**When Timing Matters for Bureaucratic Responsiveness:
Evidence from a Regression Discontinuity in Time**

Abstract: We exploit a regression discontinuity in time (RDiT) design that leverages sharp breaks in regulatory behavior induced by calendar-based performance benchmarks, using high-frequency administrative records from a large set of local jurisdictions. This design isolates changes in complaint responsiveness at moments when enforcement effort discontinuously gains or loses evaluative relevance, allowing us to trace how authorities adjust their behavior around these temporal cutoffs. The observed patterns are consistent with a broader theoretical logic in which bureaucratic incentives are shaped by benchmark-based evaluation systems: enforcement effort is most valuable when it can still affect an impending assessment, loses salience once success has been secured, and can regain meaning when failure becomes unavoidable but remains subject to interpretation. Together, this approach shows that variation in responsiveness to public complaints reflects temporal incentive shifts embedded in evaluation regimes rather than stable differences in regulatory capacity or citizen pressure.

Keywords: environmental governance; public complaints; bureaucratic incentives; threshold performance evaluation; regression discontinuity in time.

Introduction

Public complaint systems have become a central pillar of contemporary environmental governance (Buntaine et al. 2024). Governments increasingly encourage citizens, community groups, and non-governmental organizations to report pollution incidents and regulatory violations (Reid and Toffel 2009; Wu et al. 2025), positioning public complaints as a means of supplementing state monitoring and strengthening regulatory oversight (Hiatt et al. 2015). By mobilizing dispersed citizen observation (Odziemkowska and Henisz 2021), complaint systems are expected to reduce information asymmetries between regulators and regulated firms and to translate public input into timely enforcement actions (Fung 2015).

Yet, despite their prominence in policy design, public complaints do not uniformly trigger regulatory action (Delmas and Toffel 2008). Empirical research documents substantial variation in bureaucratic responsiveness to complaints, both across jurisdictions and within the same jurisdiction over time (Buntaine et al. 2024; Marquis and Bird 2018). Some complaints prompt rapid investigation and resolution, while others experience prolonged delays or limited follow-up. Existing explanations for this variation emphasize differences in political pressure (Wang et al. 2018), bureaucratic capacity (Marquis and Bird 2018), or citizen mobilization (Delmas and Toffel 2008). While these factors are undoubtedly important, they offer limited leverage for explaining why responsiveness fluctuates sharply within the same jurisdiction over the course of a single evaluation cycle, even when institutional structures, enforcement capacity, and complaint volume remain largely unchanged.

We argue that this within-jurisdiction variation reflects the incentive structure created by threshold-based performance evaluation systems. In many environmental regulatory regimes, bureaucrats are evaluated against annual performance targets that operate as binding thresholds rather than continuous scoring rules (Cao et al. 2025). Meeting the target avoids sanction, whereas failure triggers administrative penalties or political accountability, with little additional reward for performance beyond the threshold. This structure implies that the marginal return to enforcement effort is inherently discontinuous over time.

When performance remains close to a binding threshold and attainment is still feasible, responding to environmental complaints has clear instrumental value because it can still avert failure and sanction. Once the target has been achieved early, however, additional enforcement effort no longer improves evaluation outcomes and may even impose strategic costs, such as disrupting local economic activity or inviting stricter future targets.

By contrast, when officials anticipate that attainment has become impossible, the incentive logic shifts rather than disappears. Although further enforcement can no longer change the binary evaluation outcome, it remains consequential for how failure is assessed. In such settings, superiors often distinguish between failure accompanied by visible regulatory effort and failure perceived as neglect or inaction. As a result, enforcement actions that are observable and procedurally salient—such as timely responses to public complaints—become a means for officials to demonstrate diligence, manage accountability, and mitigate reputational or disciplinary consequences, even in the face of inevitable failure.

We develop and test these arguments in the context of China's environmental governance system, where local governments are evaluated against annual air-quality targets that function as salient regulatory thresholds. These targets are tightly linked to cadre evaluation and generate strong incentives for local officials to manage environmental performance over the course of the year. Importantly, while officials may influence pollution trends through enforcement and regulatory action, the exact timing of target attainment or failure is heavily affected by meteorological conditions beyond bureaucratic control, such as wind patterns, precipitation, and temperature inversions (Olken 2007). This feature creates quasi-random temporal variation in threshold crossing, allowing us to identify how bureaucratic responsiveness changes as incentive regimes shift.

Empirically, we combine daily public environmental complaint records with air-quality performance data from 324 Chinese prefecture-level cities. Exploiting quasi-random variation in the timing of early-fulfillment and inevitable-failure thresholds, we estimate a regression discontinuity in time (RDiT) design (Aaltonen and Wattal 2025; Castellaneta et al. 2025). The analysis reveals discrete slowdowns in bureaucratic responsiveness following early target attainment, consistent with incentive withdrawal once evaluation risk is eliminated. In contrast, we observe discrete increases in responsiveness following inevitable-failure thresholds, consistent with compensatory enforcement aimed at managing accountability and reputational exposure when attainment is no longer possible.

This study makes three theoretical contributions to research on state responsiveness, participatory governance, and performance-based regulation. First, we reconceptualize state responsiveness as an incentive-contingent and temporally variable behavior rather than a stable bureaucratic trait. Existing research largely explains responsiveness through structural factors such as regulatory capacity, legal mandates, or institutional design, implicitly treating responsiveness as relatively constant within a jurisdiction (Frank et al. 2000; Marquis and Bird 2018; Tsai 2007; Yan et al. 2021; York et al. 2003). We depart from this view by showing that responsiveness fluctuates sharply within the same jurisdiction and evaluation cycle as bureaucrats move across performance thresholds. By linking responsiveness to officials' performance standing relative to binding environmental targets, we introduce a dynamic account in which the same bureaucratic apparatus can be highly responsive or weakly responsive to identical complaints depending on the marginal evaluative returns to enforcement effort. This shifts scholarly attention from cross-sectional differences between states to within-unit variation driven by incentive discontinuities.

Second, we advance the literature on stakeholder environmentalism by demonstrating that stakeholder voice is conditionally effective rather than inherently influential. Prior work often treats public complaints and stakeholder pressure as a relatively stable source of external accountability that disciplines firms and regulators alike (Delmas and Toffel 2008; Reid and Toffel 2009). Our findings complicate this view by showing that stakeholder voice is filtered through bureaucrats' evaluative logic. Complaints carry greater weight when environmental targets are at risk, lose traction once targets are secured, and reemerge as a tool for signaling diligence when failure becomes unavoidable. This perspective reframes bureaucrats not as passive recipients of stakeholder pressure but as strategic interpreters of public input, whose responsiveness depends on how complaints align with their performance incentives.

Third, we uncover a previously underappreciated behavioral consequence of performance-based environmental governance. While threshold-based targets are designed to enhance accountability and mobilize regulatory effort (Cao et al. 2025; Yang et al. 2024), they can also narrow bureaucratic attention in ways that undermine sustained engagement with public concerns. Once targets are met, enforcement effort—including responsiveness to legitimate complaints—becomes a low-return activity, even though environmental risks may persist. By documenting systematic shifts in responsiveness around performance thresholds, we show how metrics intended to discipline bureaucrats can inadvertently discourage continued responsiveness. This highlights a fundamental tradeoff in technocratic governance between target compliance and ongoing public accountability, with implications extending beyond environmental regulation to other domains governed by binary performance evaluations.

Theory and Hypotheses

Threshold-Based Evaluation and Dynamic Incentive Regimes in Environmental Governance

Performance targets are a central instrument of contemporary environmental governance (Cao et al. 2025). Governments increasingly rely on quantified environmental indicators (e.g., air quality, water pollutions) to discipline regulatory effort (He et al. 2020), align local implementation with central environmental priorities, and render regulatory performance observable and comparable across jurisdictions. Unlike economic growth targets, which often admit gradation and trade-offs (Li and Zhou 2005), environmental targets are typically framed as regulatory thresholds: jurisdictions are assessed on whether a specified standard is met or violated. Meeting the target avoids sanction, while failure triggers penalties, inspections, or political accountability, with little additional credit for performance beyond the threshold.

China's environmental governance system exemplifies this threshold-based structure (Cao et al. 2025). Local governments are evaluated annually on whether key environmental indicators, such as air-quality targets, meet centrally mandated standards (Kostka and Nahm 2017). These evaluations are highly consequential, shaping administrative sanctions, reputational standing within the bureaucracy, and promotion prospects of local officials (Jia et al. 2015). Importantly, the evaluation system is asymmetric.

While failing to meet the target carries clear downside risk, exceeding the target yields little marginal benefit and may even generate future costs through target ratcheting, whereby strong performance raises expectations and tightens future standards.

This institutional design generates dynamic and discontinuous incentive regimes over the evaluation cycle. Early in the year, environmental performance remains uncertain, and enforcement effort has ambiguous returns. As cumulative pollution outcomes accumulate and remaining time shrinks, officials update expectations about whether additional regulatory effort can still influence the year-end evaluation (Shen and Ahlers 2019). When environmental performance is sufficiently close to the regulatory threshold and attainment remains feasible, enforcement effort such as responding to citizens' environmental complaints, has high instrumental value because it can still avert failure and sanction (Lorentzen et al. 2014).

Crucially, incentive dynamics do not simply disappear once attainment becomes impossible. When officials anticipate that environmental targets will not be met, the nature of incentives shifts rather than collapses. At this stage, enforcement effort can no longer change the binary evaluation outcome, but it can influence how failure is interpreted by superiors. In environmental governance, failure is rarely assessed purely mechanically; higher-level authorities often distinguish between failure due to uncontrollable external conditions (e.g., adverse weather or industrial legacy) and failure attributed to weak enforcement or negligence (Kostka and Mol 2013). As a result, observable regulatory effort remains consequential even under inevitable failure, shaping reputational judgments, sanction severity, and post-evaluation scrutiny (Chen and Kung 2019).

Thus, threshold-based environmental evaluation systems create two distinct but consequential incentive transitions. Early fulfillment weakens incentives for continued enforcement by eliminating evaluation risk, whereas anticipated failure heightens incentives for visible regulatory effort aimed at demonstrating diligence and compliance orientation. These shifts occur within jurisdictions and within evaluation periods, implying that bureaucratic responsiveness can vary sharply over time even in the absence of changes in institutional structure, regulatory capacity, or political environment.

