed within the mentioned time frame.

Category 1: Price-Based Instruments

These instruments use financial signals, such as carbon prices, taxes, or tradable permits, to change the cost of emitting greenhouse gases.

<u>National Emissions Trading System – Power Sector:</u>

Formally entered into operation in July 2021. At launch, the world's largest carbon market by covered emissions: approximately 2.200 entities in the power generation sector, covering around 5.1 billion tonnes of CO_2 annually, equivalent to over 40% of total Chinese CO_2 emissions. The system is intensity based-rather than cap-and-trade: allowances are allocated free of charge using output-based benchmarking, meaning no absolute ceiling on total emissions exists. Carbon prices for allowances traded between RMB 40 and RMB 60 per tonne of CO_2 during the first compliance cycle (2021), though rose to around RMB 100 per tonne in 2024. Compliance rates reached 99,6% in 2021, and 99,8% in 2022, when the second compliance cycle started (ICAP, n.d.; MEE, 2024; Sandalow et al., 2022).

<u>ETS Interim Regulations:</u>

Adopted in February 2024 by the State Council. Interim Regulation for the Management of Carbon Emissions Trading elevates the ETS from ministry-level to State Council-level authority. This strengthened non-compliance penalties and provided the legal basis for future auctioning (Xuan Tan & Iyer, 2025).

CCER Voluntary Carbon Offset Scheme – Relaunch:

Relaunched in 2024 after being suspended since 2017. The Chinese Certified Emissions Reduction (CCER) voluntary carbon market. The relaunched scheme allows covered ETS entities to use CCER offsets for some of their verified emissions (Yang et al., 2024).

ETS Expansion – Steel, Cement, and Aluminum:

Announced and implemented in 2024 by the Ministry of Ecology and Environment. The expansion of the national ETS to include steel, cement, and aluminum smelting sectors. This added approximately 1.300 new entities and raised coverage to roughly 60% of China's national CO_2 emissions, bringing total covered emissions to around 8 billion tonnes CO_2 annually. Allowances for the new sectors were initially allocated free of charge with a planned tightening from 2027 onward (Xuan Tan & Iyer, 2025).

Category 2: Regulatory Standards

These instruments set mandatory performance requirements, prohibitions, or minimum standards that regulated entities must meet.

Coal Power Small-Unit Retirement Policy:

During the 2020 to 2025 period, China continued a policy of closing small and inefficient coal-fired generation units. In 2020 alone, the country closed units with a joint capacity of 5.2 GW. However, retirements were subsequently slowed after the 2021-2022 power shortage crisis, with some policies revised to keep marginal plants online as grid flexibility reserves rather than retiring them. In 2022, only a reduced capacity of 4.1 GW was closed down (Myllyvirta, 2023; Patel, 2025).

New Energy Vehicle (NEV) Dual-Credit Mandatory Production Quota:

Took effect in January 2021. The second phase of China's Parallel Management Regulation for Corporate Average Fuel Consumption and New Energy Vehicle Credits requires manufacturers producing or importing passenger light-duty vehicles to earn NEV credits equivalent to 14% of their conventional vehicle production in 2021, rising to 16% in 2022 and 18% in 2023. For 2024 and 2025, requirements were subsequently set at 28% and 38% in December 2023, reflecting the rapid pace of market development. Non-compliance requires purchasing credits from other manufacturers (DieselNet, n.d.).

Corporate Average Fuel Consumption (CAFC) Phase V Standards – Passenger Vehicles:

In effect, from 2021 onward, under Phase V of China's fuel economy regulatory framework. Sets a binding fleet-average target of 4.0 liters per 100 kilometers (NEDC) for all new passenger vehicles produced or imported in China by 2025, tightening from the Phase IV target of 5.0 liters per 100 kilometers in 2020 (ICCT, 2021; IEA, 2021).

14^{th} FYP Binding Carbon and Energy Intensity Targets (2021-2025):

Primarily a Category 4 instrument, with relevant applications here. Approved March 2021. The 14^{th} FYP contains two binding national targets: a reduction in CO_2 emissions per unit of GDP of 18% from the 2020 baseline by 2025, and a reduction in energy consumption per unit of GDP of 13,5% from the 2020 baseline by 2025. These are enforceable obligations on provincial governments and state-owned enterprises (Xinhua, 2021).

14th FYP Energy Conservation and Emission Reduction:

Approved March 2021. This plan sets sector-specific emissions reduction and energy efficiency targets across the steel, cement, coating, petrochemical, and chemical industries. It mandates “ultra-low emission transformation for 530 million metric tonnes of steel capacity” by 2025 and requires significant coal consumption reductions during the plan period (Xinhua, 2021).

Renewable Electricity Consumption Obligations (RECO):

Starting in 2021. China formalized a renewable portfolio standard requiring grid companies, electricity retailers, and large users of electricity to buy minimum renewable electricity percentages, with annual targets set province by province by the National Energy Administration. Binding obligations were progressively tightened over the 2021 to 2025 period. This, along with auctions, replaced feed-in tariffs over time (Sandalow et al., 2022; Zhou et al., 2022a).

Updated Nationally Determined Contribution (NDC) – 2021:

Primarily a Category 4 instrument, with relevant applications here. Submitted to the UNFCCC in October 2021. China’s updated NDC commits to peaking CO_2 emissions before 2030, reducing carbon intensity by over 65% from the levels seen in 2005 by 2030, raising the share of non-fossil fuels consumed in primary energy to around 25% by 2030, and reaching 1.200 GW of combined wind and solar installed capacity by 2030. While formally an international commitment rather than domestic regulation, it creates binding political targets that are operationalized through domestic legislation and FYPs (UNFCCC, 2021).

Strict Control of New Coal Power (1+N) framework directive:

Primarily a Category 4 instrument, with relevant applications here. Set in action in October 2021. The 1+N architecture Action plan includes a specific directive to “strictly control” coal power capacity during 2021 to 2025 and “phase down” coal consumption during 2026 to 2030 (Xinhua, 2021).

China’s Energy Law (November 2024):

Enacted in November 2024 and put into effect in January 2025. China’s first comprehensive Energy Law, which came into effect in November 2024, is the country’s first framework law for the entire energy sector, sitting above all sector-specific energy legislation. It prioritizes renewable energy over fossil fuels while maintaining coal as a strategic reserve, and provides the legal foundation for energy security and transition planning (NEA, 2024).

Category 3: Technology Support Items

These instruments directly support the deployment or development of low-carbon technologies through subsidies, public procurement, feed-in arrangements, or research funding.

