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RESEARCH NOTE

Political will as a source of policy innovation

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Abstract

In an era of disruptive global challenges, from climate crises to pandemics, understanding the drivers of drastic policy innovation is paramount. This study defines drastic policy innovation as a significant shift in governmental priorities through policies untried by most jurisdictions in a country. While policy entrepreneurs are often credited with initiating change, this study argues that political will is essential for enacting and implementing such innovative policies. Political will is defined as the degree of commitment among key decision makers to enact and implement specific policies. It is characterized by three key components: authority (the power to enact and enforce policy), capacity (the resources to implement it effectively), and legitimacy (the perceived rightfulness of actions by stakeholders). Through the case of low-carbon city experimentation in China, this study examines how political will drives the adoption and implementation of these policies. The findings reveal that a high level of political will is significantly linked to more drastically innovative policies being enacted and implemented and that when political will is institutionalized, implementation continues despite leadership turnover. These insights likely apply to other policy contexts and countries, regardless of regime type, albeit with some caveats.

KEYWORDS

comparative public policy, policy innovation, political entrepreneur, political will

INTRODUCTION

A wealth of scholarship has delved into the sources of policy innovation. Policy innovation is most commonly defined as a policy new to the adopting jurisdiction, even if it is not an entirely novel idea (Walker, 1969). The extant literature regards diffusion, internal determinants, and external triggers as the three main drivers of policy innovation. Policy innovation occurs via diffusion in one or multiple forms: learning, imitation, normative pressure, competition, and coercion (Berry & Berry, 2014). However, internal dynamics and external triggers also play critical roles in fostering or hindering diffusion. Generally, jurisdictions with higher levels of economic development are generally more capable of sponsoring policy innovation; localities experiencing more severe problems are more motivated to innovate to tackle those issues; and places with more skillful policy entrepreneurs are more likely to

get innovative policies on the agenda and see them through to fruition (Berry & Berry, 1990; Daley & Garand, 2005). Additionally, other scholarship emphasizes the role of the impact of unforeseen external events as pivotal catalysts for policy innovation, especially regarding what Kingdon (1984) refers to as the "problem stream."

Despite the rich insights from existing studies, there remains a gap in understanding the sources of more "drastic" policy innovation—policies characterized by a shift in governmental prioritization of policy goals and the adoption of policy instruments so new that they rarely have, if ever, been implemented by any jurisdiction in the country. This gap is especially relevant as our world increasingly faces disruptive events with causes and consequences that humankind struggles to grapple with, such as climate change and environmental degradation, the COVID-19 pandemic, and economic shifts driven by globalization.

In this study, I explore the role of an understudied and undertheorized factor—political will—in driving drastic policy innovation. Political will is defined as the degree of commitment among key decision makers (i.e., elected politicians in democracies or political leaders in autocracies) to enact and implement specific policy solutions addressing a particular issue. It involves a readiness to make sacrifices, such as reallocating resources, risking political capital, or altering established priorities to achieve a particular outcome. This commitment extends beyond merely supporting a policy idea; it reflects a resolute determination to see the policy through to implementation despite obstacles and even at the expense of other competing goals. Political will is characterized by three key components: (1) authority, which refers to both the formal and practical power to not only make but also enforce policy; (2) capacity, which includes the availability and effective mobilization of resources—fiscal, human, and administrative—necessary to implement the policy effectively; and (3) legitimacy, which is the perceived rightfulness of the decision-maker's actions by stakeholders, including other policymakers, bureaucrats, and the public, and is essential for garnering support and reducing resistance.

I argue that political will emerges as a critical factor in driving drastically innovative policies. When institutionalized, political will extends beyond the temporary commitment of individual leaders and becomes embedded in governance structures and processes. In this context, leadership teams or decision-making bodies maintain a consistent focus on the same policy goals, even when there are changes in personnel. In the case of low-carbon city experimentation in China, political will is institutionalized through the consistent composition and goals of the Low-Carbon City Construction Leading Groups (LCCLGs), which will be explained in detail later in the study. This institutionalization ensures that drastically innovative policy measures are implemented despite leadership turnover.

POLITICAL ENTREPRENEUR, POLITICAL WILL, AND DRASTIC POLICY INNOVATION

Policy innovation is typically conceptualized as the adoption of a policy that is new to a particular jurisdiction. This definition acknowledges that while the policy adopted may not be entirely novel in a broader context—having possibly been implemented in other jurisdictions in the country—it represents a departure from the status quo for the adopting jurisdiction. Thus, this approach to understanding policy innovation emphasizes the relative nature of novelty for a particular locality in defining what constitutes an innovative policy. Peter Hall's concept of a policy paradigm shift, which he terms a "third order change," involves changes in all three aspects of the policymaking process: (1) governmental goals that guide policy in a particular field, (2) policy instruments used to attain these goals, and (3) the policy instrument settings (Hall, 1993). Hall's "paradigm shift" extends beyond the usual definition of policy innovation but suggests that policy instruments only need to be relatively novel to a given locality.

