

THE ROLE OF PROGRAM EVALUATION IN CHINA'S ENVIRONMENTAL POLICY

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SUMMARY

Evaluating government programs is a relatively new idea for China's government and policymakers. Many policies and programs continue to be evaluated based on procedural standards rather than on actual performance. This Article investigates how program evaluations and the knowledge they produce find their way into China's environmental policy. It argues that without procedurally adequate, well-managed evaluation programs, the value of China's various policy pilots as learning exercises would be greatly reduced, presenting current case studies and explaining patterns in China's recent environmental policies. This China discourse could help international readers understand program evaluation and its relationship to environmental law, and thus its practical significance in modern climate governance.

In the past decade, China has increasingly sought mechanisms to curb emissions that cause climate change. In 2011, the National Development and Reform Commission (NDRC), China's top economic planning agency and the leading ministry in charge of climate policy, determined that market-based instruments would be economically efficient¹ alongside more traditional regulations. It took the bold step of launching a national emissions trading scheme (ETS) and opening up the retail electricity market with market-driven energy prices. When combined with additional market-focused governmental actions,² these approaches could have wide-ranging economic, social, and environmental benefits,³ and are currently being tested in various pilot programs throughout China.

But while market-based climate mitigation measures are emerging as part of China's future climate policy package,

they remain underused tools for stimulating meaningful participation from the private sector. This is partly because of a lack of information⁴ and a lack of understanding about the value of information disclosure: for example, it is often hard for individual project owners to systematically adjust their energy production, as there is no publicly available catalogue of the subsidy payout order.⁵ Even if such a catalogue were available, obstacles exist to designing and carrying out climate mitigation measures in practice, including the complex social, political, economic, legal, and institutional conditions that even the most seasoned central policymakers can neither fully anticipate nor control.⁶ A perception that certain types of trading may be inaccessible for mid- and small-sized private companies and individual buyers further complicates the pursuit of a healthy emissions market.⁷

1. Ying Shen, *Crossing the River by Groping for Stones: China's Pilot Emissions Trading Schemes and the Challenges for a National Scheme*, 18 ASIA PAC. J. ENV'T L. 1, 4 (2015).

2. Including but not limited to the NDRC's *energy use* trading scheme and the National Energy Administration's (NEA's) *green certificate* trading scheme, the Ministry of Industry and Information Technology's *carbon credits* trading scheme for new energy vehicles, the Ministry of Ecology and Environment's (MEE's) *pollutant discharge rights* trading pilot projects, and *water rights* trading pilot projects. In 2019, the NDRC proposed a national public resource trading platform that would include trading of carbon emissions quotas, pollutant discharge rights, energy use rights, and other public resources. However, questions remain regarding the possible overlaps between these programs and the ETS, and other non-market-based measures, such as the environmental protection tax program, and the renewable electricity guaranteed buyout policy.

3. John Byrne & Yu-Mi Mun, *Rethinking Reform in the Electricity Sector: Power Liberalisation or Energy Transformation*, in *ELECTRICITY REFORM: SOCIAL AND ENVIRONMENTAL CHALLENGES* 48 (Njeri Wamukonya ed., United Nations Environment Programme 2003).

4. PETER H. SCHUCK, *WHY GOVERNMENT FAILS SO OFTEN: AND HOW IT CAN DO BETTER* 210 (2014).

5. Butie Xulie (补贴序列) [catalogue of the subsidy payout order]. Citing a litany of difficulties, a recent analysis by BloombergNEF estimated that only about 18% of solar and 2% of wind projects in China were built without subsidies in 2019. See Justin Wu, *Wu: When the Going Gets Tough for Asia's Energy Transition*, BLOOMBERGNEF (Feb. 25, 2020), <https://about.bnef.com/blog/when-the-going-gets-tough-for-asias-energy-transition>.

6. SCHUCK, *supra* note 4, at 229.

7. For example, the six issuers of China's first batch of carbon-neutral bonds are all state-owned utilities and infrastructure companies; China's renewable electricity quota system—equivalent to a renewable portfolio standard (RPS)—stipulates minimum levels of regional renewable energy consumption for each provincial-level administrative area. Electricity generated by renewable energy resources is split into two streams: guaranteed electricity and marketable electricity. The former will be purchased first according to the benchmark on-grid pricing, and the latter will be subsidized in the form of a premium paid to wind and solar producers by the Renewable Energy Development Fund. However, local governments and grid companies facing shortages and national expectations of delivering cheaper power from non-

Added to such difficulties are the complexity of the governmental institutions tasked with making policy recommendations and the sheer scope of their responsibilities.⁸ Along with other government agencies, the NDRC simultaneously conducts research, designs pilot programs, supervises market mechanisms, makes climate policy to improve China's air quality, pushes forward renewables expansion, and caps energy consumption, all with limited resources.⁹

Despite the overall market design and governance capacity-building challenges,¹⁰ the type of information on how to choose among different programs and models without clear guidance on the standards that a good project should meet, and on how to do so across geopolitical areas that suffer from social, demographic, and economic inequities, which is passed among the NDRC and other unspecified decisionmakers, is to a great extent tacit.¹¹ It is information passed along a network that is deeply rooted in China's political culture and institutional logic.¹² This politicized institutional network alone is too powerful to be credible.

In 2021, China unveiled its newest five-year plan (FYP), which outlined future steps in limiting greenhouse gas (GHG) emissions including a massive power industry overhaul.¹³ The flood of money into green projects through the distribution of subsidies and through green investment and financing must be carefully designed to manipulate the incentives of market actors to achieve China's climate goals.¹⁴ Yet, the government repeatedly experiences systematic difficulties in providing detailed evidence on the most

observable pathways between environmental program activities and outcomes.¹⁵

This Article argues that China should create a standardized system for evaluating climate mitigation pilot programs. As a centrally ruled state that is different from western democratic countries, China needs to rely on credible theory and carefully designed program evaluation in order to produce sound policy interventions in the future and to guide further specific international/transnational cooperation on tackling climate change. Moreover, as China begins to create cross-border green projects with its "Belt and Road Initiative," covering mostly developing regions in India, Mesopotamia, Northern Africa, and Europe,¹⁶ which have yet to bear fruit, it opens up debates on China's climate governance quality and the rationale behind China's aggressive energy-efficiency and global warming goals.

China claims that, given its characteristics of a non-traditional capitalist economy, its ability to mobilize businesses, organizations, and individual forces to work toward an integrated "top mission" is unique.¹⁷ However, more direct evidence on the claims that China has made is needed before it could serve as a positive example and boost climate actions in the developing world.

The Article draws upon environmental program evaluation theory to address the issues of information disclosure, market participation, and government-business relationships and to discuss why environmental law is a good field in which to introduce program evaluation. Such theories indicate that it would be more effective to create a decisionmaking process that includes a clear program evaluation system in order to produce collectively valued tools and credible policies for meeting public emissions reduction aims.¹⁸ Alongside strong regulatory capacity, particularly monitoring capacity, a cogent evaluation plan is needed to ensure the smooth operation of all environmental programs.

Program evaluation can be simply defined as "systematic procedures used in seeking facts or principles,"¹⁹ "the systematic collection of information about the activities, characteristics, and outcomes of programs to make judgments about the program, improve program effectiveness, and/or inform decisions about future programming,"²⁰ "a form of appraisal, using valid and reliable research methods, that examines the processes or outcomes of an

hydro renewable sources tend to reduce the annual average hours of wind and solar power utilization subject to guaranteed purchase in favor of more hours for market transactions, knowing that this would bring down the average electricity price even more—both in retail market and government-run auctions. Thus, wind and solar power operators have no choice but to deliver astoundingly low feed-in prices on the heels of low tariffs and fewer hours of guaranteed purchase while struggling with a tight cash flow, and to wait for often delayed subsidy payments.