Grid-Parity Renewable Energy Auction System (replacing FIT):

From 2021 onward, China successfully transitioned from feed-in tariffs for solar and wind power to a competitive auction system, as well as RECOs under which developers bid for long-term contracts at or below the prevailing local coal tariff. Projects winning auctions receive guaranteed 20-year purchase contracts at fixed prices. This shift reduced the public subsidy burden while maintaining deployment incentives. Feed-in tariffs were formally phased out for new solar projects from 2021 (Sandalow et al., 2022).

NEV Purchase Subsidies – Extension to end-2022:

The national NEV purchase subsidy programme, originally planned to end in 2020, was extended through the end of 2022 with gradual step-downs. In 2021, subsidies for battery electric vehicles were around RMB 13.000 per vehicle. The programme was fully phased out at end-2022 (DieselNet, n.d.).

NEV Purchase Tax Exemption – Extension:

The purchase tax exemption on NEVs was extended through the end of 2022 and subsequently renewed for 2023 and then further extended to 2027, though with growing limitations on the amount per vehicle. This instrument provides a direct cost reduction for consumers of battery electricity, plug-in hybrid, and fuel cell vehicles. The addition of RMB 20.000 trade-in subsidies for consumers replacing older vehicles with NEVs in 2024 meant that by 2024, almost 10% of all cars in use are NEVs, and in 2025, NEV sales made up over half of all vehicle sales (Climate Action Tracker, 2025; DieselNet, n.d.; IEA, 2025b).

Large-Scale Wind and Solar Base (Desert/Gobi) Programme:

From 2021 onward, the central government launched a series of large-scale renewable energy base programmes in Gobi, desert, and arid land areas, targeting over 300 GW of combined wind and solar capacity in multiple tranches. The first tranche of approximately 100 GW was approved in 2021, with subsequent tranches approved in 2022 and 2023 (Myllyvirta & Zhang, 2022).

Green Finance Policy Framework:

Launched in 2021 by the People's Bank of China. Carbon emission reduction lending facilities provide low-cost refinancing to banks lending to projects that support clean energy, the conservation of energy, and the reduction of carbon. By the end of 2023, the facility had channeled over RMB 800 billion in directed credit toward the energy transition, and the project had been extended to 2027 (Fu, 2022; Lee, 2024).

State-Owned Enterprise (SOE) Renewable Capacity Mandate:

Guidance issued by the State-Owned Asset Supervision and Administration Commission (SASAC) in 2021 requires central SOEs to achieve a renewable energy share of at least 50% of installed power generation capacity by 2025. This included China's five major state power groups, which collectively represent the dominant share of electricity generation capacity (Sandalow et al, 2022).

14th FYP for Renewable Energy – Capacity and Generation Targets:

Primarily a Category 4 instrument, with relevant applications here. Launched by the National Development and Reform Commission (NDRC) in June 2022. Sets targets for renewables to supply 33% of electricity consumption by 2025, for non-hydro renewables to 18%, and for renewable energy to account for over 50% of incremental energy consumption growth during the plan period. Also mandates renewable energy generation of at least 3.300 TWh annually by 2025 (NDRC, 2022).

Green Power Trading Market – National Launch:

Launched in September 2021. The national green power trading market allows large electricity users to voluntarily purchase renewable electricity directly from generators at a premium. This provides a revenue channel for renewable generators beyond auction contract price and supports corporate net-zero commitments (Herbert Smith Freehills, 2022).

Charging Infrastructure Investment Programme:

Throughout the 14th FYP period, central and local governments maintained investment requirements and procurement targets for EV charging infrastructure, including targets for charging points in residential complexes, highways, and commercial zones. By the end of 2024, China had over 12 million public and private charging points installed (IEA, 2025b).

Category 4: Governance and Planning Instruments

These instruments set strategic frameworks, institutional arrangements, national targets, and coordination mechanisms that shape the overall direction of climate and energy policy.

Dual Carbon Goals Declaration:

Announced in September 2020 at the 75th UN General Assembly by President Xi Jinping. China will peak CO_2 emissions before 2030 and achieve carbon neutrality before 2060. This constitutes the starting point of the analytical pivot and a political anchor for all following climate and energy policy in the 2020 to 2025 period (Xi, 2020).

Leaders Group for Carbon Peak and Neutrality:

Established in early 2021 under the State Council. High-level inter-ministerial coordination body chaired by the Vice-Premier. It oversees the implementation of the 1+N framework across all government departments, provinces, and companies. It reviews provincial action plans and is empowered to hold officials accountable for missed targets (You, 2021).

14th FYP for National Economic and Social Development:

Approved at the Two Sessions in March 2021. Contains binding national targets for carbon intensity reduction (18% from 2020), energy intensity reduction (13,5% from 2020), non-binding guidance for non-fossil energy share (20% of primary energy by 2025), and constructs many wind power bases offshore. Established the institutional planning framework within which all sectoral plans operate (Xinhua, 2021).

14th FYP for Modern Energy System:

Issued jointly by the NDRC and NEA in March 2022. Sets targets for non-fossil fuel power generation (39% of total by 2025), its consumption (30%), and renewables (about half of total installed capacity). Energy security features as an explicit co-objective alongside decarbonization (Climate Change Laws, n.d.).

1+N Policy Architecture – Working Guidance and Action Plan:

Jointly issued in October 2021 by the CPC Central Committee and the State Council. The Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy established the overarching framework for subsequent climate policy. This was followed by the State Council's Action Plan for Carbon Dioxide Peaking Before 2030 (also October 2021). The first N-sector plans cover power, transport, industry, urban construction, carbon sinks, and agriculture. They constitute the top-level governance design for China's decarbonization architecture (NDRC, 2021a; NDRC, 2021b).

Updated NDC Submission:

Submitted October 2021 to the UNFCCC as part of the 1+N framework launch. Formalizes domestic policy targets internationally and reaffirms the 2030 peaking commitment with strengthened targets on carbon intensity, non-fossil energy, and renewable capacity (UNFCCC, 2021).

Xi Jinping Speeches at COP26 (2021) and Leader's Meeting on Climate (2025):

Announced by President Xi Jinping at COP26 in October 2021. They are a key governance communication that frames China's international climate positioning and publicly commits the national leadership to specific climate outcomes. China will phase down coal consumption from 2026 and phase out coal power projects abroad. At the 2025 Leaders' Meeting, Xi reaffirmed the dual carbon targets and signaled continued acceleration of the clean energy transition (Xi, 2021; Xi, 2025).

20th CPC National Congress – Ecological Civilization Commitments:

Held October 2022. The congress report embedded the ecological civilization doctrine and the dual carbon goals into the Party's five-year governing programme, framing "harmonious coexistence of humanity and nature" as a core modernization objective and linking carbon neutrality to China's 2035 and 2049 development milestones (IDCPC, 2023).