While existing contributions have significantly advanced our understanding of policy innovation, they predominantly address incremental and paradigmatic changes characterized by *relative* novelty in a given locality. However, our world increasingly faces disruptive events, notably climate change, which necessitate fundamental transformations in governance structures and approaches. To effectively

confront these challenges, there is an urgent need for drastic policy innovations—pioneering policies so novel they have scarcely, if ever, been implemented by other jurisdictions in the country and represent a new prioritization of governmental policy goals.

A vast wealth of scholarship has enriched our understanding of the role of policy entrepreneurs in driving policy innovations. Policy entrepreneurs are individuals or groups who play crucial roles in identifying problems, crafting solutions, and building coalitions to promote and implement new policies. They possess the ability to navigate the political landscape, leverage resources, and utilize their networks effectively. Policy entrepreneurs can be found in various positions within the government, NGOs, think tanks, advocacy groups, or even the private sector.

The foundational work of Kingdon (1984) notes the importance of policy windows—periods of opportunity for policy innovation created by events such as turnover in critical leadership, changes in congressional committee chairs, or crises that draw public attention. Scholarship in this area argues that policy entrepreneurs work to forge and anticipate such windows of opportunity to push their demands onto the policy agenda (Baumgartner & Jones, 2009; Béland & Howlett, 2016; Kingdon, 1984). After a proposed change gets on the agenda, policy entrepreneurs facilitate the adoption of their proposed policy measures (Arnold, 2021; Arnold et al., 2017; Mintrom, 1997).

As a subset of policy entrepreneurs, political entrepreneurs are bureaucrats and politicians who use their authority to direct resources to implement policies that significantly alter the status quo and the direction of politics (Schneider & Teske, 1992). Political entrepreneurs are driven by the potential for "profits" (McCaffrey & Salerno, 2011), which in the political realm translates to gaining political capital, achieving policy goals, winning material gains for their jurisdictions, and enhancing reputation and the prospects for re-election or promotion. Political entrepreneurs are characterized by their ability to shape political debate, introduce innovations, and consolidate change. They frame issues, redefine problems, and influence agendas to create opportunities for change (Schiller, 1995). Overcoming collective action problems is crucial for political entrepreneurs, as they need to mobilize support and resources to implement the policies they champion. Furthermore, political entrepreneurs transform innovations into lasting institutional changes by creating new boundaries of authority and establishing robust support coalitions (Sheingate, 2003). Political entrepreneurs can be found at various levels of government, including senators and national politicians, high-level bureaucrats and civil servants, and local government officials.

This article posits that political will is a latent but critical factor in determining how effectively and lastingly political entrepreneurs can initiate and maintain drastic policy innovation. Although frequently referenced in political rhetoric, political will has received limited scholarly attention (Post et al., 2010). In the field of organizational behavior, political will is studied from the perspective of individual psychology and is defined as the willingness or motivation—driven by the need for achievement and intrinsic motivation—to expend personal resources to engage in political behaviors within organizations (e.g., Treadway et al., 2005). In public policy and administration, political will is understood more broadly as the degree of commitment by key decision makers to enact and implement specific policy (Post et al., 2010). This commitment involves a willingness to make significant trade-offs, such as redirecting resources, taking political risks, or changing priorities to achieve a policy goal. It goes beyond mere support, embodying a determined effort to ensure the policy is realized despite challenges. Political will differs from political power: it is about the political entrepreneur's commitment and determination to prioritize and advance a policy, even if it requires significant trade-offs, while political power refers to the authority and resources available to enact and implement policies.

Political will embodies three key components: (1) authority—the power to create, enforce, and sustain policy; (2) capacity—the necessary fiscal, human, and organizational resources; and (3) legitimacy—the support and acceptance from stakeholders, crucial for minimizing resistance and ensuring successful implementation (Andrews, 2004; Brinkerhoff, 2000; Hammergren, 1998; Kpundeh, 1998). By motivating political entrepreneurs to take decisive actions and make bold decisions, political will strengthens their authority and drives the mobilization and allocation of resources necessary for implementing policies. Moreover, when political will aligns with the interests and values of the public or

higher authorities—commonly referred to as "stakeholders"—it earns approval and acceptance, thereby reinforcing the legitimacy of political authority (Riley, 1982). Consequently, strong political will can propel political entrepreneurs to enact and implement drastic policy innovation through strategic resource allocation, effective coalition building, overcoming resistance, and establishing and enforcing necessary regulations (Figure 1).

To better understand what drives drastic policy innovation, it is imperative to incorporate political will explicitly as an explanatory variable. Evaluating political will involves examining the leadership structure and consistency among key decision makers as well as their commitment to sustaining policy measures despite challenges. This aspect is further elaborated in the empirical section, using the leadership structure of low-carbon city experimentation in China to gauge the degree of political will and its impact on policy outputs and outcomes.