8. Miranda Schreurs, *Multi-Level Climate Governance in China*, 27 ENV'T POL'Y & GOVERNANCE 163 (2017).
9. Newly constructing an ETS is a complex undertaking that requires a significant amount of financial, technical, and knowledge resources. China's central government agencies, while sitting at the pinnacle of authority, are relatively small as measured by the size of the civil service. See Yuenyuen Ang, *Counting Cadres: A Comparative View of the Size of China's Public Employment*, 211 CHINA Q. 676 (2012). Detailed information about the main functions of departments of the NDRC can be found on the NDRC's website, NDRC, *Bureaus and Departments*, <https://en.ndrc.gov.cn/aboutndrc/BandD/> (last visited Oct. 24, 2021).
10. KATJA BIEDENKOPF ET AL., POLICY DIFFUSION THROUGH CAPACITY BUILDING AND PROJECT INTERACTION IN THE CASE OF GREENHOUSE GAS EMISSIONS TRADING IN CHINA (2016), http://earthssystemgovernance.net/nairobi2016/wp-content/uploads/2016/11/4_Biedenkopf_VanEynde_Walker.pdf.
11. STEVEN W. POPPER ET AL., CHINA'S PROPENSITY FOR INNOVATION IN THE 21ST CENTURY: IDENTIFYING INDICATORS OF FUTURE OUTCOMES 9 (2021).
12. Jessica C. Teets et al., *The Incentive to Innovate? The Behavior of Local Policy-makers in China*, 22 J. CHINESE POL. SCI. 505, 513 (2017).
13. Hongqiao Liu et al., *Q&A: What Does China's 14th "Five Year Plan" Mean for Climate Change?* CARBON BRIEF (Mar. 12, 2021), <https://www.carbonbrief.org/qa-what-does-chinas-14th-five-year-plan-mean-for-climate-change>.
14. Michel Callon, *Civilizing Markets: Carbon Trading Between in Vitro and in Vivo Experiments*, 34 ACCT. ORGS. & SOC'Y 535 (2009); see also Nicolas Koch et al., *Causes of the EU ETS Price Drop: Recession, CDM, Renewable Policies, or a Bit of Everything?—New Evidence*, 73 ENERGY POL'Y 676 (2014).

15. Alex Y. Lo & Michael Howes, *Power and Carbon Sovereignty in a Non-Traditional Capitalist State: Discourses of Carbon Trading in China*, 15 GLOB. ENV'T POL. 60 (2015).
16. Christian Shepherd, *China Pours Money Into Green Belt and Road Projects*, FIN. TIMES (Jan. 26, 2021), <https://www.ft.com/content/8ec30baf-69e9-4d73-aa25-13668dcb659f>.
17. Jizhong Liliang Ban Da Shi (集中力量办大事) [setting aside a certain amount of budget and administrative and human capacity in order to tackle the primary task].
18. JOHN BRADEN ET AL., ENVIRONMENTAL PROGRAM EVALUATION: A PRIMER 295, 321, 351 (Gerrit J. Knaap & Tschangho J. Kim eds., Univ. of Illinois Press 1998).
19. ROBERT L. BARKER, THE SOCIAL WORK DICTIONARY 398 (5th ed. 2003).
20. MICHAEL Q. PATTON, UTILIZATION-FOCUSED EVALUATION 23 (2008).

organization that exists to fulfill some social need,”²¹ or “systematic inquiry that describes and explains the policies’ and program’s operations, effects, justifications, and social implications.”²²

While informed by the more traditional outcome-oriented evaluation design or the so-called scientific approach of program evaluation research, the Article takes a broad approach when defining program evaluation. It argues that the scientific approach is based on a narrow, performance-focused school of thought, and that prospective analysis (ex ante analysis) of environmental policy should also serve as an important link to the environmental program evaluation system.²³

In addition to impact evaluation, formative, process, and efficiency evaluation designs conducted at specific points in the policy and program cycle have been found to be highly relevant to successful policy and effective program implementation from an evidence-based point of view,²⁴ especially in the case of the environment. Over time, many of the practical approaches and techniques for environmental programs have been used effectively to respond to criticism leveled against program evaluation by program administrators, legislators, and other government officials, and they have received substantial positive feedback.²⁵

Drawing upon this theory, I will answer the following questions. First, how do China’s top planners currently identify priorities and make design decisions, and how do relevant stakeholders translate decisions into real-world practices? Second, how might China’s relevant government agencies use program evaluation to create standardized assessments and improve environmental conditions? Third, how can climate-related government agencies and programs move closer to an ideal system of accountability?

Answering these questions is crucial for building connections between different environmental programs both inside China and beyond. Reports analyzing activities of involved individuals and organizations, identifying why a certain program succeeded or failed, and why benefits did

or did not exceed costs, may inform other countries that seek to replicate similar programs, thereby building international/transnational best practices.²⁶

In Part I, I start with a comparative study of Shenzhen and California in order to examine how program evaluation could flourish in the environmental sector. Crucially, this will reveal the similarities and differences between environmental program evaluation and various environmental management tools and identify applications for China’s environmental programs, which I explore in Part II. Part III then analyzes the main reasons for the common limitations of China’s evaluation approaches and how it can do better.

In Part IV, I consider implications for China of the understanding of “program” and “evaluation” and in particular their relationship to law, and argue why they are important in the context of international/transnational environmental and climate policies. The concluding section proposes a research agenda of China’s discourse on environmental program evaluation that could build on this Article’s findings.

I. China’s Need for Environmental Program Evaluation

A. Comparing Shenzhen With California

Shenzhen is known as a testing ground for President Deng Xiaoping’s “reform and opening-up” policy, which blends “socialism with Chinese characteristics.”²⁷ As China’s first special economic zone, it embraces market capitalism and the right of provincial-level economic administration, which has consequently attracted increasing numbers of migrants from mainland China as well as foreign investors.

Shenzhen is also considered a model by China’s climate governance and energy regulatory authorities.²⁸ It has China’s first citywide carbon market²⁹—the Shenzhen regional pilot ETS—a fairly positive test case of China’s plans to control carbon emissions, which has grown quickly and outperformed other regional carbon markets,³⁰ with the highest trading volume and turnover³¹ despite a small market size.

21. RICHARD M. GRINNELL & YVONNE A. UNRAU, *SOCIAL WORK RESEARCH AND EVALUATION: FOUNDATIONS OF EVIDENCE-BASED PRACTICE* 553 (2008).

22. MELVIN M. MARK ET AL., *EVALUATION: AN INTEGRATED FRAMEWORK FOR UNDERSTANDING, GUIDING, AND IMPROVING PUBLIC AND NONPROFIT POLICIES AND PROGRAMS* 3 (2000).

23. Some environmental program evaluation studies take a narrow approach and define “program evaluation” as retrospective analysis (ex post analysis) only, distinguishing evaluation from “evaluability” assessment, needs assessment, logic model, performance measurement, risk assessment, and other forms of economic assessments of costs and benefits. See Per Mickwitz, *A Framework for Evaluating Environmental Policy Instruments: Context and Key Concepts*, 9 *EVALUATION* 415, 421 (2003); see also Mikael Hildén, *Time Horizons in Evaluating Environmental Policies*, *NEW DIRECTIONS FOR EVALUATION*, Summer 2009, at 9, 14.