Methane Emissions Control Action Plan:

Published in November 2023. China's first dedicated methane emissions control action plan commits to peak methane emissions before 2030 and to strengthening monitoring and reporting across the coal, oil, gas, and agriculture sectors. Extends the 1+N architecture beyond CO_2 for the first time and signals a broadening of China's climate governance scope (MEE, 2023).

China's 2035 NDC Submission:

Submitted in November 2025. Plans to achieve a 7-10% reduction of economy-wide net greenhouse gas emissions from peak levels by 2035. First absolute, economy-wide emissions target covering all greenhouse gases. Additional targets: non-fossil energy share (over 30%), wind and solar capacity (over 3.600 GW), and NEVs (mainstream of new vehicle sales) (Climate Action Tracker, 2025).

Recommendation for the 15th FYP:

Recommendations for the 15th FYP were published in November 2025 by the CPC Central Committee. Establish “major new progress in building a beautiful China” as a major target and reaffirm intent to achieve the 2030 carbon peaking goal. The 15th FY was only formalized in 2026, so only the recommendations document is relevant (Climate Action Tracker, 2025).

Annex 2: Discourse Analysis Research Logbook

IDCPC

Log 01 – IDCPC (2023): Full Text of the Report to the 20th National Congress of the Communist Party of China

A. Entry metadata	
Entry no.	Log 01
Date	April 18, 2026
Source	DCPC. 2023. *Full text of the report to the 20th National Congress of the Communist Party of China.* Beijing: International Department, Central Committee of CPC. August 2.
Language	English (official translation)
Document type	CPC National Congress Report

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	"Green development" explicitly mentioned far after "economic development" making it seem subordinate; "high-quality development" positioned as primary task, with "green development" positioned as a component of not a constraint on this; "building the new before discarding the old" explicitly hedging for continuing coal use; "coal and hydrocarbon expansion" is explicitly committed to simultaneously with positive language about "coal;" "energy security as a national security obligation;" four-element coordination formulation of "cut carbon, reduce pollution, expand green development, pursue growth," appears verbatim as in 2021 NDC, 2035 NDC, and other documents in this corpus; the inclusion of "economic growth" explicitly frames the possibility of co-existence of climate policy and economic

	development; "science and technology self-reliance" where "new energy" is listed as one of the points (Congress-level confirmation of the IR-industrial strategy argument); clean energy as technological independence; "China opposes protectionism… committed to building … a clean and beautiful world through green and low-carbon development" appearing in the same part positions China's clean energy industrial dominance as both a green contribution and a counter to decoupling pressure; "various black swan and gray rhino events may occur at any time… ready to withstand high winds, choppy waters, and even dangerous storms" explicitly invoking "bottom-line thinking" (底线思维) as the governing cognitive approach to risk
Phase 2 – Frame coding	
Political economy/ Party leadership	Every domain is organized around Party leadership (pace is Party-determined)
National security/ self-reliance	Significantly more security-oriented framing than 14th FYP; risk language escalated, energy security elevated to national security architecture, supply chain security emphasized
Ecological civilization	"Ecological civilization" is included as one of the spheres; the highest level confirmation that the ecological frame is genuine and irreversible; confirmation that ecology is elevated to be co-equal, but not superior to economic construction
Schoenhals (1992)	1) "construction before deconstruction" ("先立后破") elevated to congress level; 2) "cut carbon, reduce pollution, expand green development, pursue growth" ("降碳减污扩绿增长") four-element coordination formulation appears in Corpus multiple times, confirming it as fixed terminology; 3) "Chinese modernization" ("中国式现代化") embeds ecology into a civilization argument that positions green development as a marker of Chinese

	distinctiveness; 4) "bottom-line thinking" ("底线思维") named explicitly as a governing cognitive method

C. Analytical reflection	
Framework(s) engaged	Political economy (primary; Party leadership over transition pace; multi-objective governance, coal authorized); international relations (strong; energy security as national security, IR opposition to decoupling, Chinese modernization civilization frame; ecology (institutionalized within five-sphere plan (co-equal, not dominant); socio-technical (landscape authority for managed co-existence of fossil and clean energy regimes)
Tensions/ contradictions	Explicit ratification of coal being permitted by the governing transition principle, endorsed by the energy development sector, and required by the national security sector

MEE

Log 02 – MEE (2023): Methane Emissions Control Action Plan

A. Entry metadata	
Entry no.	Log 02
Date	March 7, 2026
Source	MEE. 2023. 甲烷排放控制行动方案 *[Methane Emissions Control Action Plan]*. Beijing: 中华人民共和国生态环境部 [Ministry of Ecology and Environment, People's Republic of China], November 2023.
Language	Chinese (original)
Document type	State Council / MEE action plan; governance and planning instrument

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	"降碳减污协同" ("pollution-carbon synergy"); "能源安全" ("energy security"); "甲烷减排" ("methane emission reduction"); "生态文明" ("ecological civilization", cited i
Phase 2 – Frame coding	
Ecology/ co-benefits	Strong; document explicitly uses "降碳、减污、扩绿、增长协同推进" ("coordinated advancement of carbon reduction, pollution mitigation, green expansion, growth") as its guiding logic; directly echoed in Gong et al. (2025) as co-benefit roadmap
IR/ strategic competition	Absent; no reference to international competition, supply chain dominance, or Malacca-type vulnerability

Innovation/ industrial upgrading	Present, but secondary; section 6 on technological innovation and monitoring capacity building aligns with the industrial upgrading discourse
Energy security	Minor; “能源安全” (“energy security”) appears in the section on risk prevention (Section 2, Principle 5): “methane control must not compromise energy security, food security, or supply chain security”; security is a constraint on ambition rather than a driver
Governance expansion	Significant; document is notable as the first extension of 1+N architecture beyond CO_2 to a non-CO_2 greenhouse gas; explicitly invokes the 1+N framework and 14th FYP in its justification
Schoenhals (1992)	The inclusion of “甲烷” (“methane”) in a standalone MEE action plan, where previously only CO_2 had dedicated instruments, represents a meaningful terminology expansion of the climate governance lexicon, consistent with Schoenhals’ observation that new terms signal shifting political priorities

C. Analytical reflection	
Framework(s) engaged	Ecology (primary); socio-technical (secondary); political economy (minor; enforcement limited, document aspirational); international relations (minor; via short energy security acknowledgement)
Tensions/ contradictions	Document acknowledges weak statistical baseline and absence of binding methane standards; plan is dense in intention, low in enforceable stringency