EMPIRICAL SETTING

Climate change represents a novel existential crisis, far more complex than earlier sustainability problems like acid rain and ozone depletion. Unlike these earlier issues, which had more straightforward solutions, climate change encompasses a wide array of challenges that vary significantly across different sectors and regions. This variability necessitates drastic policy innovations tailored to the specific characteristics and needs of each location.

Policy experimentation is an ideal setting for identifying drastic policy innovations.[1] These experiments serve as political windows of opportunity for transformative change by allowing political entrepreneurs to take calculated risks and explore untested policies. The small-scale and temporary nature of policy experiments enables innovation by mitigating risks, identifying potential flaws, and adapting policies to local contexts (Sabel & Zeitlin, 2012). Moreover, the experimental setting encourages creativity and flexibility in response to complex policy challenges, particularly in situations marked by significant uncertainty or ambiguity (Sanderson, 2009). While political will remains a critical factor in driving innovation, it is the experimental context, where the stakes are lower and outcomes can be tested, that enhances the likelihood of political entrepreneurs advancing drastically innovative policy measures. Thus, policy experimentation, combined with strong political will, creates fertile ground for both incremental and more drastic policy innovations.

Low-carbon experimentation in China

In a centralized system like China, policy experimentation is typically orchestrated in a top-down manner where the central government oversees the design, implementation, and evaluation of policy experiments, refining policies before broader implementation (Florini et al., 2012). This approach leverages local variations to pilot and improve policies effectively. However, localities are often encouraged to exercise agency by deciding whether to participate and selecting the policy measures that best leverage their local knowledge and conditions. The central government typically sets broad, macro-level policy objectives, while the pilots either implement designated policy instruments or innovate new ones (Heilmann, 2008; Zhu & Zhao, 2021). This approach facilitates localized adaptation and innovation within the framework of centrally defined goals.

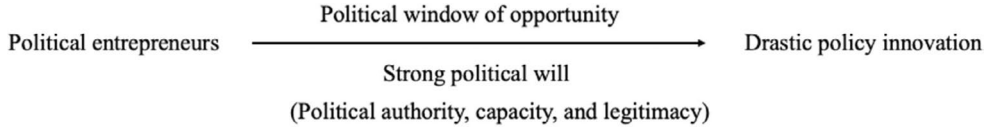

FIGURE 1 The role of strong political will in driving drastic policy innovation.

In response to the escalating challenge of climate change, the Chinese government initiated its first significant national climate mitigation initiative in 2010 through the low-carbon pilot program. This program marked the first national initiative on climate mitigation; previously, only Shanghai and Baoding City in Hebei Province—with Baoding also becoming a first-batch low-carbon pilot in 2010—had explored low-carbon development strategies under the World Wildlife Fund, starting in 2008. This program also marked the beginning of a major shift in governmental prioritization of policy goals, moving from a focus heavily on growth to one that increasingly values sustainability. Unlike many other centrally-led policy experiments, the national low-carbon pilot program did not include central government funding. Despite this, many cities eagerly embraced the opportunity to become low-carbon city pilots for the perceived prestige and future benefits.

This enthusiasm differed markedly from the typical pattern observed in developed democracies, where localities keen on experimenting with climate policies usually have strong public support, high environmental consciousness, ample economic and institutional resources, and are often directly affected by the impacts of climate change, such as rising sea levels or more frequent extreme weather events (Cain, 2023). My thematic analysis of city climate plans in China, involving systematic reading and summarization of the key motivations within these documents, shows that cities are keen to rebrand themselves and secure a leading position in the development of climate policies. Some city leaders view climate and sustainability as the emerging frontier, akin to the focus on economic development in the past decades, with the belief that early adoption of low-carbon initiatives will prepare their cities for future development. Notably, concerns about climate change as an existential threat or experiences with worsening climate-related disasters are seldom mentioned as motivating factors.

The composition of the second batch of low-carbon pilots in 2012 was notably different from the first and aligns well with the conditions for understanding the factors bringing about drastic policy innovation for decarbonization. For the first batch, the central government designated five provinces and eight cities, primarily well-developed regions, as pilots. Realizing that cities are better suited for organizing decarbonization efforts, the central government subsequently shifted its focus to city-level experimentation. The second batch featured a more transparent and publicized application process, encouraging localities to propose innovative decarbonization policies suited to their local contexts.

This revised process resulted in 28 out of 41 cities and one province being selected based on leadership engagement, clear objectives, demonstration potential, and preliminary implementation plans.[2] Table 1 summarizes the comparisons between the first and second batches of pilots. Distinctively, the second-batch pilots differed markedly from the first in regional characteristics, rendering previous experiences from the first batch minimally applicable for guidance.

City leadership, low-carbon city construction leading group, and decarbonization policy measures

In China, the party secretary and the governor (mayor) are the first- and second-in-command, respectively, in city governance. Together, they form the city's uppermost leadership duo and wield substantial influence across numerous policy domains, including environmental and climate-related policies (Shen, 2022). The role of the prefectural party secretary is particularly crucial; their support is fundamental to advancing any policy initiative, especially in new policy areas (Wang et al., 2020).