24. For a thorough examination of performance-based and evidence-based movements of improving government effectiveness, see Carolyn J. Heinrich, *Evidence-Based Policy and Performance Management: Challenges and Prospects in Two Parallel Movements*, 37 *AM. REV. PUB. ADMIN.* 255 (2007).

25. BRADEN ET AL., *supra* note 18, at 35; Petrus Kautto & Jukka Similä, *Recently Introduced Policy Instruments and Intervention Theories*, 11 *EVALUATION* 55 (2005); Debra J. Rog, *When Background Becomes Foreground: Toward Context-Sensitive Evaluation Practice*, *NEW DIRECTIONS FOR EVALUATION*, Fall 2012, at 25; Andy Rowe, *Sustainability-Ready Evaluation: A Call to Action*, *NEW DIRECTIONS FOR EVALUATION*, Summer 2019, at 29.

26. BIEDENKOPF ET AL., *supra* note 10.

27. Xuanmin Li et al., *Xi Charts Shenzhen’s New Mission*, *GLOB. TIMES* (Oct. 14, 2020), <https://www.globaltimes.cn/content/1203507.shtml>.

28. *China Applauded for Leading International Efforts in Tackling Climate Change*, *XINHUA NET* (Sept. 13, 2018), http://www.xinhuanet.com/english/2018-09/13/c_137465951.htm.

29. Jingjing Jiang et al., *The Construction of Shenzhen’s Carbon Emission Trading Scheme*, 75 *ENERGY POL’Y* 17 (2014).

30. Ke Zhang, *Qi Ge Shidian Tan Jiaoyi Leiji Chengjiao 71 Yi, Shi Siwu Kuo Zhi Shiyon, Huagong, Gangtie he Minbang [The Seven Pilot Carbon Markets Have a Cumulative Turnover of 7.1 Billion Yuan, and the Carbon Market Planned to Be Extended to Petroleum, Chemical, Steel, and Civil Aviation in the 14th Five-Year Plan Period]*, *DI YI CAIJING [FIRST FIN.]*, (Sept. 19, 2019), <https://www.yicai.com/news/100337566.html>.

31. Hairong Wang, *Shenzhen Tan Shichang Mai Ru Shi Yiyuan Julebu, Leiji Chengjiao E Zai Quanguo Qi Ge Tan Jiaoyi Shidian Shengshi Zhong Paiming Di Yi [Shenzhen Carbon Market Into the 1 Billion Yuan Club, With a No.1 Cumulative Turnover in the Country’s Seven Carbon Trading Pilot Prov-*

Situated in a special economic zone within Guangdong Province, the Shenzhen regional pilot ETS offers a unique case study to analyze the possibilities for bridging local carbon markets with other existing or planned ETSs³² because, while it resides under the Guangdong regional pilot ETS, it has its own sets of regulatory design, enforcement, and trading practices. Shenzhen has the most diverse ETS, covering about 26 different sectors, while Guangdong focuses on four sectors at the opposite extreme from Shenzhen.³³ Shenzhen also has pioneered cross-regional cooperation by launching the Shenzhen-Baotou (a city in the Inner Mongolia Autonomous Region) ETS.³⁴ It has even attempted to strengthen communication and interaction with ETSs abroad, with an eye to “further expansion and the creation of a global carbon market”³⁵ in the future.

In 2013, the Shenzhen Municipal Development and Reform Commission (DRC) and the California Air Resources Board (CARB) signed a memorandum of understanding.³⁶ As a result, the two organizations have officially established communication and cooperation on the ETS since then, including a series of information exchange and training workshops.³⁷ A comparative study of Shenzhen DRC³⁸ and CARB, and their climate policy mix, may shed some light on the issue of building effective climate governance systems. Both regions are backed by a notable high-tech industry and growing service sector,³⁹ and both ETS markets are regulated by dedicated ETS bills passed through local legislation, which provides more legal stability.

However, unlike California, the Shenzhen local government has no particular reputation in the field of environmental policy, and the level of environmental information disclosure and public participation is limited. For example, allocation plans of the Shenzhen regional pilot ETS since 2013 have not been made publicly available, and no formal evaluation has been conducted, except yearly government-funded research programs.⁴⁰ In preparation of the adop-

tion of a national ETS, the Shenzhen DRC increasingly encourages both internal and external capacity-building initiatives⁴¹ focusing on data-gathering, emissions verification, market monitoring, compliance, and enforcement. However, policy and program monitoring capacity-building is largely neglected in practice,⁴² with no mention of environmental justice studies on the Shenzhen DRC and Ecology and Environment Bureau (EEB) websites. Current ecological poverty alleviation efforts are project-based political campaigns, with Shenzhen as the savior of remote regions from severe poverty⁴³; and yet income inequalities and relative poverty within Shenzhen remain significant, and socioeconomic improvement and community capacity-building are slow to hit the policy agenda.⁴⁴

A good model for effective program evaluation can be found in California’s Global Warming Solutions Act (Assembly Bill (A.B.) 32).⁴⁵ California has been a historical leader in evaluating environmental policy and programs through an environmental justice lens.⁴⁶ A.B. 32 requires CARB to evaluate policies with reference to factors including California’s economy, environment, and public health, equity between regulated entities, reliability of the electricity supply, and conformity with other environmental laws.⁴⁷ The Economic and Allocation Advisory Committee and the Environmental Justice Advisory Committee worked closely with CARB to refine methodologies, ensure the social effectiveness and environmental justice delivered by A.B. 32, and help inform measure-specific analysis of initiatives such as the California cap-and-trade regulation.

The environmental justice dimension of A.B. 32 was further enhanced by Senate Bill 535 and A.B. 1550, which directed that at least 25% of funds received from the GHG Reduction Fund go to projects located within and benefiting disadvantaged communities, and at least an additional 10% go to low-income households or communities.⁴⁸ A.B. 32’s provisions for evaluation of California’s climate initiative affirm that risk assessment, and more generally the design of major regulatory activities (e.g., climate miti-

inces and Cities], SHENZHEN SHANG BAO [SHENZHEN BUS. DAILY] (July 26, 2018), <http://www.tanjiayoi.com/article-24532-1.html>.

32. Jiang et al., *supra* note 29, at 21.

33. JOSH MARGOLIS ET AL., PAULSON INSTITUTE, CARBON EMISSIONS TRADING: ROLLING OUT A SUCCESSFUL CARBON TRADING SYSTEM (2015), <http://www.paulsoninstitute.org/wp-content/uploads/2015/09/5-Emissions-Trading-EN-final1.pdf>.

34. INTERNATIONAL CARBON ACTION PARTNERSHIP (ICAP), EMISSIONS TRADING WORLDWIDE: STATUS REPORT 2021 (2021), <https://icapcarbonaction.com/en/icap-status-report-2021>.

35. Slobodan Perdan & Adisa Azapagic, *Carbon Trading: Current Schemes and Future Developments*, 39 ENERGY POL’Y 6040, 6052 (2011).

36. According to Assembly Bill 32 legislation, CARB is the lead agency responsible for the implementation of a series of clean energy policies. *See also* Press Release, CARB, California and Shenzhen, China, Sign Agreement to Cooperate on Fighting Climate Change (June 18, 2013), <https://ww2.arb.ca.gov/news/california-and-shenzhen-china-sign-agreement-cooperate-fighting-climate-change>.