Log 03 – MEE (2024): Progress Report of China’s National Carbon Market

A. Entry metadata	
Entry no.	Log 03
Date	March 7, 2026
Source	MEE. 2024. *Progress Report of China’s National Carbon Market (2024)*. Beijing: Ministry of Ecology and Environment, People’s Republic of China, July 2024.
Language	English (official government translation)
Document type	Official government progress report on the national ETS; combines statistical reporting, policy narrative, and institutional self-assessment; promotional tone

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	“Dual carbon” (“双碳”; cited as overarching policy anchor throughout); “ecological civilization” (“生态文明”); “high-quality development” (“高质量发展”; prominent and linked to carbon market as driver of economic upgrading); “energy security” (“能源安全”; explicitly mentioned as a constraint China faces, not as a driver of ETS itself; “international influence” (“国际影响力”)
Phase 2 – Frame coding	
IR leadership/ credibility	Strong; report repeatedly invokes China’s “Chinese approach” (“中国方案”) to global carbon markets, claims international influence, and frames the ETS as a contribution to global climate governance

Economic modernization	Strong; carbon market framed as driver of "new quality productive forces" ("新质生产力") (a Xi-era concept linking green transition to industrial upgrading)
Ecology/ co-benefits	Present but subordinate, ecological civilization cited in the Xi quote context; the ETS is positioned as an economic mechanism first, environmental mechanism second
Energy security	Appears as constraint, not driver; outlook section notes China's dependence on coal and heavy industry as factors that make the ETS challenging (security is a reason to transition is hard, not a reason it is being pursued)
Schoenhals (1992)	Phrase "a more dynamic and internationally influential carbon market" ("更有活力、更具国际影响力的碳市场") is repeated verbatim in the forward, abstract, and outlook; classic CPC rhetorical repetition marking a politically fixed formulation

C. Analytical reflection	
Framework(s) engaged	International relations (primary; credibility/ leadership framing); political economy (secondary; state-directed market design, SOE compliance); socio-technical (tertiary; niche-to-regime transition of ETS)
Tensions/ contradictions	Report claims the carbon market's guiding role in energy mix adjustment is "becoming gradually evident", but the 8,78% intensity improvement in total electricity generation is largely attributable to renewable deployment, not ETS-induced fuel switching; attribution problem

NEA

Log 04 – NEA (2024): Energy Law of the People's Republic of China

A. Entry metadata	
Entry no.	Log 04
Date	March 14, 2026
Source	NEA. 2024. 中华人民共和国能源法*: 2024-11-09 [Energy Law of the People's Republic of China: 2024-11-09].* Beijing: 国家能源局 [National Energy Administration]. November 9.
Language	Chinese (original)
Document type	Framework legislation

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	"能源安全" ("energy security"; highly frequent, structurally embedded as co-equal objective alongside green transition); "碳达峰碳中和" ("carbon peak and carbon neutrality"; coordinated with energy security); "绿色低碳" ("green low-carbon"; frequent, standardized formulaic pairing in Xi-era governance texts); "可再生能源" ("renewable energy"; prominent); "煤炭" ("coal"; positioned as backup resource); "创新" ("innovation"; prominent in Chapter 6, energy technology innovation); "国际合作" ("international cooperation"); Article 78 (reciprocity clause against discriminatory restrictions on Chinese clean energy)
Phase 2 – Frame coding	

Energy security	Very strong; energy security appears in the purpose clause alongside decarbonization (they are not hierarchically ordered but presented as simultaneous objectives); the entire Chapter 5 on “储备” (“reserves”) and emergency response has no parallel in pre-2020 energy legislation. This reflects the post-2021 power shortage experience and post-2022 geopolitical context
IR/ strategic sovereignty	Present via Article 78 reciprocity clause; the authorisation to take countermeasures against countries restricting Chinese clean energy represents an explicit linkage of the energy transition to trade/ strategic competition, directly supporting the IR lens argument
Ecology/ co-benefits	Present, but tertiary; “生态环境” (“ecological environment”) appears in Article 39 as a compliance requirement, not a driving frame; ecological civilization is implied but not foregrounded)
Governance/ planning	Strong; law establishes hierarchical planning architecture: national comprehensive energy plan → sectoral plan → regional plans → provincial plans; this codifies the planning infrastructure that enabled the deployment acceleration in 4.1.
Schoenhals (1992)	The transition from “能耗双控” (“energy intensity dual-control”) to “碳排放双” (“carbon emission dual-control”) in Article 5 is a significant terminological shift. It moves the measurement regime from energy efficiency toward absolute carbon accounting (a signal that the post-2025 policy architecture will be structurally tighter)

C. Analytical reflection	
Framework(s) engaged	International relations (primary; security co-equal framing, Article 78 reciprocity); political economy (strong; planning hierarchy, SOE obligations legally codified); socio-technical (medium; regime codification); ecology (minor)

Tensions/ contradictions	Article 28 provides the statutory basis for the continued coal approvals documented in 4.4.; the coal paradox is therefore not a governance failure, but a designed feature of legislative architecture (coal as strategic reserve is explicitly preserved in the framework law)

NDRC

Log 05 – NDRC (2021a): Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality

A. Entry metadata	
Entry no.	Log 05
Date	March 21, 2026
Source	NDRC. 2021a. *Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy*. Beijing: The State Council of the People's Republic of China, National Development and Reform Commission. October 24.
Language	English (official NDRC translation)
Document type	Top-level CPC Central Committee + State Council joint opinion
Version note	Specific CPC terminology from chinese version used where analytically significant

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	"Deployment" ("发展"; dominant throughout, even in the title itself); "security" ("安全"; very high frequency; standard principle in five working guidelines; "reduce carbon in a safe and secure way" ("安全降碳" is a key formulation); "carbon peak and carbon neutrality" ("碳达峰碳中和"; structural anchor; appears in every major section as the governing objective; but regularly hedged with: "actively and prudently" ("积极稳妥"; ecological civilization" ("生态文明"; present in guiding principles; functions more as ideological framing than as an operational driver); "international"