Each low-carbon pilot city is required to form a Low-Carbon City Construction Leading Group (LCCLG). The LCCLG is tasked with developing strategic plans and policies that align with national decarbonization goals while considering local conditions. It spearheads the integration of low-carbon strategies into various sectors. The LCCLG consists of a Leader, Vice Leader, and Members, with the composition requiring approval from the party secretary, who may also assign themselves as the Leader. Typically, the Leader position is held by the prefectural party secretary, mayor, executive deputy mayor, or deputy mayor, in descending order of seniority. The Vice Leader occupies a position lower than the Leader, while Members are generally the heads of relevant bureaus.

TABLE 1 Comparison between the first and the second batch of low-carbon pilots.

	First batch of pilots	Second batch of pilots
Announcement	**July 2010**	**December 2012**
Areas selected	5 provinces and 8 cities (designated by the central government)	1 province and 28 cities, from 42 applications
Way to select	Direct appointment	Open application and selection
Application criteria	NA	1. high priority from local leadership 2. clear experimentation objectives, including targets for the 12th Five-Year Plan related to carbon intensity, renewable energy share in primary energy consumption, forest carbon sink, etc. 3. leadership potential for demonstration of green and low-carbon development 4. preliminary implementation plan
Selection process	NA	1. preliminary selection by the Ministry of Ecology and Environment Department of Climate Change (MEE DoCC) based on submitted materials 2. ground inspection by officials from and experts gathered by the MEE DoCC 3. recommendations made based on expert assessment of submitted implementation plans, organized by the MEE DoCC
Selection criteria	Local groundwork and representativeness	Local groundwork, demonstrability (esp. carbon intensity), representativeness, and leverage of local characteristics

Political entrepreneurs for low-carbon city development are found in various positions, such as the local Development and Reform Commissions, the local Bureau of Science and Technology, and the mayor and/or the party secretary themselves. They are part of the leading group as the Leader, the Vice Leader, and/or Members. Despite potential leadership turnovers, the composition of the LCCLG generally remains consistent throughout the experimentation period. This institutionalization reflects a formalized and enduring framework for its operation and governance.

Cities applying to participate in the low-carbon pilot exhibit varying levels of political will in achieving and demonstrating results. In China, officials' titles and ranks are closely tied to the authority, capacity, and legitimacy they wield, directly influencing their ability to enact and implement policies. Therefore, the rank of the official assigned to lead an initiative typically reflects the political will of the party secretary. While some are primarily interested in the prestige associated with being an early mover on low-carbon development, others are more dedicated to achieving substantive outcomes. This variation in political will is often reflected in who is assigned to lead the LCCLG: prefectural party secretaries typically serve as the LCCLG Leaders when the political will is high. The assignment of mayors as LCCLG Leaders reflects a moderate level of political will. When a figure other than the party secretary or the mayor is chosen as the LCCLG Leader, it usually indicates a comparatively low level of political will toward the low-carbon city goals. Each level of political will and the designation of the LCCLG Leader subsequently influence the motivation and ability to mobilize resources and coalitions.

Even when the LCCLG is headed by someone other than the party secretary, the group's operations still require guidance and approval from the prefectural party secretary. This hierarchical arrangement highlights the central importance of the prefectural party secretaries in China's policymaking and implementation processes. Studies focusing on how political incentives influence these processes in China often emphasize the critical role of prefectural party secretaries, demonstrating their pivotal influence in a variety of policy areas (Shen, 2022; Wang et al., 2020). Figure 2 illustrates the dynamics most relevant to this study.

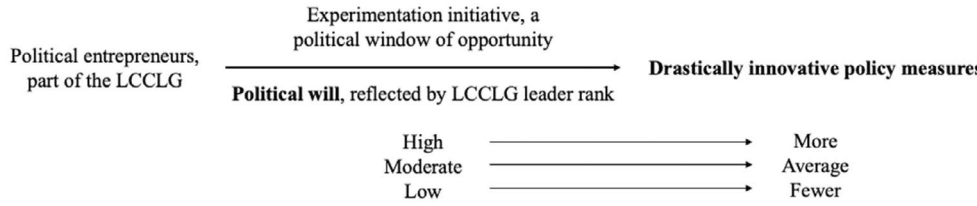

FIGURE 2 The influence of the level of political will on the number of drastically innovative policy measures.

RESEARCH DESIGN AND EMPIRICAL RESULTS

This study employs weighted Poisson regression models with robust standard errors and bootstrapped Poisson regression analyses to evaluate the relationship between the level of political will and the number of drastically innovative policy measures among the second-batch low-carbon pilots in China. The first-batch pilots were designated rather than voluntary, which would not be suitable for this research because their selection was driven by central government decisions rather than local initiative and commitment.

Contrary to most previous studies, this research defines drastic policy innovation not as the mere introduction of new policies to a region, which would classify almost any climate policy as innovative for the pilot areas. Instead, it quantifies drastic policy innovation as the count of climate policy measures proposed or enacted by each pilot that was absent in official central government documents. This includes the low-carbon pilot notices from the National Development and Reform Commission, the primary agency overseeing this experimentation initiative, and the 12th Five-Year Plan (2011–2015). The measures are sourced from prefectural implementation plans and end-of-experimentation work reports.