37. BIEDENKOPF ET AL., *supra* note 10, at 14.

38. In early 2019, the ETS-related responsibilities in Shenzhen were transitioned from the Shenzhen Municipal DRC to the Ecology and Environment Bureau (EEB) as a result of government restructuring across China.

39. Wenfu Tang et al., *Satellite Data Reveal a Common Combustion Emission Pathway for Major Cities in China*, 19 ATMOSPHERIC CHEMISTRY & PHYSICS 4269, 4279 (2019).

40. ICAP, *supra* note 34, at 150.

41. BIEDENKOPF ET AL., *supra* note 10.

42. *Id.* at 16.

43. *Socialist System’s Advantages, CPC Leadership Key to China’s Miraculous Poverty Alleviation Success*, GLOB. TIMES (Feb. 25, 2021), <https://www.global-times.cn/page/202102/1216489.shtml>.

44. Stefan Gravemeyer et al., *Poverty in Shenzhen* (Center for International Economics, Working Paper No. 2010-04, 2010), https://www.researchgate.net/profile/Thomas_Gries/publication/254441547_Poverty_in_Shenzen/links/0f31753b5442834375000000.pdf; *see also* Yanhui Xu & Ziyu Gong, *Social Quality, Community Capacity, and Capability Poverty of Urban Residents in Shenzhen, China*, 7 INT’L J. SOC. QUALITY (2017).

45. *AB 32 Global Warming Solutions Act of 2006*, CARB (Sept. 28, 2018), <https://ww2.arb.ca.gov/resources/fact-sheets/ab-32-global-warming-solutions-act-2006>.

46. COLLEEN CALLAHAN ET AL., UCLA LUSKIN CENTER FOR INNOVATION, PATHWAYS TO ENVIRONMENTAL JUSTICE: ADVANCING A FRAMEWORK FOR EVALUATION 1, 20 (2012), https://innovation.luskin.ucla.edu/wp-content/uploads/2019/03/Pathways_to_Environmental_Justice.pdf.

47. *Climate Change Controversy in California: A Summary of California Climate Bill AB 32 and Ballot Proposition 23 (Part I of II)*, ECOMETRICA (Sept. 16, 2010), https://ecometrica.com/article/climate_change_controversy_in_california_part_i [hereinafter *Climate Change Controversy in California*].

48. California Environmental Protection Agency, *California Climate Investments to Benefit Disadvantaged Communities*, <https://calepa.ca.gov/EnvJustice/GHGInvest/> (last visited Oct. 24, 2021).

gation policies), can be revised to include environmental justice strategies and to consider often overburdened disadvantaged communities. This is a step beyond merely mitigating a specific type of air pollution. Rather, California looks at long-term impacts as well as infrastructure and energy use. During the November 2010 elections, 61% of Californians voted to keep A.B. 32 in effect, which showed the significant grassroots support for climate change legislation in California.⁴⁹

B. *The Benefits of Pilot Programs and the Merits of China's Approach*

The advantages of China's current approach to greening the economy are many. China's various pilot programs promote constructive dialogue between program owners, local authorities, and higher-level policymakers on "evidence about what works,"⁵⁰ without investing too much effort in the often fruitless task of measuring program success with precision, especially given the difficulty of agreeing on metrics and the lack of sufficient high-quality data.

In addition to making decisive contributions to the evolution of the regulation by testing regulatory theories and assumptions from the bottom up, China's policy pilots can further reduce the administrative and related costs of launching new policy or program initiatives nationwide. By taking advantage of trial policies or programs imposed on some but not all regulated entities, relevant authorities and program leaders can take bolder steps, knowing that the risk of market disruption or wasted capacity in case of failure will be limited.

Fragmented regional pilot programs also have more flexibility in complying with set environmental regulations. Different regional pilot programs with different economic designs can share best practices and provide valuable information and lessons about what kinds of adjustments and improvements are needed, which might further development of the as-yet-untested countrywide program in a relatively short period of time.⁵¹ Comprehensive evaluation programs and endless hearings would slow the whole process down.

Moreover, experience generated from local environmental policy pilots or programs may be useful in informing law and policy by showing where complementary climate mitigation measures are needed. In the local experimental phase, the rules that induce policy variation temporarily are flexible enough to avoid national bans of certain procedures or trading products. For example, Shenzhen was engaged in closed beta testing of Central Bank's digital currency electronic payment, while the national government continues to offer no recognition of bitcoin and other

cryptocurrencies as legal payment and cracks down on its trading. Local authorities, also, have been giving "special deference" to the development of such experiments⁵² informally in the regional pilots until it gets formalized by subsequent local or national laws. This is just one example of "laws [being] framed as reversible and temporary" in policy pilots.⁵³ Regardless of the outcome, these pilots and experimental data developed in the real world will benefit China and also allow other countries to share China's road maps to carbon neutrality.

Although local experiments should be considered an important step in tackling climate change, this Article does not advocate further expansion of pilot programs as a one-size-fits-all solution into every corner of the nation without ways to evaluate their effectiveness. While President Xi described the tension between innovation and practice as "galloping with steady steps"⁵⁴ when referring to China's industrial upgrading and legal reform, the criteria defining "steady steps" remains unclear.

C. *Why Does China Need Environmental Program Evaluation?*

China's environmental pilot programs are not sufficient by themselves. Industry claims about the effects of proposed rules often seem reactive, poorly supported, and lacking in credibility. For example, under the Shenzhen ETS, the number of allowances allocated to a covered firm depends on its chosen production decisions over the compliance period, which "causes covered facilities with relatively low emissions intensities to increase both electricity output and emissions relative to their levels under business as usual."⁵⁵ This raises questions about the unintended yet perverse effect of market participants rushing to meet their targets under major environmental programs.⁵⁶

Similarly, in 2017 and early 2018, China's solar photovoltaic (PV) industry experienced a massive installation surge in response to generous government subsidies. This development was followed immediately by the launch of the pivotal "531" policy at the end of May 2018, which sought to control the growth of major solar PV projects by phasing out subsidies. The experience, dubbed "China's solarcoaster,"⁵⁷ caused great uncertainty and panic across the solar PV industry.

49. Daniel A. Farber, *California Climate Law—Model or Object Lesson?*, 32 *PACE ENV'T L. REV.* 492, 494 (2015). A list of companies, Californian organizations, and individuals supporting California A.B. 32 is provided at *Climate Change Controversy in California*, *supra* note 47.

50. Jiang et al., *supra* note 29, at 18.

51. Sebastian Heilmann, *From Local Experiments to National Policy: The Origins of China's Distinctive Policy Process*, 59 *CHINA. J.* 1 (2008), <https://www.journals.uchicago.edu/doi/abs/10.1086/tcj.59.20066378>.

52. Colleen V. Chien, *Rigorous Policy Pilots: Experimentation in the Administration of the Law*, 104 *IOWA L. REV.* 2313, 2332 (2018/2019), https://heinonline.org/hol/cgi-bin/get_pdf.cgi?handle=hein.journals/ilr104§ion=63.

53. *Id.* at 2318.

54. Ti Ji Bu Wen (蹄疾步稳) [galloping with steady steps].

55. Lawrence H. Goulder et al., *China's Unconventional Nationwide CO₂ Emissions Trading System: The Wide-Ranging Impacts of an Implicit Output Subsidy* 11, 40 (National Bureau of Economic Research, Working Paper No. 26537, 2019), https://www.nber.org/system/files/working_papers/w26537/w26537.pdf.