Public Complaints as Discretionary and Observable Enforcement Actions

Public environmental complaints provide regulators with granular information about localized pollution events, firm-level violations, and enforcement blind spots that are difficult to detect through routine inspections alone (Hiatt et al. 2015; Reid and Toffel 2009). For this reason, complaint systems are widely promoted as a cornerstone of participatory environmental governance, enabling citizens to supplement state monitoring capacity and enhance regulatory coverage (Fung 2015). Yet the institutional design of complaint systems makes bureaucratic responses inherently discretionary.

Responding to a complaint is not a symbolic acknowledgment but a resource-intensive enforcement action (Cao et al. 2025). It typically requires dispatching inspectors, coordinating with other agencies, collecting evidence, engaging with firms, documenting procedures, and formally closing the case in administrative systems. These activities consume scarce enforcement capacity that could otherwise be allocated to routine inspections, major compliance campaigns, or politically salient tasks. As a result, complaint handling forces bureaucrats to make prioritization decisions rather than simply follow procedural scripts.

Crucially, complaint responsiveness is also highly observable. Response times, investigative steps, and resolution outcomes are digitally recorded and can be audited by higher-level authorities. In contrast to many forms of behind-the-scenes regulatory work, complaint handling leaves a clear administrative trail that is legible both upward within bureaucratic hierarchies and outward to citizens. This dual visibility gives complaints a distinctive strategic value: they allow officials to demonstrate diligence, compliance orientation, and alignment with policy priorities in a way that is externally validated.

Taken together, these features imply that complaint responsiveness reflects a calculated allocation of enforcement effort under constraint. Bureaucrats are more likely to prioritize complaints when doing so advances their position within prevailing evaluation regimes (Jia et al. 2015). When enforcement effort can influence whether environmental targets are met, complaints represent actionable opportunities to improve performance. When outcomes are fixed, complaints provide a vehicle for signaling effort and procedural compliance. When neither outcome nor interpretation is at stake, complaint responsiveness becomes comparatively unattractive.

Early Fulfillment and Incentive Withdrawal

When jurisdictions achieve environmental performance targets early, they enter a regime characterized by incentive withdrawal. Having secured compliance, officials no longer face sanction risk tied to the targeted environmental domain. Under a threshold-based evaluation system, additional enforcement effort does not improve evaluation outcomes and therefore carries little marginal benefit.

Moreover, continued enforcement after early attainment may impose strategic economic costs. Aggressive complaint handling can generate friction with local firms by disrupting production schedules, delaying investment projects, or increasing compliance costs, particularly in pollution-intensive industries that contribute substantially to local output and employment. Because local officials remain accountable for economic performance alongside environmental compliance, intensified enforcement after targets are secured can undermine parallel growth objectives. As a result, once environmental evaluation risk is eliminated, officials have strong incentives to reallocate attention and enforcement capacity toward activities with higher expected economic returns under the evaluation system, such as promoting industrial output, facilitating investment, or advancing infrastructure projects.

This reallocation does not reflect complacency or declining capacity. Instead, it follows directly from the incentive structure embedded in threshold-based evaluation. Once environmental targets are secured, responsiveness to complaints becomes a low-return activity relative to alternative bureaucratic tasks. We therefore propose:

> *Hypothesis 1 (Early Fulfillment Effect). When local authorities achieve their environmental performance targets early, their responsiveness to stakeholders' environmental complaints decreases.*

Inevitable Failure and Compensatory Responsiveness

The incentive logic differs sharply when officials anticipate that environmental performance targets will not be met. Although additional enforcement effort can no longer reverse the attainment outcome, the evaluation of failure itself remains subject to interpretation. In hierarchical governance systems, sanctions are rarely applied mechanically; superiors commonly assess whether failure reflects adverse external conditions, inherited problems, or insufficient effort and diligence (Hood 2011; Tsai 2021).

Officials who can demonstrate visible effort, such as intensified inspections, rapid complaint responses, or procedural compliance, are often treated differently from those perceived as passive or negligent. Under inevitable failure, observable enforcement actions therefore become a means of managing accountability rather than changing outcomes.

Public complaints are especially well suited for this purpose. Because they originate outside the bureaucracy and are administratively documented, responding to complaints allows officials to credibly signal responsiveness, diligence, and alignment with higher-level priorities despite unfavorable performance trajectories. Intensifying complaint responsiveness enables officials to shape how failure is interpreted, mitigate reputational damage, and potentially reduce sanction severity.

This logic highlights how threshold-based evaluation systems can induce selective intensification of enforcement effort aimed at evaluation management rather than outcome reversal. We therefore propose:

Hypothesis 2 (Inevitable Failure Effect). When local authorities fail to meet their environmental performance targets, their responsiveness to stakeholders' environmental complaints increases.

RESEARCH DESIGN

Institutional Background

Environmental performance targets and bureaucratic accountability in China

In the early stages of China's economic development, bureaucrats were primarily evaluated based on GDP growth, incentivizing a strong pro-growth orientation often at the expense of environmental protection (Luo et al. 2017; Wang et al. 2018). In response to mounting public discontent and escalating ecological crises, the central government began to reform its cadre evaluation system. A key innovation was the introduction of binding environmental performance targets—most notably, the proportion of days with good or moderate air quality, as measured by the Air Quality Index (AQI)—into the formal performance appraisals of bureaucrats (Cao et al. 2025).

Under this regime, the central government sets annual air quality targets for provinces, which are then decomposed and allocated to prefecture-level cities. In Gansu Province, for instance, the provincial government signs performance responsibility agreements with all 14 municipalities, mandating compliance with AQI benchmarks aligned with national air pollution control policies. Prefecture-level bureaucrats are required to develop and execute implementation plans that often target firm-level activities, such as enforcing emissions reductions in high-polluting industries, mandating cleaner production technologies, suspending construction permits for noncompliant firms, or imposing rectification deadlines for regulatory violators.

Performance is closely monitored, and bureaucrats' career outcomes are directly tied to target attainment. Sanctions for underperformance range from administrative reprimands and budget penalties to blocked promotions and formal disciplinary action. In Jiangsu Province, for example, a "one-vote veto" system automatically overrides all other evaluation criteria if environmental targets are missed. Similarly, Henan issues public censures and demotions for noncompliance, while Gansu mandates formal accountability hearings for underperforming administrators. These mechanisms are enforced with growing intensity: in 2015, the mayor of Zhengzhou was publicly summoned by the Ministry of Ecology and Environment (MEE); in 2020, Shandong Province began holding quarterly reviews targeting cities with persistent air quality issues; and in 2023, several Yangtze River Delta cities, including Hangzhou and Jiaxing, were publicly criticized by the Central Ecological Environmental Inspection Group for failing to meet AQI targets.

The AQI target regime not only institutionalizes environmental accountability but also structures how bureaucrats experience performance pressures over time. Because the metric is tied to a fixed calendar—counting the number of days per year with AQI $\leqslant 100$—bureaucrats can track their standing in real time.[1] Crucially, as the year progresses, cities may cross into one of two evaluative thresholds: early fulfillment, where the target has already been met and additional clean-air days no longer affect performance evaluations; or inevitable failure, where the target has become unattainable regardless of future air quality (Cao et al. 2025). These sharp, functionally exogenous status shifts mark discontinuous changes in bureaucratic performance standing, forming the basis for our identification strategy: by observing how bureaucratic behavior changes around these thresholds, we can identify the causal effect of target-linked performance pressure— early fulfillment and inevitable failure—on state responsiveness to stakeholder environmental complaints.

Public complaints and environmental governance

In parallel with performance-based regulation, China has established formal mechanisms for public participation in environmental governance. Central among these is the 12369 Environmental Complaint System, launched by the MEE in 2001 and later expanded into a nationwide, multi-platform network accessible via telephone, web, and WeChat. Citizens can report pollution incidents through this system, which automatically routes complaints to the appropriate local environmental bureau based on administrative jurisdiction. Appendix 1 provides examples of such environmental complaints.

Once received, complaints follow a standardized administrative workflow: they are logged, assigned, investigated, and resolved according to national protocols. Local bureaus are required to document the nature of the complaint, the results of their investigation, any enforcement actions taken, and their final response to the complainant. Enforcement is carried out by specialized units, such as the environmental supervision brigade, and may involve joint law enforcement if the case is significant or cross-regional. Following on-site verification, if a violation is confirmed, agencies can impose a range of penalties under laws such as the Environmental Protection Law and the Air Pollution Prevention and Control Law. Sanctions vary in severity and may include fines, production suspension, facility closures,

[1] AQI ranges from 0 to 500 and is divided into six categories: 0–50 (Good), 51–100 (Moderate), 101–150 (Light Pollution), 151–200 (Moderate Pollution), 201–300 (Heavy Pollution), and 301–500 (Severe Pollution). Only days with AQI $\leqslant$ 100 count toward performance targets.

mandatory rectification deadlines, enterprise relocation, or referral to other authorities. Rapid response mechanisms have also been institutionalized—for instance, in Hunan Province, the Huaihua Environmental Protection Bureau resolved a complaint about an illegal chemical plant within 48 hours.[2]

Once a complaint is closed, results must be communicated to the complainant and uploaded to a centralized database managed by the MEE. This workflow, "public reporting → regulatory investigation → on-site enforcement → public feedback", reinforces procedural accountability, transparency, and traceability.

The complaint system serves both instrumental and political functions. Instrumentally, it provides regulators with decentralized intelligence about environmental violations that may otherwise go undetected. Politically, it signals the government's responsiveness to citizen concerns, reinforcing the legitimacy of regulatory authorities. Bureaucrats are expected to handle complaints promptly; failures—whether due to inaction, delays, or data falsification—can trigger intervention from higher-level agencies or result in disciplinary consequences.

To institutionalize timeliness and accountability, the central government mandates a closed-loop, time-bound process, with most cases required to be resolved within 20 working days. National guidelines also specify procedures for reprocessing unsatisfactory responses and for escalating key or repeated complaints. Within this framework, the handling time of a complaint—measured as the number of days between its initial filing and formal resolution—serves as a concrete, auditable indicator of bureaucratic responsiveness. Faster resolution reflects greater attentiveness and prioritization; slower handling may signal reduced engagement or strategic deferral. Because this metric is both observable and formally regulated, it offers a reliable behavioral measure of how bureaucrats respond to public demands, conditional on their performance standing relative to environmental targets.

Data

AQI targets for prefecture-level cities

[2] Appendix 2 provides an illustrative example of such enforcement.