Such operationalization makes sense in this context because it accounts for the heavy reliance on central government documents for guidance in local implementation in China, especially at a time when low-carbon city development was still at a very early stage with minimal diffusion from other localities in the country.[3] The few localities that previously experimented with decarbonization measures were generally not comparable to the second-batch pilots, which were mostly regular prefectural cities. By focusing on the number of policy measures that extend beyond centrally issued guidelines, this approach effectively captures the extent of drastically innovative efforts undertaken by local governments to suit their local conditions in the low-carbon pilots. Section A.1 in the Appendix provides an example from one city, illustrating how drastically innovative policy measures are identified and counted, using the decarbonization goals outlined in the NDRC's notice on launching the low-carbon pilots and the 12th Five-Year Plan from the State Council (Table A1) as reference points.

The primary independent variable, political will, is inferred from the Leader of the LCCLG. The personnel composition is typically outlined in pilot cities' implementation plans. Some cities included the information in other local documents. Political will is coded as "2" (high) if the LCCLG is led by the prefectural party secretary, "1" (moderate) if by the mayor, and "0" (low) if otherwise. The second independent variable, leadership turnover, reflects the potential disruptions in the continuity of policy innovation. It is a dummy variable indicating whether a city's prefectural party secretary changed during the experimentation period from November 2012 to December 2015. The "turnover" variable's effect may vary: it could be positive, enhancing the promotion of drastic climate policy measures if the successor had a stronger commitment, or negative, diminishing policy continuity and intensity if the successor was less inclined toward innovative decarbonization.

Additionally, the study considers the influence of impending leadership changes, operationalized as whether the prefectural party secretary was within 6 months of departure at the time of application, as 6 months is typically when leaders are informed by their superiors about their impending rotation

(Shen, 2022, p. 38). This factor is crucial as it may affect their propensity to propose drastically innovative measures. Prefectural party secretaries, recognizing their imminent departure, are expected to have diminished interest in long-term outcomes and might advocate for less drastically innovative policies. Out of the 28 pilot cities selected, 25 have made their implementation plans and work reports accessible.

Building upon existing scholarly knowledge, gross regional product (GRP) per capita is used to control for the level of economic development, which has been documented to influence a region's capacity to allocate resources toward adopting innovative policies (Berry & Berry, 2014). Furthermore, energy intensity, measured by the number of tons of standard coal burned to generate 10,000 RMB worth of GDP, is used as a proxy for problem severity. Energy intensity reduction has been made mandatory by the central government since the 11th Five-Year Plan (2006–2010) and was used by the central government to gauge the performance and the need to decarbonize at the city level. The summary statistics for all variables are laid out in Table 2. The balance table of covariates across levels of political will is presented in Section A.2.

Two approaches are employed, yielding highly consistent results. The first approach involves weighted Poisson regression analysis combined with robust standard errors. Weighting addresses sample imbalances and covariate distributions; it ensures that each political will level group is appropriately represented in the analysis, thereby balancing their influence and providing more reliable estimates of variability. Additionally, the use of robust standard errors addresses potential issues of heteroscedasticity and small sample sizes, improving the accuracy and validity of statistical inferences.

The results in Table 3 suggest that high political will, indicated by the prefectural party secretary leading their LCCLG, significantly increases the rate of drastically innovative policies being proposed and implemented. Specifically, compared to cities with low political will, the incidence rate of proposing drastically innovative measures is $\exp(1.40) \approx 4.06$ times higher, and for implementing measures, it is $\exp(1.45) \approx 4.26$ times, holding other factors constant. This suggests that high political will did not just inspire policy proposals; it translated into tangible action. This also reflects the ability of the highest-ranking official to mobilize resources, overcome bureaucratic hurdles, and implement innovative but potentially risky solutions.

Importantly, leadership turnover does not significantly affect the implementation of drastically innovative policy measures. This indicates that when the composition and objectives of the LCCLG are institutionalized and remain stable throughout the experimentation period, the preferences of the succeeding leader do not substantially alter the trajectory established by their predecessor in the pursuit of drastically innovative low-carbon policies. Institutionalizing policy objectives and strategies through the LCCLG helps mitigate the impact of leadership turnover.

Neither economic development (log(GRPPC)) nor energy intensity has a significant impact on the number of drastically innovative decarbonization policy measures proposed or implemented. This lack of significance may be due to the overriding influence of political will and institutional stability, which drive policy innovation more effectively than economic factors alone. Cities with prefectural party secretaries close to rotation are less likely to have drastically innovative policies proposed and implemented. This is likely due to reduced long-term commitment or the lack of opportunity to claim credit for climate innovation. Alternative control variables, including the age and rank of the prefectural party secretary under whom the city submitted applications for the low-carbon city pilot, are also insignificant (Section A.3). These trends indicate that drastic policy innovation is more strongly associated with political factors, particularly political will and nearing departure.