56. Jiaxuan Xu et al., *Shenzhen Shi Tan Jiaoyi Tixi de Zhuyao Wenti He Zhengce Jianyi* [Main Problems and Policy Proposals of Shenzhen's Emissions Trading System], 3 *ENV'T & SOC'Y* 47-48 (2016), <https://wenku.baidu.com/view/a5ed21eb094e767f5acfa1c7aa00b52acec79ccc?fr=xueshu>.

57. *China's Solarcoaster: From Tariffs to Trade War*, *POWER TECH.* (Oct. 31, 2018), <https://www.power-technology.com/features/chinas-solarcoaster-tariffs-trade-war/>.

At present, the government performs program evaluation only in response to direct and emerging issues—pollution discharge, increased energy consumption, poor air quality, and so on—while climate change is not solely about environmental violations and energy waste. No systematic evaluation protocol is in place for different entities to follow while accessing their own needs; problematically, the current situation disadvantages marginalized communities because governmental elites may decide such communities are not a priority for program evaluation or, if induced to evaluate the program, may rely on evaluation criteria that downplay the problem. Additionally, the majority of evaluation programs appear to be responsive to financial, performance management, and trust crises, and governance problems “rising at the time.”⁵⁸

Most of the time, government-originated pilots may, worryingly, place signs of what might not work well or last long at a disadvantage relative to temporary false prosperity, in order to guarantee continuous development quotas, subsidies, and government-channeled investment funds in the years ahead.⁵⁹ This confirmation bias has been shown to be prevalent where failures in pilot programs are often tacitly swept under the rug and seldomly face public scrutiny.⁶⁰

Several clarifications are worth making in relation to the above. First, what is examined here is claimed to be a systemic phenomenon, which focuses on agency activities and the role of institutions instead of ordinary people. This Article argues that China’s existing processes and procedures of creating and implementing environmental policy need to be rethought, reframed, and reconstructed, as they seem to affect policy change inconsistently and only on a temporary basis. The existing processes and procedures, furthermore, prioritize short-term benefit over long-term environmental impact and are too politicized and instrumentalized to be rigorous.

A classic example of these inadequacies is the coal-to-gas scandal in the winter of 2017-2018.⁶¹ It illustrates what happens in a central, top-down climate governance system where people are not consulted about climate-related policies that affect them. It also illustrates why China needs a system of public involvement in decisionmaking.⁶² Given China’s election system and control of the central government over personnel and the overall policy agenda, this should not be considered surprising.

In this analysis, however, program evaluation by officials and public participation by ordinary citizens are framed as having complementary functions, rather than being locked in an adversarial relationship of officials versus the people. “The framing above should be considered as much a statement of hope, at least at a broad systemic level, as it is an analysis of existing conditions.”⁶³ At the same time, it is still too early to talk about independent third-party evaluations in regard to accessing agency activities, since China’s government authorities do not disclose specific steps to realign priorities in the field of climate governance. On one hand, the authorities finally understand that public participation and information disclosure are necessary, and on the other, they continue to discuss development of the carbon market and the electricity retail market without an effective mechanism that links market information to investors’ decisionmaking.⁶⁴

Perhaps most important, China’s government institutions are resistant to democratic participation, including external evaluation, because they often see citizen and third-party input as a direct challenge to state power.⁶⁵ This fear is firmly embedded in China’s political culture, and exacerbates the difficulty of reaching consensus on appropriate evaluation methods. While this Article is based on an analysis of the roles of institutions, analyzing the role of private individuals could also provide important insights that can help the public and Western world understand China’s complex policy transfer and diffusion processes.

As with any political cause that is attempting to achieve departure from its previous path, China’s policy innovations necessitate more discussion, justification, and evaluation than innovations by private individuals and companies.⁶⁶ Program evaluation has the potential to enhance relevant authorities’ ability to anticipate costs and risks before policies are fully implemented, to address environmental and energy inequalities, to avoid wasting government funds and scarce resources, and to advance better treatment options in the future.

Second, this Article is primarily concerned with program evaluation and, more specifically, environmental program evaluation for formulating and implementing new policies and programs to tackle climate change. It is worth repeating the importance of pilot programs underlying

58. Jessica C. Teets, *The Politics of Innovation in China: Local Officials as Policy Entrepreneurs*, 51 ISSUES & STUD. 79, 94 (2015).

59. *Id.*

60. *Id.* at 87; see also Thomas Heberer & Anja Senz, *Streamlining Local Behaviour Through Communication, Incentives, and Control: A Case Study of Local Environmental Policies in China*, 40 J. CURRENT CHINESE AFF. 77, 87, 105 (2011).

61. *Qi Qian Kuai Yi Che Mei Shao San Nian, Shao Qi Zhi Gou Yi Nian! Nongcun Mei Gai Qi Youdian Gui [7,000 RMB of Coal That Would Last for 3 Years, Burning Gas Only Enough for a Year—Coal-to-Gas in Rural Areas Is a Little Bit Expensive]*, ZHONGGUO NENGYUAN BAO [CHINA ENERGY NEWS] (Feb. 22, 2019), <https://baijiahao.baidu.com/s?id=1626135052721034808&wfr=spider&for=pc>.

62. ANASTASIA RONIOTES ET AL., A HANDBOOK ON THE PUBLIC PARTICIPATION PROCESS IN THE MEDITERRANEAN 43 (2015).

63. Lewis Husain, *Logics of Government Innovation and Reform Management in China* 1, 19 (STEPS Centre, Working Paper No. 85, 2015), <https://open-docs.ids.ac.uk/opendocs/handle/20.500.12413/13897>.

64. Guofei Wang, *Zhongguo Guojia Tan Shichang Xinxi Gongkai: Shijian Mishi Yu Zhidu Suzao [Information Disclosure of Chinese National Carbon Market: Practical Lose and Institutional Model]*, JIANGHAN LUNTAN (July 21, 2020), <https://wenku.baidu.com/view/f5ab001f504de518964bcf84b9d528ea80c72f3?fr=xueshu>; see also Ziyuan Zhao, *Dianli Jiaoyi Zhongxin Xinxi Pulu Luanxiang Pinchu [Exclusive—Power Trading Center Information Disclosure Chaos]*, ZHONGGUO NENGYUAN BAO [CHINA ENERGY NEWS] (May 22, 2021), <https://baijiahao.baidu.com/s?id=1700432706844540951&wfr=spider&for=pc>.

65. See China’s Foreign Ministry Spokesperson Zhao Lijian’s Regular Press Conference (June 21, 2021), <http://m.news.cctv.com/2021/06/21/AR-TIZJFUt2Dn78JD0BbwfWrm210621.shtml>.

66. Carter Bloch & Markus M. Bugge, *Public Sector Innovation—From Theory to Measurement*, 27 STRUCTURAL CHANGE & ECON. DYNAMICS 133, 140 (2013).

ing China's approach to reshaping itself to deal with the changing context and emerging climate challenges, and China's skepticism of "real" democracy and China's tradition of sidestepping public participation and information disclosure in policymaking. In most cases, these rationalizations hold across levels of government and different policy areas, but it would be shortsighted to claim that there are not other important factors that should be considered.