	(“国际”; present but carefully framed); “innovation” (“创新”; frequent); “coal” (“煤炭”; plans to strictly limit coal consumption, but not eliminated)
Phase 2 – Frame coding	
Political economy/ development first	Dominant; the document’s governing logic is: carbon goals must be embedded within (and subordinate to) overall economic and social development framework; the phrase “incorporated into the overall economic and social development frameworks” (“纳入经济社会发展全局”) appears in the guiding principles and is the structural rule that explains why provincial coal approvals were politically defensible (development takes precedence, decarbonization is the direction, not the hard constraint)
Risk management / security	Very strong as a constraint frame; the five working guidelines include “guarding against risk” (“防范风险”) as a standalone principle; the document explicitly warns against “campaign-style carbon mitigation” (“运动式减碳”), it is a direct signal that the central government anticipated and pre-emptively legitimized slower-than-maximum action; Schoenhals-level terminological signal: providing political cover for the coal approvals documented in 4.4.
IR/ international positioning	Present but secondary; the document is primarily a domestic governance instrument; international cooperation (Section X) is the shortest section
Ecological civilization	Present but legitimating ideology, not operational driver; cited in guiding principles as the philosophical foundation but does not generate specific operational requirements; contrasts with Log 01, where co-benefits logic is more operationally central
Industrial upgrading/ innovation	Strong in Sections III and VIII; green transformation is consistently linked to “high-quality development” (“高质量发展”) and “strategic emerging industries” (“战略性新兴产业”)

Schoenhals (1992)	1) “complete, accurate, comprehensive” (“完整准确全面”) in the title is a standard CPC three-character intensifier signalling doctrinal importance; 2) “actively and prudently” (“积极稳妥”) as the governing adverb for dual carbon (every subsequent document that repeats this phrase is signalling continuity with this framework; 3) “campaign-style carbon mitigation” (“运动式减碳”), the explicit naming of a prohibited approach is a classic CPC device for creating political cover for moderate implementation

C. Analytical reflection	
Framework(s) engaged	Political economy (primary; state-directed framework, binding targets, SOE role, provincial responsibility system; international relations (secondary; domestic/ international coordination, sovereignty protection language)
Tensions/ contradictions	The document simultaneous sets a binding CO_2 intensity reduction target for 2025, but explicitly authorizes the risk-management principle that permits deviation from strict enforcement, and carbs against campaign-style action; this is a standard adaptive governance approach for the CPC (Heilmann, 2011): set ambitious targets, allow local experimentation and deviation, evaluates results

Log 06 – NDRC (2021b): Action Plan for Carbon Dioxide Peaking Before 2030

A. Entry metadata	
Entry no.	Log 06
Date	March 21, 2026
Source	NDRC. 2021b. *Action Plan for Carbon Dioxide Peaking Before 2030.* Beijing: The State Council of the People's Republic of China, National Development and Reform Commission. October 27.
Language	English (official NDRC translation)
Document type	State Council action plan

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	"Energy security" ("能源安全"; present in the guiding principles, clearly signaling that security is a hard-constraint rather than a co-equal objective; "keep national energy security and economic development as the bottom line" ("以保障国家能源安全和经济发展为底线") that gives security lexical priority over decarbonization); "construction before deconstruction" ("先立后破"; appears in the guiding principles meaning it governs all ten subsequent actions); "campaign-style carbon mitigation" ("运动式减碳"; explicitly prohibited, explaining why provincial governments were not held accountable for coal approval surge); "dual carbon" ("双碳"; present throughout the governing objective, always accompanied by "actively and prudently" ("积极稳妥") hedge in key passages)

Phase 2 – Frame coding	
Security/ risk management	Security is framed as a hard constraint on transition pace; this is stronger than the Working Guidance, the Action Plan converts the Working Guidance's risk principle into an operational bottom line; energy security is the governing constraint explaining the continued use of coal
Political economy/ state direction	The ten actions are structured around sector-by-sector state planning: each action assigns specific agencies, sets binding targets, and creates accountability mechanisms; this is a state-directed transition design, not market-driven; the 100 pilot cities programme (Section III.10(d) is characteristic of Chinese adaptive governance: create experimental zones, evaluate, scale successes)
IR/ industrial strategy/ export	Section IV (International Cooperation) links transition explicitly to Belt and Road development and new energy technology export; this is the IR-industrial strategy nexus: domestic transition creates exportable industrial capacity; the BRI green export framing directly supports the 2.1.2. Argument that clean energy manufacturing dominance is a strategic objective, not merely a climate outcome
Ecology/ co-benefits	Present but subordinate; Action 8 covers ecological protection, but it is the penultimate action (architecturally less prominent than energy, industry, and transport); the ecological frame here is weaker than in Log 1
Innovation/ upgrading	Action 7 (green and low-carbon technology innovation) is substantive and specific; it lists key technology areas, including hydrogen, CCUS, smart grids, advanced energy storage; consistent with industrial upgrading frame

Schoenhals (1992)	1) “construction before destruction” (“先立后破”), a four-character chengyu-style formulation signalling a deep political principle, not a tactical preference; found verbatim in Xi speeches; 2) “campaign style” (“运动式”), used pejoratively to delegitimized excessive zeal (classic CPC moderation signal); 3) “one size fitting all” (“一刀切”), used against uniform enforcement; 4) “keep… as the bottom line” (“以...为底线”), elevates energy security to a non-negotiable constraint; 5) “orderly” (“有序”), appears 20+ times throughout (the dominant temporal qualifier for the transition emphasizing sequence and control-over-speed)

C. Analytical reflection	
Framework(s) engaged	Political economy (primary; state planning architecture, bottom-line security constraint, SOE role, accountability systems); international relations (strong; BRI green exporting framing, international positioning); socio-technical (medium; tech actions as niche-to-regime transition map); ecology (secondary; Action 8 on sinks)

Log 07 – NDRC (2022): 14th Five-Year Plan for Renewable Energy Development

A. Entry metadata	
Entry no.	Log 07
Date	March 21, 2026
Source	NDRC. 2022. *"十四五"可再生能源发展规划 [The 14th Five-Year Plan for development of renewable energy]."* Beijing: 中华人民共和国国家发展和改革委员会 [National Development and Reform Commission]. June 1.
Language	Chinese (original)
Document type	NDRC and NEA sectoral N-document in the 1+N architecture

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	"能源安全" ("energy security"; used as a justification for renewable development and the inevitable choice for strengthening national energy security capacity and gradually achieving energy independence; "能源安全" ("energy independence" is rare and directly supports the IR argument); "生态文明" ("ecological civilization"; relatively strong but secondary to security and development frames); "人类命运共同体" ("community with a shared future"; IR leadership framing, where transition is positioned as China's contribution to global governance); "产业链供应链" ("supply chain"; highly prominent; IR-industrial strategy nexus); "平价" ("key transitional term"; signals the shift from feed-in tariff era to the auction system); "补贴" ("subsidies"; phasing out is treated as an achievement and a design principle simultaneously; socio-technical transition from state-subsidized niche to market-competitive regime); "先立后