The second approach used is bootstrapping. By resampling the original data set with replacement to generate multiple simulated data sets, bootstrapping provides a robust estimation of model parameters and their confidence intervals, particularly for small or non-normally distributed samples. In this analysis, bootstrapping is applied with 1000 replications to assess the stability of the coefficients in the Poisson regression model, examining the number of drastically innovative policy measures. For each bootstrap iteration, a random sample is drawn from the original dataset, where some observations are selected multiple times, whereas others are not included, simulating new data sets. The model is refitted on each resampled data set, and the coefficients are stored. This process generates a distribution

TABLE 2 Summary statistics for all variables.

Variable	Description	Obs.	Median	Mean	Std. Dev.	Max	Min
Innovative measures, proposed	The number of policy measures proposed that were absent in official central government documents	25	1	2.32	2.32	8	0
Innovative measures, implemented	The number of policy measures implemented that were absent in official central government documents	25	1	1.64	2.06	7	0
Political will	Leader of the LCCLG being the prefectural party secretary (high) = "2," mayor (moderate) = "1," or otherwise (low) = "0"	25	1	0.76	0.72	2	0
Log(GRPPC)	Logarithmic form of GRP per capita of the city	25	10.82	10.73	0.54	11.53	9.67
Energy intensity	The amount of energy consumed per unit of GDP (tons of standard coal/10,000 RMB)	25	1.06	1.06	0.46	2.25	0.46
Nearing rotation	The prefectural party secretary being within 6 months of rotation at the onset of experimentation = "1" and otherwise = "0"	25	0	0.08	0.28	1	0
Leadership turnover	Leadership turnover occurred during 2012–15 = "1" and otherwise = "0"	25	1	0.56	0.51	1	0

of the estimated coefficients for each independent or control variable, which is then used to calculate percentile-based confidence intervals.

The results in Table 4 generally align with those in Table 3, underscoring the stability of the findings regardless of the approach used. Political will continues to demonstrate a strong influence on policy innovation, particularly at the highest level, while economic development and energy intensity remain insignificant factors. Nearing leadership turnover is significantly associated with fewer drastically innovative policy measures proposed but has an insignificant impact on those that were ultimately implemented. Furthermore, when incorporating alternative control variables, the results in Table A4 consistently demonstrate that a high level of political will is significantly related to a greater number of drastically innovative policy measures both proposed and implemented.

TABLE 3 The relationship between political will and the count of drastically innovative policy measures proposed and implemented.

	Drastically innovative policy measures			
	Proposed		**Implemented**	
Political will: high (vs. low)	1.40*** (0.42)	1.45** (0.45)	1.35** (0.42)	1.44*** (0.40)
Political will: moderate (vs. low)	0.52 (0.48)	0.47 (0.44)	0.65 (0.46)	0.73 (0.44)
Log(GRPPC)		0.30 (0.50)		0.08 (0.58)
Energy intensity		0.01 (0.46)		−0.23 (0.51)
Nearing rotation		−0.93*** (0.23)		−1.05*** (0.24)
Leadership turnover			−0.31 (0.23)	−0.46 (0.38)
Observations	25	25	25	25

Note: Analyses weighted based on the sample size of each political will level group. Robust standard errors in parentheses.
***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

TABLE 4 Bootstrapped coefficients and confidence intervals for drastically innovative policy measures proposed and implemented.

	Drastically innovative policy measures	
	Proposed	**Implemented**
Political will: high (vs. low)	1.36 (0.27, 14.31)	1.85 (0.48, 20.28)
Political will: moderate (vs. low)	0.42 (−0.49, 1.37)	1.03 (0.09, 19.38)
Log(GRPPC)	0.31 (−0.67, 1.96)	0.83 (−0.23, 2.48)
Energy intensity	−0.36 (−2.24, 0.90)	0.13 (−1.85, 2.16)
Nearing rotation	−1.14 (−18.69, −0.56)	−0.55 (−18.13, 0.44)
Leadership turnover		0.16 (−1.03, 1.20)

Note: 95% Confidence intervals in parentheses.

DISCUSSION AND CONCLUSION

This study contributes to the literature on policy innovation by emphasizing and explicitly studying the critical role of political will and political entrepreneurship in driving drastic policy innovations. Existing research primarily focuses on diffusion mechanisms and internal determinants such as economic development and problem severity, with an emphasis on the role of policy entrepreneurs broadly defined. This study builds on existing wisdom, especially scholarship on political entrepreneurship, but shifts the focus to political will as a critical driver of policy innovation, thereby addressing an important gap in the current scholarship. By operationalizing political will through the leadership structure and composition of the leading group in the context of low-carbon city experimentation in China, this research demonstrates how the political will of key decision-makers drives drastic policy innovation.