AQI targets are typically set as the minimum number of days per year with an AQI of 100 or less. Building on prior research (Cao et al. 2025; Kong and Liu 2024), we manually gathered AQI targets for prefecture-level cities from documents publicly issued by provincial governments. When these documents were unavailable online, we submitted information disclosure requests to relevant government departments, such as provincial government offices or provincial departments of ecology and environment. In doing so, we successfully obtained AQI targets from 27 provinces including Sichuan, Henan, Guangxi Zhuang Autonomous Region, Gansu, Shaanxi, Guangdong, Anhui, Zhejiang, Shandong, Jilin, Yunnan, Liaoning, Jiangsu, Qinghai, Hubei, Hunan, Heilongjiang, Ningxia Hui Autonomous Region, Jiangxi, Inner Mongolia Autonomous Region, Guizhou, Xinjiang Uyghur Autonomous Region, Shanxi, Xizang Autonomous Region, Fujian, Hebei, and Hainan, covering 324 prefecture-level cities over the years 2015-2019. We excluded four municipalities directly governed by the central government—Beijing, Tianjin, Shanghai, and Chongqing—as they consist of districts and counties and lack specific AQI targets.

Prefecture-level average response time for environmental complaints

The data on environmental complaints come from the MEE's 12369 Environmental Complaint Management Platform, which includes channels such as WeChat, hotlines, and online platforms. The dataset spans from 2010 to 2019, comprising a total of 2,453,299 records. The 12369 environmental complaint system, spanning national-provincial-city-district/county levels, achieved full operation by 2015, resulting in data coverage concentrated in the 2015–2019 period. Each complaint record is equipped with a unique event number, the time the complaint is created, and the time it is resolved. Records also include the complainant's province, city, and district information, name, phone number, and detailed complaint content. Each complaint is handled by the corresponding environmental bureau, including administrative division units and administrative division codes, such as *Chengdu Municipal Bureau of Ecological Environment* (510100), *Jingbian County Bureau of Ecological Environment* (610824), or *Huangdao District Bureau of Ecological Environment* (370211). As the location of the complainant does not precisely determine the prefecture-level city of the complaint, it is assigned to the respective bureau of ecological environment for handling based on jurisdiction. Accordingly, we use Python to match the administrative division code, under which the complaint is processed, with the Administrative Division Codes published by China's Ministry of Civil Affairs,[3] to determine the prefecture-level city for each complaint.

In the data processing phase, we excluded duplicate and test complaints (i.e., those records used to test the functionality of the 12369 platform). Since firms are the primary drivers of local GDP, to clearly capture the government's balance between economic and environmental complaints, we primarily retained public complaints regarding polluting firms during the data processing phase. After merging with the AQI targets, records prior to 2014 were removed, resulting in a total of 2,011,885 valid complaint records from 2015 to 2019. Excluding data from Tianjin, Chongqing, Shanghai, and Beijing results in a total of 1,494,675 complaint records from 2015 to 2019. Finally, we consolidated the complaint data by "prefecture-level city-day" dimension and calculated the average handling time for all pollution complaints per day for each prefecture-level city from 2015 to 2019, thereby measuring the efficiency of environmental complaint handling across different prefecture-level cities.

AQI and prefecture-level pollution emission data

The daily AQI and prefecture-level emissions data for sulfur dioxide (SO_2) and nitrogen oxides (NO_x) used in our paper were obtained from the China Air Quality Online Monitoring and Analysis Platform.[4] This platform employs web crawling technology to collect historical air quality data released by MEE, and then makes this data publicly available (Cao et al. 2025). In our research, we primarily use the AQI index to evaluate the attainment of annual AQI targets by various prefecture-level cities and to identify specific cutoff points under different scenarios. Additionally, we employ SO_2 and NO_x data to analyze the effectiveness of pollution control measures and the impact of these pollutants in scenarios where prefecture-level cities either meet or fail to achieve their AQI targets. We successfully gathered daily AQI, SO_2, and NO_x emissions data for 324 prefecture-level cities across 27 provinces spanning the years 2015 to 2019.

Firm-level pollution emission data

[3] In Chinese only: https://so.mca.gov.cn/searchweb/
[4] In Chinese only: https://www.aqistudy.cn/historydata/.

We utilize the 2015 industrial enterprise sample from the China Industrial Enterprises Database,[5] which includes industrial firms in mainland China with annual sales exceeding 5 million yuan (increased to 20 million yuan since 2011). The data encompasses basic firm information, financial details, and production sales details. We then match this data with the information published by the National Enterprise Credit Information Publicity System to obtain the most recent and accurate addresses of the firms from 2015 to 2019 and remove any firms that have been deregistered. Next, we employ the Baidu Map API to convert these addresses into geographic coordinates (latitude and longitude). Finally, we employ Python and the Haversine formula to calculate the distances between each firm's coordinates and those of nearby air pollution monitoring stations. This formula is a well-established method for determining the distance between two points on a sphere based on their latitudes and longitudes (Robusto 1957).

Firms located closer to monitoring stations are under closer scrutiny and enforcement by local environmental officials (Axbard and Deng 2024). Consequently, we selected firms within a 1 km radius of monitoring stations to utilize station readings for assessing their pollution emissions. We successfully gathered daily emissions data for 6,806 firms from 2015 to 2019. Our primary focus is on sulfur dioxide (SO_2) and nitrogen oxides (NO_x), which serve as key precursor pollutants for the formation of $PM_{2.5}$ (fine particulate matter). These compounds undergo chemical transformations to generate secondary particles that significantly deteriorate air quality. Both pollutants predominantly originate from industrial sources (Karplus and Wu 2023), making them reliable indicators for assessing firms' pollution emissions. The coordinates of monitoring stations and pollution data are sourced from Chinese environmental monitoring stations.

Meteorological data

The meteorological data come from the National Meteorological Science Data Sharing Service Platform,[6] which includes daily maximum temperature, minimum temperature, precipitation, and average wind speed for prefecture-level cities.

[5] The China Industrial Enterprises Database has been discontinued, with the 2015 version being the latest available.

[6] https://data.cma.cn/en

Prefecture-level economic data

The Share of Secondary Industry in GDP (%) for prefecture-level cities in a year and the logarithm of Per Capita GDP (Yuan) for prefecture-level cities in a year. All data are derived from the annual "China City Statistical Yearbook" published by the National Bureau of Statistics.

Variables

Dependent variables

Our core dependent variable is the *average handling time*, which we use as a proxy for state responsiveness to stakeholder environmental complaints. Specifically, we calculate the logarithmic value of the daily average processing time (in natural days) for all environmental complaints in each prefecture-level city. This measure captures the time from acceptance to resolution, producing a city-level, daily indicator of government response speed.

This indicator is selected for both data granularity and policy relevance. First, complaint data are recorded at a daily frequency, enabling fine-grained observation of dynamic changes in bureaucratic behavior. This stands in contrast to more traditional metrics—such as administrative penalties—which are typically aggregated monthly or annually and thus poorly suited for capturing short-term shifts in responsiveness. Second, the speed of complaint resolution is directly relevant to China's environmental governance regime, where air quality targets are evaluated on a daily basis. A timely response to complaints can help bureaucrats prevent environmental deterioration and reduce the risk of formal sanctions from higher authorities. As such, complaint resolution serves as a real-time reflection of bureaucratic prioritization in addressing environmental issues.

In our supplemental analysis, we also evaluate pollution emissions at both the prefecture and firm levels, focusing on sulfur dioxide (SO_2) and nitrogen oxides (NO_x). These emissions are measured as daily *residual of* SO_2 and NO_x at both prefecture and firm levels.

Independent/Running variable

Our running variable, *Days Relative to Target Completion* (t_{cyd}), is measured as the number of days before (indicated by negative values) or after (indicated by positive values) a specific cutoff date (Cao et al.

2025). This cutoff date is identified as the day a prefecture-level city meets its annual AQI targets. The determination is based on daily AQI data and the predefined AQI targets for each prefecture-level city. The treatment variable, D_{cyd} is a binary variable indicating treatment status, assigned a value of 1 if t_{cyd} is zero or positive, and 0 if negative.

Control variables

Previous research has shown that meteorological conditions can influence pollution dispersion and air quality, affecting public perceptions of environmental quality and their propensity to lodge complaints (Fu and Gu, 2017). Accordingly, our study controls several meteorological variables to account for their potential impact. We account for temperature extremes by controlling for both *Maximum and Minimum Temperatures*, recorded as the highest and lowest temperatures in degrees Celsius within the prefecture-level city on any given day (Feng et al. 2020); we control for *Average Wind Speed*, measured in meters per second, since higher wind speeds facilitate the dilution and dispersion of airborne pollutants (He and Zheng 2024; Wu and Cao 2021); and we control for *Average Precipitation*, quantified as the daily average precipitation in millimeters, because precipitation can significantly improve air quality by washing out and dissolving airborne pollutants (Liu et al. 2020). These controls help ensure that our analysis accurately reflects the effects of environmental policies on public responses, independent of natural weather variations.

Regions with a higher proportion of secondary industries often experience an increased number of public complaints against polluting firms. However, cities that are more economically dependent on these industries might see their municipal bureaucrats prioritizing business protection, which could influence their responsiveness to such complaints (Tong et al. 2021; Wang et al. 2023). To account for this, we control for *The Share of Secondary Industry in GDP* (%), which represents the annual percentage of GDP contributed by secondary industries in prefecture-level cities.

Regions with higher *per capita GDP* usually display greater economic development, along with elevated levels of education and income among residents. This prosperity often raises expectations and demands for quality of life, prompting the public to actively seek resolutions through complaints about services or environmental issues. To account for this, we control for *GDP per capita*, measured as the logarithm of the regional gross domestic product per capita (in Yuan) for prefecture-level cities annually.

Identification Strategy: Regression Discontinuity in Time (RDiT) Design

The achievement of annual air-quality targets by Chinese prefecture-level cities provides a quasi-experimental setting well suited for a regression discontinuity in time (RDiT) design. As described in the Institutional Background, provincial governments require prefecture-level cities to meet air pollution control targets defined by the maximum allowable number of days in a calendar year with an Air Quality Index (AQI) exceeding 100. These targets are incorporated into the annual cadre evaluation system and operate as binding regulatory thresholds.

The RDiT framework is appropriate for settings in which treatment occurs at a specific point in time, but the precise timing of treatment cannot be directly manipulated by the units under study (Aaltonen and Wattal 2025; Castellaneta et al. 2025). In our context, treatment is defined as the moment a city crosses a performance threshold that changes its evaluation regime: either the early-fulfillment threshold, after which the annual target is irrevocably secured, or the inevitable-failure threshold, after which meeting the target becomes mathematically impossible within the remaining days of the year.