	破” (“construction before destruction”; not explicitly used, but logic embedded throughout)
Phase 2 – Frame coding	
Energy security/ strategic independence	The preamble lists its justifications for renewable development in this order 1) “全球能源革命趋势” (“global energy revolution trend”); 2) “必然选择” (“national energy security”); 3) “客观要求” (“ecological civilization”); 4) “人类命运共同体” (“community with a shared future”; the ordering is significant: energy security precedes ecological civilization; the security argument is made explicit in a way that is unusual in official Chinese documents; “逐步实现能源独立” (“gradually achieve energy independence”) frames renewable development as a way to reduce import dependence
IR/ industrial strategy/ supply chain	Section 7 (international cooperation) is substantive and structured: participate in global green energy governance, deepen technology and production capacity cooperation, participate in international standards; Section 7.2. Explicitly calls for “可再生能源优质产业走出去” (“high-quality renewable energy industries going global”); supply chain dominance data is presented as a competitive advantage to be maintained and expanded
Market-driven development	The transition from subsidy-driven to market-driven development is a structural theme, contrasting with the state-driven framing of Log 04 and Log 05
Ecology/ co-benefits	Present and quantified, the co-benefit quantification in Section 10 directly supports a reading through an ecological lens
Innovation/ industrial upgrading	Chapter 5 (innovation-driven high-quality development) is one of the longest; the supply chain consolidation language (“锻造产业链供应链长板” (“forge the long board of the industrial supply chain”); “补齐短板” (“fill the short board”)) is standard for Xi-era

	industrial policy; technology targets are specific (industrial upgrading frame operates at the sectoral level)
Schoenhals (1992)	1) “大规模、高比例、市场化、高质量” (“large-scale, high proportion, market oriented, high-quality”), four character quadrangle, a fixed formulation that will appear verbatim in assessments and reports; 2) “能源独立” (“energy independence”), unusual phrase: its appearance signals a deliberate framing choice; 3) “预期性 vs. 约束性”, the classification of targets as expected (“non-binding vs. binding”) is explicit in the tables; RECO targets are “预期性” (“anticipated”), which means the document deliberately avoids making them enforceable; 4) “历史性拐点” (“historic tipping point”), applied to grid parity, signals that this moment is being marked as structurally significant CPC historiography of the energy transition

C. Analytical reflection	
Framework(s) engaged	International relations (primary; energy independence language, supply chain export, international standards leadership); political economy (strong; state planning architecture, base programmes, RECO obligations); socio-technical (primary; niche-to-regime consolidation, market transition, grid integration, challenge); ecology (medium; quantified co-benefits, ecology first principle)

UNFCCC

Log 08 – UNFCCC (2021): China's Achievements, New Goals, and New Measures for Nationally Determined Contributions

A. Entry metadata	
Entry no.	Log 08
Date	March 28, 2026
Source	UNFCC. 2021. "China's Achievements, New Goals and New Measures for Nationally Determined Contributions." United Nations. Climate Change. NDC Registry.
Language	English (unofficial translation)
Document type	International commitment submitted under the Paris Agreement

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	"Not at others' request but on China's own initiative" ("不是别人要我们做，是我们自己要做"; claims autonomous motivation rather than external pressure; climate leadership); "community with a shared future for mankind" ("人类命运共同体"; appears often; Xi's signature foreign policy concept; climate governance positioned as a pillar of China's global leadership narrative); "energy security" ("生态文明"; notably less prominent than in domestic documents; strategic self-interest is downplayed; framing: global responsibility first, security second); "common but differentiated responsibilities" ("共同但有区别的责任"; legal principle that developing countries bear less responsibility than developed countries for historical emissions; protects China's developmental rights while asserting climate leadership); "construction before

	destruction" ("先立后破"; not explicit, coal continuation logic is explicitly absent)
Phase 2 – Frame coding	
IR leadership/ global governance	The NDC is a strong IR leadership document; self-motivation frames the whole document; community with a shared future appears often; China is positioned as a co-architect of the Paris Agreement, a South-South cooperation provider, and a defender of multilateralism against unilateralism
Developing country identity	Simultaneous assertion of global leadership and developing country status; defense for coal-dominated energy due to industrialization and urbanization; tension between the two is the central contradiction of China's international climate positioning
Ecological civilization/ high-quality development	Stronger than in domestic documents; ecological civilization is foregrounded as a philosophy with three principles: high-quality economic development, high-level environmental protection, and a community with a shared future
Energy security	Deliberately subdued; it is mentioned, but there is deliberately no use of" energy independence" ("能源独立") or "frame security as a bottom line" ("以...为底线"); strategic self-interest is filtered out
CBAM/ trade competition	The explicit CBAM critique reveals that China's engagement with the Paris Agreement framework is conditional; China supports multilateralism as long as it does not disadvantage Chinese exports; linkage of climate commitment to trade rules; clean energy transition, and defense of export competitiveness are inseparable

Schoenhals (1992)	1) “not at others’ request but on China’s own initiative” (“不是别人要我们做，是我们自己要做”; has become a fixed formulation of Chinese climate diplomacy, appearing in Xi’s speeches across multiple years; its inclusion marks it as an official position); 2) “participant, contributor, torchbearer” (“参与者、贡献者、引领者”; the three-tier progression of China’s self-description in climate governance; deliberate upgrading of status terminology from prior NDC language; 3) absence of “construction before destruction” (“先立后破”) and “campaign-style carbon mitigation” (“运动式减碳”) from the international document shows that domestic hedging language is not exported; 4) “CBAM critique uses does not conform to WTO rules” (“不符合世界贸易组织规则”; framing a climate instrument as a trade violation; places China’s climate engagement within the WTO multilateral framework)

C. Analytical reflection	
Framework(s) engaged	International relations (dominant; global leadership framing, CBAM critique, South-South positioning, developing country identity); ecology (strong; ecological civilization philosophy more prominent than in domestic documents); political economy (present; state-directed transition, leading group, accountability systems); socio-technical (minor; landscape-level document, not operational)
Tensions/ contradictions	Comparing this to Log 04, 05, and 06 is the systematic gap between the international and domestic framing of the transition; internationally: ecological civilization leads security is secondary coal is to be strictly controlled; domestically: security is a bottom line, coal is repositioned as system regulation; this gap is not hypocrisy, it is standard distinction between international commitment and domestic operational governance in any large developing economy; still China is simultaneously

	making genuine international commitments and designing domestic governance that moderates the pace of delivery

Log 09 – UNFCCC (2025): China's 2035 Nationally Determined Contribution Report

A. Entry metadata	
Entry no.	Log 09
Date	March 28, 2026
Source	UNFCCC. 2025. *2035* "年中国国家自主贡献报告 [China's 2035 National Determined Contributions]." United Nations. Climate Change. NDC Registry.
Language	Chinese (original)
Document type	International commitment submitted under the Paris Agreement, updating the 2021 NDC (Log 07)