On one hand, the flexibility in policy formulation and implementation at China's local level is largely reflected in the field of environmental policies.⁶⁷ While this benefits subnational climate actions on the whole, the limited minority rights and similarities of lessons learned, and mistakes made,⁶⁸ across widely differing conditions are unmistakable. The political significance of environmental policies in relation to China's entire policy context has also been addressed in the literature.⁶⁹

On the other hand, the emphasis of the central government on transforming "soft" environmental targets to "hard" performance control does not necessarily translate into successful environmental policies.⁷⁰ Environmental program evaluations will play a specific role here, both in rebalancing the continued expansion of environmental law into different aspects of life and many different kinds of government agencies,⁷¹ and in breaking through an already-agreed value orientation of state centralization⁷² and strong government agenda control, given environmental change being claimed as "something new under the sun" in environmental studies.⁷³

Lastly, the comparator of California's program evaluation efforts can help reveal both the problems in China's overall approach to program implementation and the issues within Shenzhen, an area that has had some success with environmental policy pilots, and yet different levels of local authorities in different jurisdictions will surely influence the dynamics of decisionmaking processes and procedures. As for Shenzhen, it failed to assess links between its environmental measures and improvements in the quality of people's lives, as well as the cost of program failure. The regulatory philosophy of "looking on the bright side"⁷⁴ diminished Shenzhen's ability to learn lessons from the failure of other programs.

That said, domestic contexts need to be carefully considered and direct "transplants" of strategies like environmental impact assessment are not always the solution. Shenzhen and California have very little in common in terms of governance, economic structure, and historical priorities with regard to environmental policy. For example, China's government may set different policy-specific priorities for different policies or, in some cases, for similar policies in different regions. "Impacts on the community" may not be a top priority of the Shenzhen regional pilot ETS, but it can be a high priority when it comes to the emissions mitigation policy in the rural area. "Energy security" may seem to be an outdated criterion, but it remains vital given Guangdong's growing electricity demands.⁷⁵

In addition, unlike California, Shenzhen has limited experience in market-oriented instruments because of its centrally planned economy. Three decades of economic reform have shifted the role of competent authorities from market dominator to market regulator and created so-called significant freedom within a regime of strong supervisory macro-control, yet Shenzhen remains very different from a mature market economy.⁷⁶

The ecological impact of this greater level of supervision and control can be seen, for example, in the case of restrictions on new car licenses except for new energy vehicles in China's major cities including Shenzhen. The regulatory philosophy behind this bundled arrangement is that when consumers purchase a certain product in short supply, like an extra vehicle in one of China's busiest cities, consumers will need to match this purchase with investments that are considered socially beneficial by the government. A similar approach here would be the "double counting" of both direct and indirect emissions from purchased electricity, heat, or steam in China's ETS. Under such design, regulators require both the generators and end-users to surrender allowances for the same emissions.⁷⁷

Herein lies a problem. While it is possible to regulate products such as extra cars, it is not the same to require customers to pay extra for products like electricity, as it has no substitute and demand for electricity is somewhat "inelas-

67. Heberer & Senz, *supra* note 60, at 86.

68. *Id.* at 87; see also Husain, *supra* note 63, at 18.

69. Heberer & Senz, *supra* note 60, at 93-94.

70. Husain, *supra* note 63, at 18-19.

71. Farber, *supra* note 49.

72. John A. Donaldson, *China's Administrative Hierarchy: The Balance of Power and Winners and Losers Within China's Levels of Government*, in *ASSESSING THE BALANCE OF POWER IN CENTRAL-LOCAL RELATIONS IN CHINA* (John A. Donaldson ed., Routledge 2016).

73. John R. McNeill, *SOMETHING NEW UNDER THE SUN: AN ENVIRONMENTAL HISTORY OF THE TWENTIETH-CENTURY WORLD* (THE GLOBAL CENTURY SERIES) (2001).

74. At the risk of many uncertainties, China believes the perhaps inefficient or ineffective pilot programs are in fact the most efficient and effective way of generating information for solving environmental problems. Most of the time, pilot programs or demonstration projects are considered as a green light in China, as the government has not yet determined a single pilot program or demonstration project as a failure.

75. Tao Wu, *Guangdong Zai Xian Gongdian Jinzhang, Tongdiao Zuigao Fube Yi Chao Qunian Zuigao Shuiping* [Guangdong Maximum Circuit Load Has Exceeded Last Year's Highest Level], XINHUA SHE [XINHUA NEWS AGENCY] (May 25, 2021), <https://power.in-en.com/html/power-2388264.shtml>; see also Chuanming Zhang, *Guangdong Quedian He Shi Liao* [The Shortage of Electricity in Guangdong—When Will It End?], SHOU DIAN XINGXING [SOLD STARS] (May 25, 2021), <https://baijiahao.baidu.com/s?id=1700695867676855614&wfr=spider&for=pc>.

76. For example, if a liquor distributor wants to buy 10 bottles of alcohol from Kweichow Moutai Co., China's largest liquor maker based in Guizhou Province, the distributor would simultaneously need to buy 5,000 RMB worth of fresh produce from poverty-stricken areas in Guizhou; this is to alleviate poverty, according to local government policies. Here, local governments are in a unique position, bundling the popular Moutai liquor with local fresh produce. Also, for the recent collapse of the Guangdong retail electricity market, see *Guangdong Duo Jia Minying Shou Dian Gongsi Lianming Shangshu Huyu "Ting Shi"* [A Number of Private Electricity Companies Jointly on the Book Called for "Suspension of the Market," in Guangdong], SHOU DIAN XINGXING [SOLD STARS] (June 29, 2021), <https://www.in-en.com/article/html/energy-2305522.shtml>.

77. Yingying Zeng et al., *Electricity Regulation in the Chinese National Emissions Trading Scheme (ETS): Lessons for Carbon Leakage and Linkage With the EU ETS*, 18 *CLIMATE POL.* 1246, 1249 (2018).

tic” in modern homes and businesses. Meanwhile, compliant companies might react quickly to legal directives and central signals, but they might be hesitant to trade without a sound legal basis and a “multi-criteria based evaluation” system for a better understanding of the credibility of central signaling and its detailed design features such as the double regulation of China’s carbon market.⁷⁸

Another key difference between California and Shenzhen is the more limited reach of China’s local government, as broad discretion is reserved for China’s state-owned enterprises (SOEs) and their local monopolies. To ensure government accountability and policy effectiveness, U.S. state governments have broad jurisdiction but numerous corresponding evaluation programs. China’s local governments, for example Shenzhen, have narrower mandates, which has given birth to Wild West-style local policy pilots with minimal program evaluation obligations as a way of enabling local action.⁷⁹

However, China’s big SOEs have held the advantage on the country’s resources, talents, experiences, reputations, political connections, financial support, as well as bargaining and pricing power,⁸⁰ but only minimal constraints in the absence of a consistent, credible, and comprehensive performance accountability system.⁸¹ This creates incentives for large SOEs and their subsidiaries to remain business-as-usual or to invest in short-lived and trivial innovation that wastes resources, especially in areas where SOEs and their local monopolies are more sheltered⁸² from punishments and sanctions.

When new evaluations are internal and backed by extensive real-world experience that is consonant with decisionmakers’ goals and values, SOEs may be more able to withstand such transitions, while in the long run, third-party evaluations are vital in order to check whether the interests of China’s SOEs truly represent the interests of the people. Rather than reflect the government’s policy agenda or that of business owners, third-party evaluation could help decisionmakers better understand long-term social impacts and their standing in the community by identifying and highlighting side effects with wider perspectives.⁸³ In a similar vein, given that corporate issuers of China’s carbon-neutral bonds are required to hire third-party institutions to issue evaluation and verification reports on the environmental benefits of proposed green projects,⁸⁴

it would be worth exploring how these projects turn out in comparison to previous evaluations, and how the role of third-party evaluators is evolving in China’s emerging green market.