Although local officials actively monitor air-quality trends, the exact day on which a city crosses either threshold is strongly influenced by short-term meteorological conditions (e.g., wind direction, temperature inversions, precipitation, and atmospheric circulation) that are plausibly exogenous to bureaucratic decision-making. These factors introduce stochastic variation in daily AQI realizations that local governments cannot *precisely* control. As a result, cities may narrowly achieve or narrowly miss threshold conditions on adjacent days despite similar enforcement effort, generating quasi-random variation in the timing of threshold crossing.

Formally, for a prefecture-level city c in year y, the threshold date d in RDiT is defined by one of the following conditions holding as of date d (Cao et al. 2025):

$$(\text{\# of days with AQI} \leq 100 \text{ until } d\text{-}1) + (\text{\# of days remaining since } d) < \textit{Target},$$

or, (# of days with AQI≤100 until d-1) ≥ *Target*.

where *Target* refers to the annual objective for days with an AQI of 100 or less. The term "of days remaining since d" is computed by subtracting the number of elapsed days (i.e., d-1) from the total days in the year (365 or 366). The first inequality delineates a scenario of "*inevitable failure*," where, from the beginning of the year up to day d-1, the performance of region c is so inadequate that even if the AQI are to remain at or below 100 for all subsequent days, the annual target will still be unattainable. The second inequality indicates "*early fulfillment*," meaning that region c has already fulfilled its annual AQI target prior to day d-1, thus making the air quality for the rest of the year inconsequential to the target's fulfillment.

In this context, from January 1 until the critical threshold date d, municipal bureaucrats will focus on improving air quality. Once d is reached, the incentives change significantly, leading to shifts in target completion status to either inevitable failure or early completion. To examine how prefecture-level cities respond to different environmental target completion statuses, we categorize the data into two sub-samples based on whether the targets assigned to city c are met: one for years when the environmental targets are not met ("environmental target failure years sub-sample") and another for years when the targets are achieved ("environmental target completion years sub-sample").

We then estimate the effect of threshold crossing on state responsiveness using the following RDiT specification:

$$Average\ Handling\ Time_{cyd} = \alpha + \beta D_{cyd} + f(t_{cyd}) + D_{cyd} \times f(t_{cyd}) + \gamma X_{cyd} + \varepsilon_{cyd} \quad (1)$$

where the subscripts c, y, and d represent the prefecture-level city c, the date d, and the year y, respectively; $Average\ Handling\ Time_{cyd}$ represents the logarithm of the average handling time for all pollution events that occurred on that day within the city; X_{cyd} encompasses a set of control variables, as defined early; t_{cyd} serves as a running variable, where negative (positive) values indicate days before (after) the defined threshold date (cutoff).[7] D_{cyd} is a binary variable indicating completion status, assigned a value of 1 if t_{cyd}

[7] For the cutoff of "early fulfillment", the calculation formula for the running variable is: t_{cyd} = *(# of days with AQI⩽100 until d-1) -Target*; For the cutoff of "inevitable failure", the calculation formula for the running variable is: t_{cyd} = *Target- [*(*# of days with AQI⩽100 until d-1*)+(*# of days remaining since d*)]

is zero or positive, and 0 if negative; the function $f(t_{cyd})$ represents a polynomial function of the running variable, whose interaction with D_{cyd} allows for different model estimates on either side of the threshold. The coefficient β of the variable D_{cyd} captures the treatment effect. Since the number of remaining days is usually greater in the failure year subsample, which allows for wider ranges of bandwidth selection. In the baseline setting, we calculate the MSE-optimal bandwidth proposed by Calonico et al. (2014) for failure and fulfillment groups with f(tcyd) being a local polynomial function with a third-order term under a uniform kernel. We cluster standard errors at the prefecture level.

FINDINGS

Descriptive Statistics

Table 1 reports summary statistics and pairwise correlations. The average AQI in our sample is approximately 76, indicating moderate air quality. The non-logged average complaint handling time ranges from 0.2 to 117 days, with a mean of 25 days, reflecting substantial variation in state responsiveness. There is also considerable heterogeneity in AQI target attainment across prefecture-level cities, indicating that most provinces assign targets that are ambitious yet feasible. Overall, 67.73% of city-year observations meet their annual air quality targets.

******* Table 1 about here*******

Tests for A Quasi-Randomized Assignment

The validity of RDiT research hinges on the continuity assumption. This assumption mandates that the running variable must transition smoothly across the threshold, ensuring no discontinuities or jumps in other covariates that could confound the treatment effect at the cutoff point. This continuity allows for the credible attribution of any discontinuities in the outcome variable precisely at the threshold to the effect of the treatment, rather than to underlying differences between the groups. This assumption mirrors the randomization process in experimental studies and has specific testable implications. Following Cunningham (2021), we conduct two standard tests to validate this assumption and ensure its reliability before proceeding with our regression analysis.

Continuity in the distribution of AQI

In RDiT studies, a critical concern is the potential for manipulation, where decision-making units might influence their assignments into treatment or control groups. Such manipulation would lead to a discontinuous distribution of the running variable at the cutoff, signaling that the quasi-random assignment is compromised. This discontinuity can introduce bias in estimating the treatment effect, as it suggests that the groups on either side of the cutoff are not comparable.

Following Cao et al. (2025), this study constructs the running variable based on the comparison between the number of days with AQI ⩽100 and the AQI target, which determines the cutoff point for the regression discontinuity design. Thus, as long as it can be demonstrated that municipal bureaucrats cannot precisely manipulate AQI values, they cannot manipulate the cutoff point either, ensuring the satisfaction of local randomness around the cutoff. Cao et al. (2025) also note that while municipal bureaucrats have some discretion in implementing emergency regulatory measures, their ability to influence local air quality is limited. Air quality is determined by a variety of factors, some of which are beyond the control of municipal bureaucrats, such as photochemical reactions, weather conditions, and air pollution from neighboring regions. The inability to precisely control AQI ensures the validity of the RDiT model, which relies on the assumption that municipal bureaucrats cannot *precisely* manipulate the running variable (Imbens and Lemieux 2008).

To further rigorously validate the local randomness assumption, following Cao et al. (2025), this study conducts the McCrary test on AQI data. Specifically, by examining the probability density function of AQI values, the continuity of the distribution around AQI = 100 is tested. If the density is found to be continuous at AQI = 100, it confirms the non-manipulation of the cutoff point and provides evidence for local randomness. Figure 1 displays the results of the McCrary test, showing a continuous distribution around the cutoff point. This continuity supports the validity of the quasi-randomized assignment between treatment and control groups.

******* Figure 1 about here *******

Continuity in the distributions of covariates

Another implication of the continuity assumption in RDiT research is that decision-making units near the cutoff are quasi-randomly assigned to either treatment or control group, akin to random assignment in experimental designs. The presence of continuity in covariates across the cutoff is crucial. It ensures that these units are comparable on other unobserved factors, which is essential for an accurate estimation of the treatment effect. Discontinuities in covariates might indicate that the assignment of individuals is not entirely random, thereby undermining the continuity assumption. Such discontinuities could introduce systematic differences in these variables across groups, leading to biased treatment effect estimates.

If the above assumption holds, according to Lee and Lemieux (2010), variables predetermined before the design, also known as predetermined covariates or control variables, should demonstrate continuity at the cutoff. We evaluate each predetermined covariate as a placebo outcome variable using valid inference methods to test for discontinuities. Since these covariates are unaffected by the intervention, the null hypothesis—that there is no discontinuity at the cutoff—should hold if the RDiT approach is valid. We employ these control variables to conduct continuity checks. The results of these tests, illustrated in Figure 2, demonstrate that the control variables are continuous at the cutoff. This continuity confirms that there are no systematic differences between the control and treatment groups, reinforcing the assumption that the assignment to treatment effectively functions as random at the threshold.

******* Figure 2 about here *******

RDiT Regressions

After validating our RDiT approach, we use regressions to analyze how municipal bureaucrats respond to stakeholder environmental complaints within our RDiT framework. Table 2 displays the regression results for two distinct scenarios: inevitable failure and "*early fulfillment*."

******* Table 2 about here*******

In the inevitable failure scenario, we observe a negative coefficient between the post-intervention period (*D*) and average handling time (Model 1: $\beta = -0.175$, $p < 0.01$). This suggests that once municipal bureaucrats realized they could not achieve their air quality index (AQI) targets, they expedited the handling of stakeholder complaints. Economically, the average handling time is reduced by 17.5%. Given that the mean value of average handling time is about 25 days, this translates to a reduction of 4.4 days on average in resolving stakeholder environmental complaints once municipal bureaucrats recognized their targets were unattainable. This result remains consistent when control variables are added to the model (Model 2).

In the early fulfillment scenario, we find a positive coefficient between *D* and average handling time (Model 3: $\beta = 0.215$, $p < 0.001$), indicating that once municipal bureaucrats achieved their AQI targets, they slowed down the handling time of stakeholder complaints. Economically, the average handling time increased by 21.5%, resulting in an average extension of 5.4 days in resolving stakeholder environmental complaints once targets were met. This result remains, with the inclusion of control variables in the model (Model 4).

Figures 3a and 3b provide graphical evidence from the baseline RDiT setup for the samples from failing and achieving years, respectively. The graphical evidence mirrors the regression results. Consequently, we find robust empirical support for our hypothesis.

******* Figures 3a and 3b about here *******

Additional Robustness Checks

To ensure the robustness of our findings, we conducted multiple robustness checks, including tests with alternative kernel and polynomial functions, a placebo cutoff analysis, a bandwidth sensitivity test, and subsample analysis using cases with detailed government-recorded enforcement outcomes.[8] Each of these tests (see Appendix 3) confirmed the consistency and reliability of our results.

Corroborative Evidence

In this section, we conduct several supplemental analyses, which provide corroborative evidence for the assumptions we made in our hypothesis development.

Air pollutions

Our theory assumes that municipal bureaucrats face inevitable failure to meet environmental targets, they are likely to intensify enforcement and complaint responsiveness in an effort to mitigate performance

[8] Not all complaint resolution records include *detailed* information on government enforcement outcomes.

shortfalls and avoid penalties. As a result, we expect to observe improvements in air quality and reductions in industrial emissions. Conversely, once targets are met early, bureaucrats may shift focus to other priorities, such as economic development, potentially at the expense of environmental oversight, resulting in worsening pollution outcomes.