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	"不是别人要我们做，是我们自己要做" ("not at others' request but on China's own initiative"; direct repetition of 2021); "参与者、贡献者、引领者" ("participant, contributor, torchbearer"; repetition confirms as the official Chinese self-positioning formulation); "新质生产力" ("new quality productive forces"; structural anchor throughout; confirms permanent anchoring of domestic governance architecture); "单边主义、保护主义" ("unilateralism and protectionism") combined with "丛林法则" ("law of the jungle") and "双重标准" ("double standards"); predatory behavior and double standards by Western countries; markedly more confrontational formulation); "破坏应对气候变化国际合作、损害包括中国在内的各方应对气候变化努力的国家，需要承担责任" ("countries that undermine international cooperation on climate change and damage the climate efforts of all parties including China must bear responsibility;" compliments previous: call for accountability of Western states)

Phase 2 – Frame coding	
IR leadership	Significantly more assertive on IR positioning; explicit naming of “丛林法则” (“law of the jungle”) and “双重标准” (“double standard”); warning about countries ‘destroying international cooperation,’ and stronger CBAM-adjacent language in Section 4. All reflect a changed geopolitical context (US re-withdrawal from Paris and EU-China trade friction on clean energy); export dominance is framed as a contribution to global climate governance rather than a commercial competitive advantage
Developing country identity	2035 NDC continues the 2021 NDC framing; new warning in Section 2.2. about countries ‘bearing responsibility’ for damaging cooperation adds a defensive dimension that was absent from 2021; China, as a good-faith actor, is being undermined by others
Industrial supply chain/ new quality productive forces	Supply chain dominance is more detailed and more assertive than in 2021; Xi’s post-2023 economic development concept is clearly connected to clean energy manufacturing; China’s clean energy industrial dominance is a contribution to global climate goals, not a competitive threat; a direct counter to comparisons with EU and US energy imports
Ecological civilization/ co-benefits	Present in the philosophy section (Section 1.1) with the same formula as 2021 “降碳、减污、扩绿、增长协同推进” (“coordinated advancement of carbon reduction, pollution mitigation, greening, and growth”); co-benefit logic is institutionalized as a five-character formulation appearing in both NDCs; consistent but not escalated relative to 2021

Schoenhals (1992)	1) “不是别人要我们做，是我们自己要做” (“not at others’ request but on China’s own initiative”; repetition: complete transition to fixed terminology standard); 2) “参与者、贡献者、引领者” (“participant, contributor, torchbearer”; three tier-proposal stabilized through repetition); 3) “新质生产力” (“new quality productive forces”; frames China’s clean energy manufacturing scale-up; absent from Log 07; conscious reposition of clean energy industry; domesticates the international commitment within the current ideological frame; reads as Xi’s thoughts rather than externally imposed obligation); 4 “丛林法则” (“law of the jungle”) and “双重标准” (“double standards”; fixed phrases; confrontational formulation used to characterize Western-dominated international order as predatory; climate governance using vocabulary of systemic international conflict); 5) “破坏应对气候变化国际合作、损害包括中国在内的各方应对气候变化努力的国家，需要承担责任” (“countries that undermine international cooperation on climate change and damage the climate efforts of all parties including China must bear responsibility”; conditional commitment clause; such an introduction into previous unconditional commitment introduces accountability language directed outward rather than inward; inserts a political escape clause); 6) “力争” (“striving to achieve/ aspirational”; aspirational qualifier; qualifier before minimum commitment for some targets, not other; consistent pattern that marks things politically desirable but not formally binding; aspiration without accountability; systematic feature of Chinese target-setting language)

C. Analytical reflection	
Framework(s) engaged	International relations (dominant; leadership positioning elevated, adversarial language intensified, supply chain framing as global contribution); political economy (strong; 1+N completion claim, dual-control transition, carbon market governance); socio-technical (medium; niche-to-regime completion confirmation for renewables; post-peak transition design); ecology (secondary; co-benefits formula maintained; sink targets upgraded)
Tensions/ contradictions	The 7-10% net reduction target uses the peak year as baseline, which has not been formally declared; if the peak is declared at a year of cyclically-suppressed emissions (e.g. 2022 with COVID-lockdowns), the target becomes easier to achieve; if peak is declared at a structurally higher year, it becomes more demanding

Speeches by President Xi Jinping

Log 10 – Xi (2020): Statement at the General Debate of the 75th Session of the UN General Assembly

A. Entry metadata	
Entry no.	Log 10
Date	April 11, 2026
Source	Xi, Jinping. 2020. "Full text of Xi's statement at the General Debate of the 75th Session of the United Nations General Assembly." *State Council Information Office of the People's Republic of China*, September 22.
Language	English (official translation)
Document type	Formal head-of-state speech at the UN General Assembly

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	Only three sentences of climate content; climate commitment in third of four thematic sections under heading "COVID-19 reminds us that humankind should launch a green revolution;" climate change as a "lesson of the pandemic"; "community with a shared future" as post-COVID solidarity and again stand-alone (climate action as component of China's global governance vision, not a standalone policy); "unilateralism" and "protectionism" (directly before climate commitment; contrasting itself with 'Western hypocrisy'); "industrial transformation" (linked with 2060 commitment; green transition as a technological and economic opportunity, not a sacrifice)

Phase 2 – Frame coding	
IR leadership	Timing important; the US was formally outside the Paris Agreement, the US presidential election is six weeks away; COVID causing global governance crisis, China under sustained international pressure on multiple fronts; 2060 commitment as strategic claim on global climate leadership
Ecology	Present but structurally subordinate; climate passage as a pandemic lesson (climate as part of broader green revolution alongside COVID recovery); speech does not invoke ‘ecological civilization’ directly; framing is more universalist (shared homeland, human civilization) than specifically Xi-era ecological ideology
Industrial opportunity	The “historic opportunities of technological revolution and industrial transformation” phrase as industrial strategy frame in embryonic form; by 2035 NDC this framing developed into the explicit supply-chain dominance argument; seed of IR-industrial strategy nexus
Schoenhals (1992)	The climate commitment is embedded in a speech whose primary argument concerns multilateralism vs. unilateralism; in CPC diplomatic language, the placement of a specific policy commitment within a broader ideological argument signals that the commitment is intended as evidence of the ideological position (2060 target is evidence of China’s multilateralism, not primarily a domestic policy decision); climate commitment becomes functionally part of an IR positioning statement

C. Analytical reflection	
Framework(s) engaged	International relations (primary; founding declaration of the IR leadership claim; anti-unilateralism framing; US absence context); ecology (secondary; green revolution framing, Paris Agreement defense)