The findings highlight the importance of institutionalizing policy objectives to achieve sustained policy innovation. Specifically, the empirical case study of low-carbon city experimentation in China suggests that policy innovation can be maintained through the embedding of policy objectives within institutional frameworks, notably that of the LCCLG, ensuring continuity and mitigating the impact of leadership turnover. This insight aligns with Hall's (1993) concept of policy paradigm shifts, which suggests that durable changes in policy often result from embedded institutional practices.

Furthermore, this study introduces the concept of drastic policy innovation, which goes beyond the relative novelty for a particular locality commonly used in extant literature. Drastic policy innovation is characterized by a fundamental shift in governmental prioritization and the adoption of policy instruments so new that they have rarely, if ever, been implemented by any jurisdiction in the country. Studying drastic policy innovation is increasingly important because our world faces disruptive events such as climate change, which necessitate fundamental transformations in governance structures, approaches, and solutions.

While the empirical case is based in an authoritarian country, the main argument is expected to also apply to democratic countries. Political will and the role of political entrepreneurs in driving policy innovation are not exclusive to any type of regime. In democratic settings, political will may be undergirded by different motives, such as electoral incentives, and channeled through different mechanisms, such as coalition-building in legislative processes. However, the underlying principle that strong political will can propel political entrepreneurs to enact and implement drastic policy innovation through strategic resource allocation, effective coalition building, overcoming resistance, and establishing and enforcing necessary regulations remains applicable. The difference is that political will needs to be modeled differently in democracies. In an authoritarian country like China, political will can be credibly operationalized by the rank of the leader, given its close association with the concentration of political power and legitimacy they command. In contrast, in democracies, a broader range of variables is needed to capture all dimensions of this complex construct due to the numerous veto points inherent in democratic regimes.

For future extensions and applications of this study to other authoritarian contexts, scholars need to identify cases in decentralized political systems where localities are allowed or encouraged to innovate. As Zhu and Zhao (2021) note, for some policy experiments, the central government already has specified policy goals and policy instruments, whereas others allow for varying levels of central involvement in setting policy goals or instruments. Hence, scholars need to identify cases where local innovation is possible.

However, the current approach to measuring political will is not without limitations, as it may overlook other factors such as informal networks, personalities, or behind-the-scenes political maneuvering (Hasmath et al., 2019; Shen, 2022, p. 38; Treadway et al., 2005). Acknowledging these complexities, this study highlights the challenges in holistically capturing the latent concept of political will and lays the groundwork for future research to refine its measurement.

Whereas studying the second-batch low-carbon pilot cities in China provides valuable insights into the role of political will in policy innovation, different political and administrative contexts may exhibit different dynamics. Future research should consider a broader range of cases, including those of other countries and policy domains, to validate and extend these findings. Specifically, future research can

continue to dissect the components of political will and the micro-processes through which political will influences policy innovation. This approach will yield valuable implications for effectively harnessing political will across different governance structures to tackle pressing policy challenges.

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CONFLICT OF INTEREST STATEMENT

The author declares no conflict of interest.

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ENDNOTES

[1] Policy experimentation is itself a form of policy innovation and provides a unique setting for more drastic innovations to emerge, especially when political will aligns with the broader experimental goals.

[2] China has 293 prefecture-level cities and four centrally administered cities. Eight cities were designated first-batch pilots. Fourteen percent of the remaining cities submitted applications for official evaluation by the central government. However, many more showed interest but were not supported by their provincial governments for further upper-level review.

[3] Borrowing from international experience is not part of the definition of drastic policy innovation. In this empirical case, although rare, some cities did include borrowing from international experience in their implementation plans.

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APPENDIX A

POLITICAL WILL AS A SOURCE OF POLICY INNOVATION

A.1 | CODING OF DRASTICALLY INNOVATIVE MEASURES

Below are the goals outlined in the low-carbon pilot notices from the National Development and Reform Commission and the 12th Five-Year Plan Energy Conservation and Emissions Reduction (Table A1).

For instance, a city in the sample has the following proposed policy measures in its low-carbon city pilot implementation plan. Compared to the official central documents, this city had three measures that were already included in the official documents (i.e., 1, 5, and 6). The other four measures (i.e., 2, 3, 4, and 7) are considered drastically innovative in this study, as they do not appear directly in the official central documents and leverage local characteristics.

1. Develop a low-carbon industrial system.
2. Develop a massive carbon sink system in the center of the city.
3. Establish a low-carbon demonstration area for the rest of the city to emulate.
4. Develop international partnerships and cooperation with an identified city in Europe.
5. Establish carbon emissions accounting and evaluation systems.

TABLE A1 Decarbonization goals are outlined in the notice on launching the low-carbon pilots from the NDRC and the 12th Five-Year Plan from the State Council.

Central documents and goals	Goals
NDRC Notice on Launching the National Low-Carbon Province and City Pilots	• Low-carbon development planning • Supporting policies to facilitate low-carbon development • Low-carbon industrial system • Carbon emissions monitoring, accounting, and target responsibility evaluation system • Public involvement—low-carbon lifestyles and consumption patterns
State Council 12th Five-Year Plan	• Industrial structure • Energy efficiency (technology and innovation) • Energy conservation and emissions reduction projects • Supporting mechanisms • Low-carbon development planning

6. Promote public involvement by raising awareness about low-carbon lifestyles and consumption.
7. Promote voluntary carbon emissions trading at the institute, enterprise, community, and individual levels, both within and across the province.