Results from the prefecture-level city analysis (Table 3a) show that inevitable failure is associated with significant declines in SO_2 and NO_x emissions, consistent with intensified pollution control efforts. In contrast, early target fulfillment correlates with increased emissions of both pollutants, suggesting reduced environmental enforcement. Firm-level results (Table 3b) display similar patterns, further reinforcing our interpretation.

******* Tables 3a and 3b about here *******

These patterns corroborate our theoretical assumptions: when bureaucrats fall short of environmental targets, they respond by stepping up pollution control efforts; when targets are already met, bureaucratic attention wanes. This shift in pollution levels around performance thresholds provides external validation of the behavioral logic we attribute to variation in complaint responsiveness.

Bureaucratic attention to environmental issues

The behavioral mechanism we proposed suggests that bureaucrats engage in performance-conditional attention allocation, wherein they treat environmental targets as baseline thresholds to be met but not exceeded, allocating attention accordingly. If this mechanism holds, we would expect treatment effects to vary depending on the underlying level of bureaucratic attention to environmental issues. This heterogeneity is plausible, as some jurisdictions consistently prioritize environmental governance more than others. In cities where environmental issues receive sustained bureaucratic attention, responsiveness to complaints may remain relatively high regardless of target status. In contrast, cities with lower attention to environmental issues may exhibit more opportunistic behavior, slowing responses once targets are met, or accelerating them only when failure becomes politically costly.

To measure bureaucratic attention, we constructed a text-based proxy using annual government reports collected from government websites. We calculated the frequency of environment-related keywords, as detailed in Appendix 4, to gauge how prominently environmental issues appear in the local government's formal agenda. We then interact this measure with performance standing in our RDiT framework. We have conducted the analysis by incorporating interaction terms as specified in the following equation:

$$Average\ Handling\ Time_{cyd} = \alpha + \beta_1 D_{cyd} + \beta_2 D_{cyd} \times Environment\ Emphasis + f\left(t_{cyd}\right) + D_{cyd} \times f\left(t_{cyd}\right) + f\left(t_{cyd}\right) \times Environment\ Emphasis + D_{cyd} \times f\left(t_{cyd}\right) \times Environment\ Emphasis + \gamma X_{cyd} + \varepsilon_{cyd} \tag{2}$$

As shown in Table 4, the results support our expectations. In cities with higher bureaucratic attention, the responsiveness drop after early target fulfillment is significantly smaller, and the acceleration of complaint handling under inevitable failure is more pronounced. These patterns suggest that attention allocation indeed explains our hypothesized effect.

******* Table 4 about here *******

In sum, these findings provide corroborative evidence for the behavioral mechanism we assume in our theory development. Bureaucrats do allocate attention based on target status, consistent with the logic of performance-conditional attention. At the same time, this allocation is not uniform: variation in bureaucratic attention explains why some governments maintain responsiveness even when incentives weaken, while others respond more opportunistically.

DISCUSSION

Overview

Governments worldwide increasingly rely on public complaint systems to address environmental harms associated with corporate misconduct. Prior research on state responsiveness has largely emphasized structural explanations—such as regulatory capacity, formal accountability mechanisms, and bureaucratic organization—to explain when and how governments respond to citizen demands. While these perspectives have yielded important insights, they often treat responsiveness as a relatively stable feature of governance systems and pay limited attention to how bureaucrats dynamically reallocate attention under shifting performance incentives.

This study advances a different perspective by foregrounding the role of threshold-based performance evaluation in shaping state responsiveness. We argue that in performance-driven environmental governance systems, bureaucrats treat regulatory targets as binding thresholds rather than continuous objectives. As a result, responsiveness to environmental complaints varies systematically with officials' performance standing relative to these thresholds. When environmental targets are achieved early, bureaucrats strategically decelerate complaint handling and redirect attention toward alternative activities with higher expected evaluative returns. Conversely, when targets become unattainable but accountability pressures persist, bureaucrats increase responsiveness to complaints as a compensatory signal of diligence and compliance, aimed at shaping how failure is evaluated by higher-level authorities.

Using manually collected data on local environmental performance targets combined with a unique daily dataset of public environmental complaints from 189 prefecture-level cities in China between 2015 and 2019, we find strong support for this incentive-based account. Bureaucratic responsiveness to complaints varies sharply and predictably with officials' position relative to environmental thresholds. These shifts occur within the same jurisdictions and evaluation cycles and cannot be explained by changes in complaint volume, regulatory capacity, or institutional structure. Instead, they track changes in the marginal evaluative return to enforcement effort. Supplementary analyses further suggest that these responsiveness patterns are meaningfully conditioned by how much attention local governments allocate to environmental issues within their broader governance agendas.

While these findings offer new insight into when public complaints matter, they also come with limitations. Empirically, our setting—prefecture-level cities in China—offers a particularly clear case of threshold-based performance governance, but it may not capture the institutional diversity present in other regulatory contexts. Future studies could examine whether similar patterns of conditional responsiveness emerge in other performance-driven systems, such as environmental regulation in federal democracies or regulatory domains beyond the environment.

In addition, while our identification strategy allows us to causally estimate how responsiveness changes at performance thresholds, it does not directly observe the interpretive processes through which bureaucrats assess performance standing and adjust behavior. We document when responsiveness changes, but not the internal reasoning behind these shifts. Complementary qualitative research—such as interviews with frontline regulators or analysis of internal evaluation documents—could deepen understanding of how bureaucrats triage complaints under performance pressure.

Contributions

This study makes several theoretical contributions that deepen our understanding of state responsiveness, participatory governance, and performance-based regulation. First, we reframe state responsiveness as an incentive-contingent and temporally dynamic phenomenon. Prior research has largely explained variation in bureaucratic responsiveness through relatively static structural factors, such as regulatory capacity, legal mandates, institutional design, or political pressure (Frank et al. 2000; Marquis and Bird 2018; Tsai 2007; Yan et al. 2021; York et al. 2003). While these factors matter, they cannot account for why responsiveness fluctuates sharply within the same jurisdiction and evaluation cycle. Our findings show that responsiveness is not a fixed organizational trait but a behavior that varies predictably with bureaucrats' position relative to performance thresholds. By linking responsiveness to threshold-based evaluation regimes, we shift attention from cross-sectional institutional differences to within-unit variation driven by changing marginal incentives. This perspective highlights how the same bureaucratic apparatus can alternate between high responsiveness, withdrawal, and compensatory action over short time horizons, even when formal institutions remain unchanged.

Second, our research helps refine scholarly understanding of participatory environmental governance. Existing work often treats public complaints and stakeholder pressure as uniformly accountability-enhancing inputs that discipline firms and regulators alike (Delmas and Toffel 2008; Reid and Toffel 2009). Our results challenge this assumption by demonstrating that stakeholder voice is filtered through bureaucratic evaluative logic. Complaints exert influence when they align with periods in which enforcement effort can affect performance evaluations; they lose traction when targets are already secured and are reinterpreted as symbolic signals when failure is unavoidable. This finding reconceptualizes bureaucrats not as passive recipients of citizen input, but as interpretive agents who selectively engage with public demands based on incentive alignment. Participatory governance, in this view, is not simply a function of citizen mobilization or institutional openness, but an interaction between voice mechanisms and state incentive structures.

Third, we uncover an overlooked behavioral consequence of performance-based governance systems. Performance metrics are widely promoted as tools to enhance accountability, discipline effort, and improve policy outcomes. Our findings reveal a less appreciated dynamic: threshold-based metrics can unintentionally narrow bureaucratic attention and weaken sustained engagement with public concerns. Once targets are met, enforcement effort—and responsiveness to complaints—becomes a low-return activity, even when legitimate environmental problems persist. Conversely, when targets become unattainable, responsiveness may intensify, but for evaluative signaling rather than substantive problem-solving. This pattern highlights a broader tradeoff inherent in technocratic governance: systems designed to enforce compliance through measurable targets may inadvertently undermine continuous responsiveness, especially in policy domains where public input is meant to complement formal monitoring.

Policy Implications

Performance targets are powerful tools for environmental governance. They create clarity, mobilize bureaucratic effort, and provide measurable benchmarks for accountability. Yet our findings reveal an overlooked cost: when performance is defined strictly by numerical goals, bureaucratic attention tends to narrow around what is measured, often at the expense of what matters.

When bureaucrats are evaluated strictly on hitting numerical goals, they learn to manage not just outcomes, but attention. Once targets are met, they often scale back responsiveness to citizen complaints. When targets become unattainable, they may still act swiftly, but to signal diligence, not necessarily to solve root problems.

For policymakers, the message is clear: metrics don't just guide behavior, but also shape what gets ignored. If public complaints matter, governments must design evaluation systems that reward continued responsiveness, not just target attainment. This could involve building in random audits of post-target responsiveness to keep engagement active throughout the performance cycle.

More broadly, these findings call for a shift in how we think about accountability. True public accountability isn't just about meeting quotas. It's about staying engaged, even when the pressure to perform has technically passed. Responsive governance requires systems that value ongoing effort, not just final outcomes.