Log 11 – Xi (2021): Written Statement at the COP26 World Leaders Summit

A. Entry metadata	
Entry no.	Log 11
Date	April 11, 2026
Source	Xi, Jinping. 2021. "Full text: Xi Jinping's remarks at COP26 World Leaders Summit." *Embassy of the People's Republic of China in Barbados*, November 2.
Language	English (official translation)
Document type	Formal presidential statement at COP26

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	"solid action" (classical Chinese proverb used, "不扰民为本" ("successful governance relies on solid action"); deliberate cultural-nationalist register; signals commitment being authenticated by deep civilizational values); "guided by the vision of a community of life for man and nature" (direct position of Xi's ecological philosophy parallel to "community with a shared future for mankind")
Phase 2 – Frame coding	
Political economy/ concrete governance	Prominence of domestic policy architecture; 1+N naming, list of sectoral implementation plans, "timetable, roadmap, and blueprint" language all foregrounding governance design; progress report on delivery

Multilateralism	Present (first of three principles) but less adversarial than in 2020; collaborative register reflects the change context with Biden
Ecological civilization/ green transition	Community of life between nature and man is explicit framing; industrial upgrading frame present but less prominent than the ecological frame
Schoenhals (1992)	1) three-principle structure (multilateral consensus/ concrete action/ green transition) as a direct replica of 2021 NDC; fixed speech architecture; 2) "unity of knowledge and action as classical authentication;" 3) 1+N policy framework named in international speech (naming of domestic architecture creates new accountability formulation that can be used in future assessments

C. Analytical reflection	
Framework(s) engaged	Political economy (primary; 1+N architecture as credibility mechanism, sectoral governance announced); international relations (secondary; multilateralism, collaborative register with Biden-US); ecological (secondary)

Log 12 – Xi (2025): Remarks at the Leaders Meeting on Climate and the Just Transition

A. Entry metadata	
Entry no.	Log 12
Date	April 11, 2026
Source	Xi, Jinping. 2025. "Remarks by H.E. Xi Jinping, President of the People's Republic of China, at the Leaders Meeting on Climate and the Just Transition." *Ministry of Foreign Affairs, People's Republic of China*, April 23.
Language	English (official translation)
Document type	Formal presidential remarks at a multilateral climate leadership meeting co-hosted by UN Secretary General Guterres and Brazilian President Lula (in lead-up to COP30 in Belém)

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	Accusation of "some major country" pursuing "unilateralism and protectionism" clearest direct reference to US climate disengagement (more assertive than 2021); "however the world may change" reference to China's unwavering commitment to climate action regardless of international context; "just transition" as acknowledgement of distributional dimension of the transition (domestic political economy constraint is acknowledged for the first time); "South-South cooperation" framed as Global South solidarity, reflecting change in geopolitics; "free flow of quality green technology and products" positions China's clean energy export dominance as global accessibility

Phase 2 – Frame coding	
IR leadership	Three-speech sequence shows escalating IR assertiveness (2020 → 2021 → 2025); trajectory of climate policy becoming more explicitly adversarial in response to the changed geopolitical context
Industrial strategy/ supply chain	China's manufacturing dominance positioned as global public good; development cooperation where China's overcapacity helps developing countries access affordable clean energy
Ecological Civilization	Ecological philosophy invoked but not central
Just transition/ distributional dimension	Acknowledges that balance between environmental and economic growth/ distributional justice/ job creation is needed; subtle domestic restraint in international framing
Schoenhals (1992)	1) triple-negative construction "not slow-down… decrease… cease" ("不会减速、不会减少、不会停止") is a fixed-formulation assurance for sovereignty-level commitments; signals climate is treated as equivalent in importance to sovereignty issues; 2) "results-oriented action" to contrast Western countries' alleged talk-without.action 3) "Global South" membership as deliberate alignment with the developing country coalition that had become central to COP negotiations since 2022

C. Analytical reflection	
Framework(s) engaged	International relations (dominant; assertive; Global South positioning; supply chain as public good counter-argument to CBAM/ tariffs); political economy (secondary; just transition acknowledgement of growth constraints); ecology (tertiary; shortened invocation)

Xinhua

Log 13 – Xinhua (2021): Outline of the People's Republic of China's 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2025

A. Entry metadata	
Entry no.	Log 13
Date	April 18, 2026
Source	Xinhua. 2021. *Outline of the People's Republic of China 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035*. Translated by Etcetera Language Group, Inc., Washington, DC: Center for Security and Emerging Technology. May 12.
Language	English (official CSET translation)
Document type	State Council / MEE action plan – governance and planning instrument (CAPMF Category 4)

B. Discourse analysis	
Phase 1 – Keyword presence	
Key terms present	"Seeking progress while maintaining stability" governs the entire plan justifying a moderate pace of transition; "dual control" explicitly states an intensity-first, volume-second hierarchy; "ecological civilization" philosophy of Part 11 contrasts with FYP's general focus on economic development primacy; "energy security" placed on same level as "environmental quality;" NEVs placed as "strategic emerging industry;" development driven by innovation places ecological transformation beneath industrial modernization as a priority

Phase 2 – Frame coding	
High-quality development/ economic modernization	Primary governing concept; economic frame showing climate policy as component, not an independent priority; green development is structurally subordinate to economic development
Political economy	State-directed plan with major project list
National security	“New development pattern” with “domestic circulation as the mainstay” puts security and self-reliance on equal footing with green development; energy self-sufficiency as a national security priority
Ecological civilization/ dual circulation	Explicitly evokes Xi’s ecological civilization philosophy with “promote green development and facilitate the harmonious coexistence of people and nature;” however, low position in FYP and absence of non-fossil target from binding indicatory give it less institutional teeth
Schoenhals (1992)	1) “seeking progress while maintaining stability” (稳中求进), four-character phrase establishing framing of entire plan, stability before progress; 2) “new development pattern” (新发展格局), a Xi-era concept whose double-circulation content is distinct but related to the energy security argument; 3) “non-binding vs. binding” (预期性 vs. 约束性) is a distinct terminological system differentiating binding and anticipated targets

C. Analytical reflection	
Framework(s) engaged	Political economy (dominant; binding target architecture; state-directed planning, SOE roles, provincial accountability); socio-technical (strong; NEVs and clean energy as strategic emerging industries, regime-level planning); international relations (secondary; domestic circulation/ energy self-sufficiency framing); ecology (present but structurally subordinated; Part 11 positioning air quality as binding target)
Tensions/ contradictions	Gap between binding and anticipatory targets indicates explanation for why renewable deployment overperformed and carbon intensity underperformed; penalizes binding intensity targets but does not reward exceeding non-binding targets