A.2 | BALANCE TABLES OF COVARIATES ACROSS LEVELS OF POLITICAL WILL

Table A2 presents the mean and standard deviation (SD) of covariates—log(GDPPC), energy intensity, turnover, and near departure—across three levels of political will (low, medium, and high). The lower panel shows the pairwise differences in means and standard error (SE) for each covariate between the groups. The covariates are generally balanced across the levels of political will, with the exception of turnover, whose mean differences and standard errors indicate some imbalance, particularly between the medium and high levels of political will. Additionally, the sample sizes across the levels of political will are imbalanced, with the high-level group having significantly fewer observations compared to the low- and medium-level groups.

A.3 | ALTERNATIVE CONTROL VARIABLES

Alternative control variables include the political incentives of prefectural party secretaries, drawing from Wang et al.'s (2020) work on career motivations. The intensity of a leader's political incentive is assessed based on their anticipated ex ante likelihood of promotion before the experimentation began, determined by their age and administrative rank at that time. I take the logarithmic transformation of the prefectural party secretary's age in 2012. Administrative rank is a factor variable assigned the value "1" for prefectural, "2" for deputy-provincial, and "3" for deputy-state cities.

The results in Tables A3 and A4 indicate that neither age nor rank is significantly related to the number of drastically innovative policy measures proposed or implemented. This potentially indicates that the strategy for leveraging climate innovation for career advancement is consistent regardless of age or the administrative rank of the city. In all models, a high level of political will is significantly related to a greater number of drastically innovative policy measures proposed and implemented.

TABLE A2 Balance table of covariates across levels of political will.

Panel A. The balance of covariates across levels of political will

		Log(GRPPC)		Energy intensity		Turnover		Near departure	
Political will	**N**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**N**	**%**
Low	10	10.53	0.53	1.13	0.49	0.40	0.52	0	0.00
Medium	11	10.83	0.56	1.09	0.45	0.82	0.40	1	9.09
High	4	10.98	0.41	0.78	0.45	0.25	0.50	1	25.00

Panel B. Pairwise comparisons of covariates between different levels of political will

			Difference	
Group 1	**Group 2**	**Variable**	**Mean**	**SE**
Medium	High	Log(GDPPC)	−0.15	0.27
Medium	Low	Log(GDPPC)	0.30	0.24
High	Low	Log(GDPPC)	0.46	0.27
Medium	High	Energy intensity	0.31	0.26
Medium	Low	Energy intensity	−0.04	0.21
High	Low	Energy intensity	−0.35	0.27
Medium	High	Turnover	0.57	0.28
Medium	Low	Turnover	0.42	0.20
High	Low	Turnover	−0.15	0.30
Medium	High	Near departure	−0.16	0.27
Medium	Low	Near departure	0.09	0.09
High	Low	Near departure	0.25	0.25

TABLE A3 The relationship between political will and the count of drastically innovative policy measures proposed and implemented, with alternative control variables (weighted regression with robust standard errors).

	Drastically innovative policy measures			
	Proposed		**Implemented**	
Political will: high (vs. low)	1.40*** (0.42)	1.61** (0.50)	1.35** (0.42)	1.68*** (0.44)
Political will: moderate (vs. low)	0.52 (0.48)	0.50 (0.52)	0.65 (0.46)	0.72 (0.51)
Log(age)		0.47 (2.37)		1.02 (2.65)
Rank: deputy-state		−0.02 (0.47)		−0.31 (0.50)
Rank: deputy province		0.42 (0.45)		0.29 (0.46)
Nearing rotation		−0.92* (0.42)		−1.00* (0.45)
Leadership turnover			−0.31 (0.23)	−0.44 (0.28)
Observations	25	25	25	25

Note: Analyses weighted based on the sample size of each political will level group. Robust standard errors in parentheses.
***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

TABLE A4 The relationship between political will and the count of drastically innovative policy measures proposed and implemented, with alternative control variables (bootstrapped).

	Drastically innovative policy measures	
	Proposed	**Implemented**
Political will: high (vs. low)	1.64 (0.73, 2.78)	2.23 (1.10, 20.07)
Political will: moderate (vs. low)	0.52 (−0.78, 1.74)	1.15 (−0.63, 19.46)
Log(age)	1.00 (−7.18, 6.14)	−0.77 (−14.65, 9.77)
Rank: deputy state	−0.05 (−1.02, 18.65)	0.46 (−1.56, 20.38)
Rank: deputy province	0.40 (−0.59, 1.45)	0.50 (−0.82, 2.75)
Nearing rotation	−1.19 (−19.12, 0.38)	−0.88 (−19.13, 1.11)
Leadership turnover		−0.08 (−2.35, 1.26)

Note: 95% Confidence intervals are in parentheses.

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