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Table 1. Descriptive Statistics and Correlations

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Average Handling Time	2.879	0.978										
2. Residual of SO_2	0.099	11.746	0.005									
3. Residual of NO_x	-0.068	9.681	0.009	0.380								
4. Maximum Temperature	21.071	10.873	0.031	-0.003	0.001							
5. Minimum Temperature	6.928	12.415	0.042	-0.002	0.002	0.889						
6. Average Wind Speed	2.180	0.900	-0.012	-0.001	0.001	-0.097	-0.111					
7. Average Precipitation	3.249	7.846	0.014	-0.001	0.004	0.110	0.215	0.027				
8. per capita GDP	10.754	0.543	-0.025	0.005	0.005	0.024	0.118	0.129	0.030			
9. The Share of Secondary Industry in GDP (%)	42.635	10.643	0.041	-0.002	0.000	0.063	0.136	-0.036	0.023	0.448		
10. Days Relative to Target Completion	-136.473	119.570	-0.000	0.008	0.019	0.131	0.128	-0.107	-0.003	-0.006	-0.008	
11. AQI	76.585	45.326	-0.002	0.215	0.322	-0.138	-0.157	-0.078	-0.185	0.031	0.120	-0.020

Table 2. RDiT Results

	Failure		Fulfillment	
	Model 1	Model 2	Model 3	Model 4
D	-0.175**	-0.177**	0.215***	0.219***
	(0.063)	(0.061)	(0.057)	(0.057)
Control Variables	NO	YES	NO	YES
Bandwidth	102	102	44	44
Kernel Function	Uniform			
RD Specification	Cubic Polynomials			
Observations	42,252	42,252	28,424	28,424

Notes: standard errors are reported in parentheses and are clustered at the prefecture level.
+ p< 0.1, * p<0.05, ** p<0.01, *** p<0.001

Table 3a. Prefecture-level Emission Evidence

	Residual of SO_2		Residual of NO_x	
	Failure	Fulfillment	Failure	Fulfillment
	Model 1	Model 2	Model 3	Model 4
D	-1.923**	1.634**	-1.609**	1.389**
	(0.730)	(0.556)	(0.523)	(0.523)
Control Variables	YES	YES	YES	YES
Bandwidth	85	45	103	52
Kernel Function	Uniform	Uniform	Uniform	Uniform
RD Specification	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials
Observations	53,808	56,872	63,314	63,458

Notes: standard errors are reported in parentheses and are clustered at the prefecture level.
+ p< 0.1, * p<0.05, ** p<0.01, *** p<0.001

Table 3b. Firm-level Emission Evidence

	Residual of SO_2		Residual of NO_x	
	Failure	Fulfillment	Failure	Fulfillment
	Model 1	Model 2	Model 3	Model 4
D	-1.715**	1.509*	-2.165*	2.484*
	(0.644)	(0.691)	(0.919)	(1.001)
Control Variables	YES	YES	YES	YES
Bandwidth	102	39	111	43
Kernel Function	Uniform	Uniform	Uniform	Uniform
RD Specification	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials
Observations	1,042,956	700,320	1,117,998	755,165

Notes: standard errors are reported in parentheses and are clustered at the prefecture level.
+ p< 0.1, * p<0.05, ** p<0.01, *** p<0.001

Table 4. The Impact of Environmental Pressure on Environmental Complaints

Environment Emphasis =	Ecological environment attention is higher than the average	Ecological environment attention is higher than the median
	Failure	
	Model 1	Model 2
*D*Environment Emphasis*	-0.193**	-0.194**
	(0.068)	(0.074)
D	-0.036	-0.031
	(0.040)	(0.044)
Control Variables	YES	YES
Observations	40,506	40,506
Bandwidth	102	102
	Fulfillment	
	Model 3	Model 4
*D*Environment Emphasis*	-0.138**	-0.153**
	(0.053)	(0.054)
D	0.228***	0.242***
	(0.038)	(0.041)
Control Variables	YES	YES
Observations	26,966	26,966
Bandwidth	44	44
RD Specification	Cubic Polynomials	Cubic Polynomials

Notes: standard errors are reported in parentheses and are clustered at the prefecture level.
+ p< 0.1, * p<0.05, ** p<0.01, *** p<0.001

Figure 1. McCrary Test of AQI

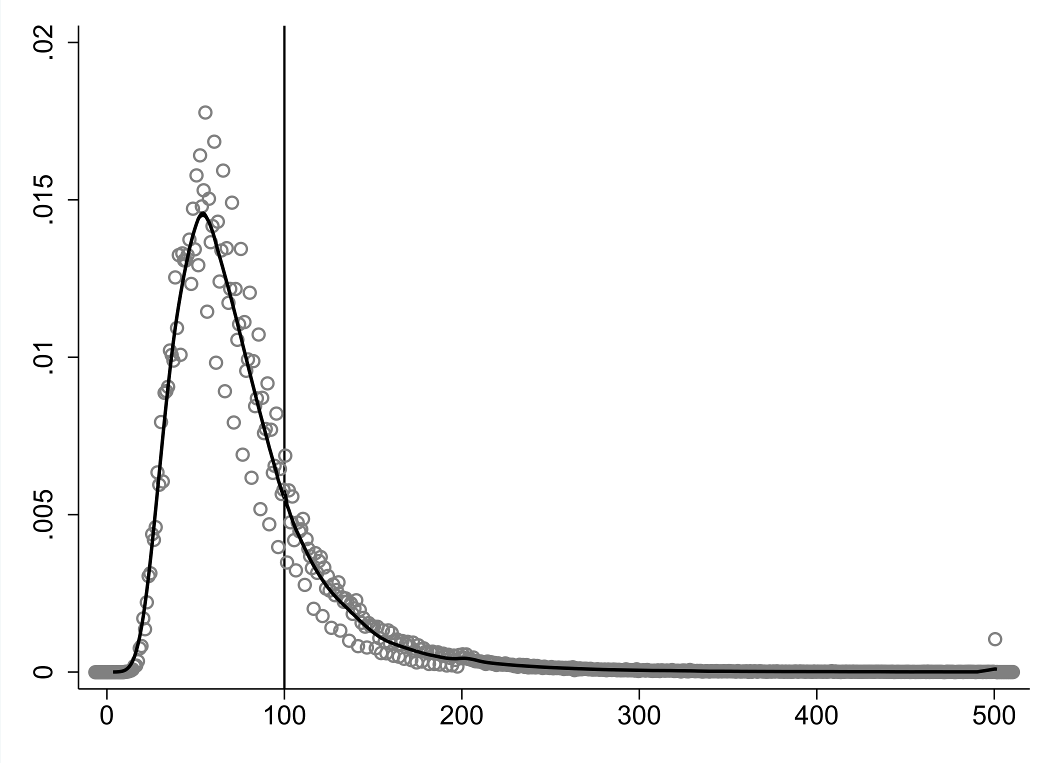
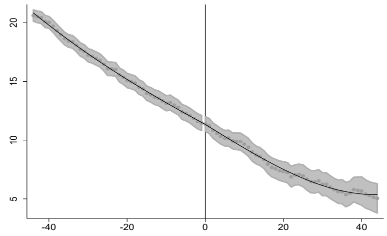
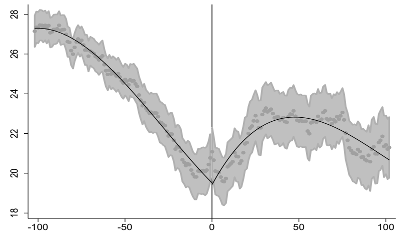


Figure 2. Continuity in the Distributions of Covariates

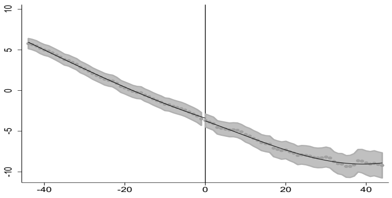
Fulfillment years	Failure years

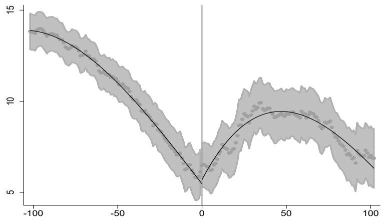
Maximum temperature



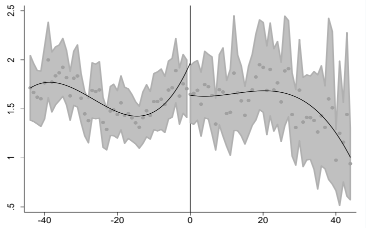


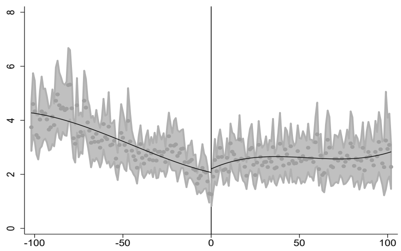
Minimum temperature



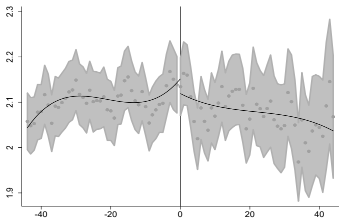


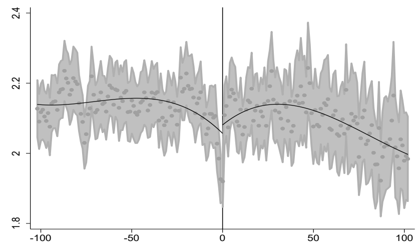
Average precipitation



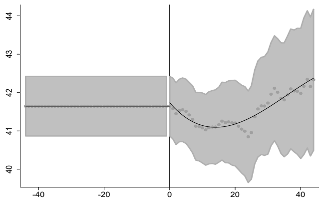


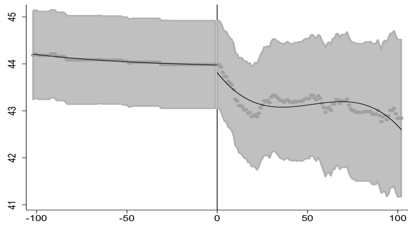
Average wind speed



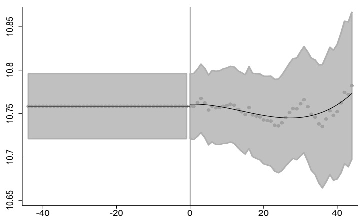


Secondary industry





GDP per capita



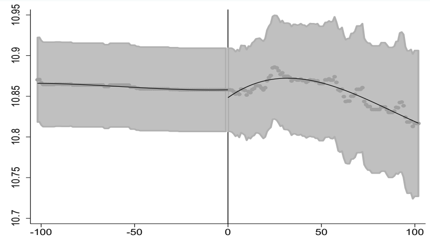


Figure 3a. Average Handling Time for Stakeholder Complaints in Failure Years

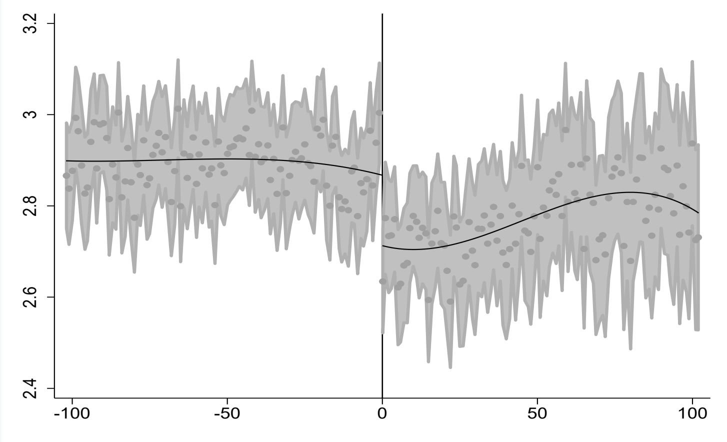
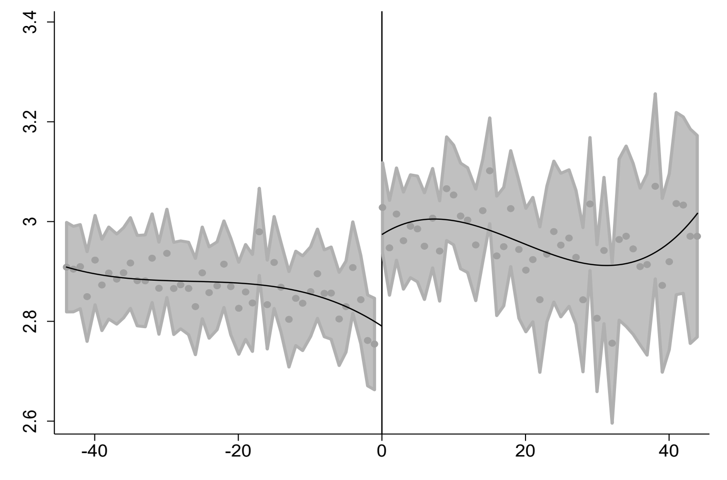