In order to have a lasting environmental and social impact on community well-being, though, China needs to create a culturally sensitive environmental program evaluation system. In particular, such a program must reflect how the larger Chinese context impacts operational and reporting prerequisites needed for conducting environmental program evaluation. In the past, program evaluation has mostly existed to sanction proposed pilots and programs, but comparisons to the well-established environmental policies in California reveal that such slapdash evaluations will not do. To that end, an environmental program evaluation system would be necessary to identify shortcomings based on past pilots, make adjustments to current pilots, and launch new pilots with evaluation programs; to generate economically valuable and environmentally credible reductions⁸⁵; and to advance united policymaking processes, guidelines, and methodologies that is rule antecedence.

II. Identifying China’s Environmental Program Evaluation Approach

No consensus exists on the effectiveness of China’s approach to climate change. Some studies indicate that China’s fight against pollution has laid the foundation for dramatic improvements in the capital’s air quality and gains in public health,⁸⁶ while others claim that it “may have been a bit too successful.”⁸⁷ According to government sources,⁸⁸ the language used to describe many of these campaign programs has made it difficult for the public to know whether these were program evaluations, audits, or inspections. Table 1 shows the similarities and differences between environmental program evaluation and three different environmental management tools.

For example, the pollution inspection tours and clean air campaigns used the following terms interchangeably to describe themselves: “seeing a doctor,” “filling the prescription,” “getting the treatment,” or “getting a medical examination” and then a “review.” Yet, we must first recognize the difference between “getting the prescription after a careful examination,”⁸⁹ and actually “filling the prescription” or “getting the treatment.” The former focuses on measuring progress and producing sound interventions (program evaluation), while the latter describes the measure of the

78. Yingying Zeng, *Indirect Double Regulation and the Carbon ETSs Linking: The Case of Coal-Fired Generation in the EU and China*, 111 ENERGY POL’Y 268, 278 (2017).

79. Teets, *supra* note 58, at 87, 89-92, 99.

80. Jun Lu, *Shenzhen Guozi Wei Shi Zhenyang Shenqi Ban de Cunzai? Zhen Jiao Lu Jun Team [The Magical Existence of Shenzhen SASAC]*, SOHU (May 16, 2021), https://www.sohu.com/a/466695509_226049.

81. Laura Hering & Sandra Poncet, *Environmental Policy and Exports: Evidence From Chinese Cities*, 68 J. ENV’T ECON. & MGMT. 296, 308 (2014).

82. Sarah Eaton & Genia Kostka, *Central Protectionism in China: The “Central SOE Problem” in Environmental Governance*, 231 CHINA Q. 685, 694 (2017).

83. Carol. H. Weiss, *Where Politics and Evaluation Research Meet*, 14 EVALUATION 93, 105 (1993).

84. Xueqing Jiang, *Green Bonds to Lift Industry, Energy*, CHINA DAILY (Mar. 1, 2021), <http://global.chinadaily.com.cn/a/202103/01/WS603c495ba31024a00baabb9e.html>.

85. Zhongxiang Zhang, *Carbon Emissions Trading in China: The Evolution From Pilots to a Nationwide Scheme*, 15 CLIMATE POL’Y S104, S119 (2015).

86. Michael Greenstone, *Four Years After Declaring War on Pollution, China Is Winning*, N.Y. TIMES (Mar. 12, 2018), <https://www.nytimes.com/2018/03/12/upshot/china-pollution-environment-longer-lives.html>.

87. Yanzhong Huang, *Opinion, Why China’s Good Environmental Policies Have Gone Wrong*, N.Y. TIMES (Jan. 14, 2018), <https://www.nytimes.com/2018/01/14/opinion/china-environmental-policies-wrong.html>.

88. Liqiang Hou, *New Round of Pollution Inspections Begins*, CHINA DAILY (June 11, 2018), <http://www.chinadaily.com.cn/a/201806/11/WS5b1dac89a31001b82571f2cd.html>.

89. Wang Wen Wen Qie, Bamai Kaifang (望闻问切, 把脉开方) [to watch, listen, ask, and feel before giving prescriptions].

Table 1. Environmental Program Evaluation and Three Different Environmental Management Tools

Types of program assessments	Self-initiated or initiated by a third party?	When to conduct?	Environmental management tool?	Likely to lead to agency enforcement?
Environmental program evaluation	Self-initiated or initiated by a third party	Conducted when a development is already in place	No	No
Environmental impact assessment	Self-initiated or initiated by a third party	Conducted in the formative stage (ex ante)	Yes	Not when self-initiated
Environmental auditing	Self-initiated or initiated by a third party	Conducted in the summative stage (ex post)	Yes	Not when self-initiated
Environmental inspection	Initiated by environmental regulatory agencies	Conducted in the summative stage (ex post)	Yes	Yes

effects of certain activities against set criteria or standards. The aim of the latter is to reduce adverse effects and therefore lead to agency enforcement (auditing, inspection).

A standardized program evaluation system is not intended to replace experience, expertise, and managerial judgement. Rather, program evaluation and program management are inextricably linked. China's major environmental campaign programs have punished more than 30,000 companies and disciplined more than 20,000 officials, and China's so-called market-based climate mitigation measures still rely heavily on regulatory or command-and-control mechanisms, in part because climate actions are often administratively complex. Thus, it stands to reason that much of the focus of China's environmental assessments is on improving the management of environmental programs rather than increasing effective evaluation.

While under some circumstances the processes of environmental management and enforcement improve environmental performance, in other circumstances, these relationships are imperfect.⁹⁰ Many environmental regulatory agencies have been concerned largely with the set standards, scopes, and processes of environmental management. In these cases, it may make more sense to carefully evaluate the agency's activities and environmental management processes instead of turning scarce resources into testbed daze.

In general, China's existing environmental program evaluations are largely run on an as-needed basis, and often in the form of ad hoc evaluation committees and expert meetings.⁹¹ For example, in April 2019, the State Council (SC) issued the Interim Regulation on Major Administrative Decisionmaking Procedures,⁹² which put forward

clear program evaluation requirements for different stages of major decisionmaking and implementation, as illustrated in Table 2 (on page 11054).

As this example suggests, non-environmental programs yield important insights into preferences among decisionmakers that can form the basis for the design of environmental policy and programs. For example, with the goal of demonstrating the diversity of program types that can be applied in the climate change domain, the Fair Competition Review System listed in Table 2 focuses on a cognitively challenging task, that investment from the private sector or foreign investors in China's environmental programs are to be considered equally with those from the SOEs.

China's unique cadre performance evaluation system has been widely discussed in the literature⁹³; however, the mechanisms for China's environmental program evaluation have been somewhat neglected. In March 2019, the NDRC formed a new internal Department of Evaluation and Supervision, an office of key project inspectors that involves a multidisciplinary team. In December 2019 and March 2020, the Central Committee of the Communist Party of China (CPC) and the SC issued two policy documents⁹⁴ that call for more public participation and government-business communication, and include an evaluation system of the entire process of enterprise-related policy-making, a "good or bad" review system of public service, and a government good-faith compliance system. While these promise "a modern environmental governance system" and "a new type of government-business relationship" that is "close and clean," to date, *systematic* environmental program evaluations do not exist in China.