Figure 3b. Average Handling Time for Stakeholder Complaints in Fulfillment Years



Appendix 1. Examples of the Environmental Complaints

No. 160728350600020079
Creation Time: 2016/7/28 9:54:29
Event Processing End Time: 2016/8/16 8:39:56
Geographic Location Information: Xinshe Industrial Zone, Fengshan Town, Hua'an County
Administrative Division Code Being Processed: 350629
Name of Administrative Division Unit in Charge: Hua'an County Environmental Protection Bureau
Report Content Information: Zhangzhou Heming Wood Industry Co., Ltd. has been emitting dense smoke lately, polluting the surrounding environment.

No. 180827361124010133
Creation Time: 2018/8/27 3:03:59
Event Processing End Time: 2018/9/20 15:24:56
Geographic Location Information: Development Avenue, Chating Industrial Park, Shangrao County, Shangrao City, Jiangxi Province
Administrative Division Code Being Processed: 361121
Name of Administrative Division Unit in Charge: Shangrao County Environmental Protection Bureau
Report Content Information: Jiangxi Xinjinye Industrial Co., Ltd., located in Chating Industrial Park, discharges large amounts of smoke with severe pungent odor 24 hours a day! The village downstream is completely engulfed in smoke dust! It seriously affects the health of nearby residents! I was woken up by the smoke at 2:30 AM!

No. 170725350200021790
Creation Time: 2017/7/25 23:47:00
Event Processing End Time: 2017/8/1 10:01:28
Geographic Location Information: Dongliao Village, Xinxu Town, Xiang'an District, Xiamen City
Administrative Division Code Being Processed: 350213
Name of Administrative Division Unit in Charge: Xiang'an District Environmental Protection Bureau
Report Content Information: Dongjiang Environmental Protection Technology Co., Ltd. located in Dongliao Village, Xinxu Town, Xiang'an District of Xiamen is emitting waste gas, please handle it.

No. 181007440112011471
Creation Time: 2018/10/7 22:25:59
Event Processing End Time: 2018/12/3 11:38:02
Geographic Location Information: Yunxin Road, Huangpu District, Guangzhou City, Guangdong Province
Administrative Division Code Being Processed: 440100
Name of Administrative Division Unit in Charge: Guangzhou Municipal Environmental Protection Bureau
Report Content Information: Since 21:00 on October 7, 2018, a strong burnt plastic odor has enveloped the neighborhoods around Yunxin Road in Huangpu District, making people feel dizzy and nauseous! These smells originate from heavily polluting firms such as Guangzhou Hongxin Plastics and Hongchang Electronic Materials, which use large amounts of chemical agents and raw materials in production, generating large volumes of toxic organic gases harmful to human health, such as benzene, toluene, xylene, acetone, dibutyl phthalate, epichlorohydrin, methyl isobutyl ketone (MIBK), etc. Although some companies have installed purification equipment, the high annual operation cost of purification exceeds the cost of the equipment itself. To save operational expenses and exploit the difficulty of collecting gas evidence, these companies often secretly discharge at night while residents are asleep, a practice that has continued since 2014; causing residents within 1 kilometer, including a 100,000 people community (including Liu Village, Zhonghai Yucheng, Yucheng Kindergarten, Yuquan School with 60 classes, Liu Village Elementary School, Weicai Kindergarten, Golden Dream, Time Spring Tree, Lingnan Yazu, etc.), to suffer from varying degrees of rhinitis, pharyngitis, nausea, etc., putting the health of 100,000 people at risk! We earnestly request the relevant departments to impose severe penalties!

Appendix 2. Case Studies of Effective Responses to Stakeholder Environmental Complaints

Case of Swift Action Against an Illegal Chemical Factory in Huaihua, Hunan Province, China:

On April 23, 2023, the Huaihua Municipal Bureau of Ecology and Environment received a complaint from the public stating: “A chemical plant in Xupu County has been secretly starting operations in violation of regulations since December 2022. It engages in the processing of chemical pharmaceuticals and has secretly commenced production. During production, toxic waste gases are emitted, and the surrounding trees have shown signs of withering. Additionally, wastewater is directly discharged into the river beside the factory through a hidden pipe located under a reservoir in the factory area.”

Following the report, the Huaihua Municipal Bureau of Ecology and Environment responded promptly. After deliberation by the leadership team, it was decided to escalate the handling of this public complaint according to the “Notice on Further Standardizing the Handling of Complaints and Reports” issued by the Hunan Provincial Department of Ecology and Environment. The enforcement personnel were instructed to proceed with the upgraded handling of the case.

On-site inspection by enforcement personnel

On April 24, the Huaihua City Comprehensive Administrative Law Enforcement Detachment, in conjunction with the Xupu Branch of the Municipal Bureau of Ecology and Environment, conducted an on-site investigation. The investigation confirmed that some of the public complaints were true. The reported enterprise, located inside an abandoned brick factory in Jiangping Community, Dajiangkou Town, Xupu County, was an unauthorized feed additive processing plant, managed by an individual named Huang. The enterprise commenced construction in December 2022 and began production in February 2023, mainly producing colistin (a feed additive). The enterprise had not obtained the necessary business license or environmental assessment documentation. The boiler emissions produced during manufacturing were discharged into the environment after rudimentary dust removal. No signs of tree withering were observed around the plant area. Cooling water that overflowed and some workshop floor wash waters were discharged into the external environment through the original culvert of the brick factory; no concealed pipes were found at the site. The enforcement officers ordered an immediate halt to production.

The Xupu County Bureau of Industry and Information Technology implemented a power cut-off to the enterprise

Based on the preliminary investigation, the Huaihua Municipal Bureau of Ecology and Environment transferred the case to the Xupu Sub-bureau for further handling. The Sub-bureau immediately initiated a formal investigation. It was found that Huang's feed additive processing plant commenced construction and production without obtaining the necessary environmental impact assessment approvals, suspected of violating Article 25 of the “Environmental Impact Assessment Law of the People’s Republic of China.” According to Article 31 of the same law, "If a construction unit fails to submit for approval the environmental impact report or form as required by law, or fails to resubmit or reevaluate the environmental impact report or form as stipulated in Article 24, and unlawfully commences construction, the competent environmental authorities at the county level or above shall order a halt to construction and impose a fine ranging from 1% to 5% of the total investment of the construction project depending on the severity of the violation and the consequences of the harm caused." Additionally, in accordance with Article 28 of the "Administrative Penalty Law of the People's Republic of China" which states "When administering a penalty, the administrative authority must order the party to correct or rectify the illegal act within a specified time."

On April 25, the Xupu Sub-bureau issued a "Decision to Order a Halt to Construction" from the Huaihua Municipal Bureau of Ecology and Environment, demanding an immediate stop to construction and pollution discharge. On the same day, a letter was sent to the Xupu County Bureau of Industry and Information Technology to cut off the power supply for production purposes, and in accordance with the procedural law, an "Administrative Penalty Decision" was timely issued to the enterprise by the Huaihua Municipal Bureau of Ecology and Environment, deciding to impose a fine of 20,400 RMB and ordering the dismantling of the relevant production equipment. The enterprise has since dismantled the relevant production equipment and paid the fine on May 9.

Before and after the dismantling of some production facilities

This case originated from the China Ecological Environment Complaints and Reports Management Platform, fully leveraging the significant potential of complaints and reports as valuable resources. The Huaihua Municipal Bureau of Ecology and Environment rigorously implemented the requirements of the "Notice on Further Standardizing the Handling of Complaints and Reports" issued by the Hunan Provincial Department of Ecology and Environment. They actively engaged in the work related to "Elevating the Handling of Key Reported Cases," promptly dispatched personnel to conduct on-site investigations, and decisively took closure measures against the violating enterprise. By swiftly cutting off the pollution source, they effectively safeguarded the legitimate environmental rights and interests of the public [9].

[9] In Chinese only: https://mp.weixin.qq.com/s/tLvaf712o1gGGtr6qGMDQQ

Appendix 3. Additional Robustness Checks

Alternative kernel functions: In our regression discontinuity design (RDD) analysis, we tested the robustness of our results by varying the kernel functions used to weight the data. Kernel functions in RDD assign non-negative weights to observations based on their proximity to the cutoff, significantly affecting the estimation of intervention effects. We used common kernels like the Triangular, which weights observations linearly closer to the cutoff, and the Epanechnikov, which weights observations quadratically and is more efficient in terms of mean squared error. By switching to these kernels and assessing their impact on our results as shown in Table A1, we confirmed that our findings remain robust across different local weighting scenarios.

Table A1. Alternative Kernel Functions

	Model 1 Failure	Model 2 Fulfillment	Model 3 Failure	Model 4 Fulfillment
D	-0.196**	0.240***	-0.207***	0.247***
	(0.062)	(0.056)	(0.062)	(0.057)
Control Variables	YES	YES	YES	YES
Bandwidth	102	44	102	44
Kernel Function	Epanechnikov	Epanechnikov	Triangular	Triangular
RD Specification	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials
Observations	42,252	28,424	42,252	28,424

Notes: standard errors are reported in parentheses and are clustered at the prefecture level.
+ p< 0.1, * p<0.05, ** p<0.01, *** p<0.001

***Alternative polynomial functions*:** To check if our results are sensitive to the polynomial functions used, we employed an alternative quadratic model. Our findings, as detailed in Table A2, remained consistent, indicating that our results are robust to the choice of polynomial specification.

Table A2. Alternative Polynomial Functions

	Model 1 Failure	Model 2 Fulfillment	Model 3 Failure	Model 4 Fulfillment	Model 5 Failure	Model 6 Fulfillment
D	-0.156**	0.196***	-0.164**	0.204***	-0.153**	0.190***
	(0.058)	(0.053)	(0.059)	(0.052)	(0.058)	(0.051)
Control Variables	YES	YES	YES	YES	YES	YES
Bandwidth	102	44	102	44	102	44
Kernel Function	Epanechnikov	Epanechnikov	Triangular	Triangular	Uniform	Uniform
RD Specification	Quadratic Polynomials	Quadratic Polynomials	Quadratic Polynomials	Quadratic Polynomials	Quadratic Polynomials	Quadratic Polynomials
Observations	42,252	28,424	42,252	28,424	42,252	28,424

Notes: standard errors are reported in parentheses and are clustered at the prefecture level.
+ p< 0.1, * p<0.05, ** p<0.01, *** p<0.001

Placebo Cutoffs: Additionally, we conduct a placebo test by selecting an alternative cutoff point to reexamine the treatment effect. This test is crucial for verifying that the observed effects are truly due to the treatment and no other confounding factors. The results of this analysis, which confirmed that the treatment effects are not present at the placebo cutoff (see Table A3), further strengthen the credibility of our conclusions.

Table A3. Placebo Cutoffs

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	-3	-2	-1	1	2	3
Target Completion Status		Failure				
D	0.010	-0.001	-0.070	-0.099	-0.010	-0.083
	(0.061)	(0.061)	(0.061)	(0.062)	(0.062)	(0.062)
Control Variables	YES	YES	YES	YES	YES	YES
Bandwidth	102	102	102	102	102	102
Kernel Function	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
RD Specification	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials
Observations	42,252	42,252	42,252	42,252	42,252	42,252
Target Completion Status		Fulfillment				
D	-0.077	-0.054	0.072	0.061	0.037	-0.050
	(0.057)	(0.057)	(0.057)	(0.058)	(0.060)	(0.061)
Control Variables	YES	YES	YES	YES	YES	YES
Bandwidth	44	44	44	44	44	44
Kernel Function	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
RD Specification	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials	Cubic Polynomials
Observations	28,424	28,424	28,424	28,424	28,424	28,424

Notes: standard errors are reported in parentheses and are clustered at the prefecture level.
+ p< 0.1, * p<0.05, ** p<0.01, *** p<0.001

Bandwidth Sensitivity Test: Next, we conducted a Bandwidth Sensitivity Test to assess the robustness of our results to changes in the bandwidth size around the cutoff. This test evaluates whether the estimated treatment effects are consistent across different ranges of data near the cutoff point. By varying the bandwidth and recalculating the effects, we can determine if our findings are stable or if they fluctuate with adjustments in the scope of data considered. This sensitivity analysis is crucial to confirming that our results are not artifacts of a particular bandwidth choice but are reliable indicators of the treatment effect across various data ranges. The results, presented in Table A4, demonstrate that our findings are robust across these varied bandwidths.

Table A4. Bandwidth Sensitivity Analysis

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Target Completion Status					Fulfillment					
D	0.243***	0.233***	0.240***	0.233***	0.225***	0.218***	0.214***	0.207***	0.207***	0.194***
	(0.057)	(0.057)	(0.057)	(0.057)	(0.057)	(0.057)	(0.057)	(0.057)	(0.057)	(0.056)
Bandwidth	39	40	41	42	43	45	46	47	48	49
Control Variables					YES					
Kernel Function					Uniform					
RD Specification					Cubic Polynomials					
Observations	25,781	26,319	26,853	27,374	27,903	28,943	29,450	29,949	30,438	30,927
Target Completion Status					Failure					
	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18	Model 19	Model 20
D	-0.183**	-0.185**	-0.189**	-0.182**	-0.179**	-0.176**	-0.170**	-0.165**	-0.171**	-0.169**
	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)	(0.061)	(0.062)	(0.062)
Bandwidth	97	98	99	100	101	103	104	105	106	107
Control Variables					YES					
Kernel Function					Uniform					
RD Specification					Cubic Polynomials					
Observations	40,468	40,842	41,197	41,553	41,897	42,586	42,940	43,285	43,629	43,963

Notes: standard errors are reported in parentheses and are clustered at the prefecture level.
+ p< 0.1, * p<0.05, ** p<0.01, *** p<0.001

***Complaint Handling Time with Confirmed Government Enforcement**:* Due to data limitations, final enforcement outcomes are not consistently disclosed for all pollution complaints. However, a subset of our sample includes detailed records documenting substantive government actions taken in response to complaints against polluting enterprises. These cases allow us to observe not only the procedural handling of complaints but also concrete enforcement outcomes. Upon verifying violations, environmental authorities may impose a range of sanctions depending on the severity of the offense, including enterprise shutdowns, production suspensions, rectification orders, on-site corrections, monetary fines, retroactive environmental assessments, forced relocations, or referrals to judicial authorities. This subset illustrates that the complaint system functions as both a public participation channel and an enforcement trigger. To further test robustness, we isolate and analyze complaints linked to verified enforcement actions. These cases offer a cleaner measure of bureaucratic responsiveness, as the recorded handling time reflects genuine regulatory follow-through. Our findings remain consistent in this filtered sample, reinforcing the credibility of our main results regarding variation in complaint handling under different target attainment statuses.

Table A5. Subsample Analysis

	Model 1	Model 2
Target Completion Status	Failure	Fulfillment
D	-0.150**	0.158**
	(0.056)	(0.058)
Control Variables	YES	YES
Bandwidth	115	51
Kernel Function	Uniform	
RD Specification	Cubic Polynomials	
Observations	33,259	22,696

Notes: standard errors are reported in parentheses and are clustered at the prefecture level. + p< 0.1, * p<0.05, ** p<0.01, *** p<0.001

Appendix 4. Dictionary for Textual Analysis of Local Governments' Attention to Environmental Issues

Primary Indicator	Keywords
Environmental Protection Category	环境保护(Environmental Protection)、环保(Environmental Conservation)、环境(Environment)、污染防治(Pollution Control)、治污(Pollution Treatment)、污染治理(Pollution Management)、治理污染(Manage Pollution)、绿化(Greening)、绿色(Green)、绿色发展(Green Development)、低碳(Low Carbon)、减排(Emission Reduction)、生态(Ecology)、污水处理(Wastewater Treatment)、污水治理(Wastewater Management)、环境影响评价(Environmental Impact Assessment)、环保督察(Environmental Protection Inspection)、生活垃圾无害化(Harmless Treatment of Domestic Garbage)、环境质量(Environmental Quality)、空气质量(Air Quality)
Environmental Pollution Category	污染(Pollution）、排污(Discharge of Pollutants)、化学需氧量(Chemical Oxygen Demand)、二氧化硫(Sulfur Dioxide)、二氧化碳(Carbon Dioxide)、颗粒物(Particulates)、$PM_{2.5}$、氨氮(Ammonia Nitrogen)、氮氧化物(Nitrogen Oxides)、大气污染(Air Pollution)、污染物(Pollutants)、扬尘(Dust Emission)、降尘(Dust Deposition)、废物(Waste)、垃圾(Garbage)、排放(Emissions)、空气(Air)、PM_{10}、雾霾(Smog)、温室气体(Greenhouse Gases)、农业面源污染(Agricultural Non-point Source Pollution)
Energy Consumption Category	水耗(Water Consumption)、能耗(Energy Consumption)、消耗(Consumption)、资源(Resources)、节约(Conservation)、集约(Intensive Use)、能源(Energy)、新能源(New Energy)、清洁能源(Clean Energy)、煤改电(Coal to Electricity)、煤改气(Coal to Gas)、集中供热(Central Heating)、再利用(Reuse)、循环(Recycling)、可再生(Renewable)、高耗能(High Energy Consumption)、节能减排(Energy Conservation and Emission Reduction)、节水灌溉(Water-saving Irrigation)、工业节水(Industrial Water Conservation)、绿色制造(Green Manufacturing)、降耗(Consumption Reduction)
Coordinated Development and Joint Environmental Governance	京津冀(Beijing-Tianjin-Hebei)、环保协同(Environmental Protection Coordination)、协同发展(Coordinated Development)、协同治理(Collaborative Governance)、部门合作(Departmental Cooperation)、公众参与(Public Participation)、交界地区(Border Areas)、共享(Sharing)、转移(Transfer)、联防(Joint Defense)、联控(Joint Control)、联治(Joint Management)、区域协调发展(Regional Coordinated Development)、流域综合治理(Integrated River Basin Management)、区域合作(Regional Cooperation)、优势互补(Complementary Advantages)、合作共赢(Win-Win Cooperation)、共同推进(Joint Advancement)、保护协作(Protection Collaboration)、协同治污(Coordinated Pollution Control)、可持续(Sustainable)、联防联控(Joint Prevention and Control)、地方立法(Local Legislation)、环境监管机制(Environmental Regulatory Mechanisms)、绿色治理(Green Governance)
Development Concepts	低碳经济(Low-carbon Economy)、循环经济(Circular Economy)、绿色经济(Green Economy)、生态文明示范区(Ecological Civilization Demonstration Zone)、生态城市(Ecological City)
Green Living	生活垃圾(Household Waste)、绿色消费(Green Consumption)、绿色出行(Green Travel)、厕所革命(Toilet Revolution)
Other Categories	蓝天(Blue Sky)、碧水(Clear Waters)、净土(Pure Land)、绿地(Green Spaces)、森林(Forests)、河长(River Chief)、河长制(River Chief System)、湖长(Lake Chief)、湖长制(Lake Chief System)、留绿(Preserve Greenery)、留白(Preserve Open Spaces)、宜居(Livability)、植树(Tree Planting)、造林(Afforestation)、绿水青山(Green Waters and Lush Mountains)、蓝天白云(Blue Sky and White Clouds)、生态屏障(Ecological Barrier)、水源涵养(Water Conservation)、水土保持(Soil and Water Conservation)、开发(Development)、土壤(Soil)、退耕还林(Returning Farmland to Forest)、天然林(Natural Forest)、山林修复(Mountain and Forest Restoration)、植树造林(Tree Planting and Afforestation)、水源涵养(Water Resources Conservation)