90. LORI S. BENNEAR & KATHERINE L. DICKINSON, DUKE UNIVERSITY, *THE ROLE OF PROGRAM EVALUATION IN ENVIRONMENTAL POLICY: A CRITICAL EVALUATION OF INCENTIVE STRUCTURES* 1, 4 (2008), http://people.duke.edu/~lds5/Papers/Bennear_Dickinson_GPRA_PART.pdf.

91. If a government-originated program "has a significant impact" or "features relatively large-scale investment," the project proposal, feasibility study report, and preliminary design "shall be strictly approved" based on a series of assessments.

92. Interim Regulation on Major Administrative Decisionmaking Procedures Issued by the SC, 2019, *available in* PKULAW, CLI.2.331847(EN) [hereinafter Interim Regulation].

93. See Husain, *supra* note 63; see Heberer & Senz, *supra* note 60; see also Teets et al., *supra* note 12.

94. Opinions of the Central Committee of the CPC and the SC on Creating a Better Development Environment and Supporting the Reform and Development of Private Enterprises, 2019, *available in* PKULAW, CLI.16.338032(EN); see also Guiding Opinions on Building a Modern Environmental Governance System Issued by the General Office of the CPC Central Committee and the General Office of the SC, 2020, *available in* PKULAW, CLI.16.340013.

Table 2. Program Evaluation Requirements for China’s Major Decisionmaking Matters

Stages and strategies	Evaluation methods and tools
Initiation	<ul style="list-style-type: none"> • Necessity and feasibility analysis • Cost, economic, and social and environmental benefits (e.g., input of human, property, and material resources, resource consumption, and environmental impact) analysis and prediction • Validity and consistency analysis
Public participation	<ul style="list-style-type: none"> • Interests of a particular group • Comprehensiveness • Responsiveness to public needs • Participation by significant stakeholders
Expert demonstration	<ul style="list-style-type: none"> • Necessity, feasibility, and scientific analysis (technical feasibility and tractability of the problem) • Expert consultation and demonstration
Risk assessment	<ul style="list-style-type: none"> • Analysis of adverse effects on social stability, public safety, and others • Risk controllability • Third-party evaluation
Legality examination, collective discussion, and issuance	<ul style="list-style-type: none"> • Legitimacy, responsiveness of the drafting process • Fair competition review • Executive meeting or plenary meeting of the decisionmaking organ
Execution and adjustment	<ul style="list-style-type: none"> • Ex post evaluation under special circumstances • Third-party evaluation

I will identify five sets of distinct environmental evaluation programs within China, explaining key roles for China’s varying levels of governmental agencies and corresponding powers, summarized in Table 3. These explanations identify different forms of China’s environmental program evaluation and, more importantly, their limitations. Common limitations of these evaluations include oversimplified evaluation methods, indicators, and results; third-party evaluations receive little national attention; noticeable fashions and swings in evaluation trends; and evaluations putting enormous pressure on project owners and local grassroots groups.

Table 3. Different Forms of China’s Existing Environmental Program Evaluation Approaches and Their Limitations

China’s Environmental Program Evaluation Approaches	Limitations
National Energy Administration’s (NEA’s) monitoring and evaluation of renewable energy support measures and safeguard measures	Simple parameters lead to oversimplified evaluation results
Ex post evaluations of government investment projects	Imposed mainly on project owners from the top down as a supervision or management tool; not widely used
National People’s Congress’ (NPC’s) mid-term evaluation of China’s FYPs and evaluation of China’s Renewable Energy Law implementation	Has not attracted much public attention; most enterprises focus solely on their own sectors
Evaluations of China’s solar PV poverty alleviation programs	Utilization of evaluation results in the long term is not clear
Ministry of Ecology and Environment’s (MEE’s) Regulatory and Evaluation Index System (Trial) and Protection Effectiveness Evaluation System (Trial) for China’s Ecological Conservation Red Line (ECRL) Initiative	Imposed mainly through cadre management system from the top down as a supervision or management tool; serves as part of agency key performance indicators; evaluation criteria remain conservative

A. The National Energy Administration’s Monitoring and Evaluation of Renewable Energy Support Measures and Safeguard Measures

This monitoring and evaluation system uses a variety of strategies to promote and safeguard renewable energy. It focuses on the utilization of China’s renewable energy as the core evaluation criteria.

The first group of strategies includes the National Energy Administration’s (NEA’s) monitoring and evaluation (or monitoring and early warning) systems for various renewable energy generation systems, demonstration provinces/regions/projects, and their market/industrial investment environment, project development mechanism, as well as utilization-related law and policy implementations (e.g., the implementation of guaranteed full purchase) based on provincial-level, administrative areas (some with different benchmarking feed-in-tariff prices⁹⁵). Under this system,⁹⁶

95. Village-level solar PV power plants for poverty alleviation or distributed solar PV systems are not included in this system.

96. NEA, Circular on the Establishment of a Market Environment Monitoring and Evaluation System to Guide the Healthy and Orderly Development of the Solar PV Industry (2017), <https://chinaenergyportal.org/en/establishment-market-environment-monitoring-evaluation-system-guide-healthy-orderly-development-pv-industry/> [hereinafter Circular of the NEA]; see also Notice of the NEA on Establishing a Monitoring and Evaluation System for Clean Energy Demonstration Provinces/Regions (Trial), 2018, available in PKULAW, CLI.4.309842.

evaluation results will be scored annually into pass/fail or three levels—green, orange, and red—representing good, normal, and poor results, respectively,⁹⁷ based on a competitiveness evaluation index, an investment and operational risk evaluation index,⁹⁸ three quantitative evaluation indicators (clean energy utilization target progress, key task completion rate, and clean energy consumption), and one qualitative evaluation indicator (self-evaluation report quality). The results they receive will lead to more, the same, or less clean energy development and construction in the following year.

Another strategy is a target-directed monitoring and evaluation system of provincial-level renewal portfolio standard (RPS) performance. According to China's new RPS,⁹⁹ the NEA will organize yearly third-party evaluations based on provincial-level energy authorities' estimations, and determine a renewable electricity quota for each provincial-level administrative area after consulting with the power grid companies. Once the quotas have been set, the NEA will carry out monitoring and evaluation of the completion of renewable obligations¹⁰⁰ in each province (autonomous region, municipality), the overall quota organization, goals, and market consumption conditions, shares of non-hydro renewables¹⁰¹ in the electricity sector, as well as the implementation of guaranteed full purchase,¹⁰² management work done by the relevant grid companies, and then publicly announce evaluation and assessment results in the NEA's yearly reports.¹⁰³

97. For detailed evaluation standards and criteria, see the Circular of the NEA, *supra* note 96; for the newest evaluation criteria, see also the Notice of the NEA on Issuing the Monitoring Guidelines and Standards of Solar PV Market Environment (2019 Revision), 2020, *available in* PKULAW, CLI.4.340622, app.

98. Circular of the NEA, *supra* note 96.

99. Notice of the NDRC and the NEA on the Establishment and Improvement of a Safeguard Mechanism for Renewable Electricity Consumption, 2019, *available in* PKULAW, CLI.4.332136.

100. Entities with renewable obligations include:

Provincial power grid companies owned by the State Grid Corp. of China—the largest utility company in the world—and Southern Power Grid, both which are government-owned; local power grid companies owned by provincial local governments; electricity retail companies with distribution grid operation permits; independent power retail companies; consumers participating in direct trading; and companies with captive power plants that purchase power through public power grids.

Under the Notice of the National Government Offices Administration and the NDRC on Issuing the 14th FYP for Energy and Resource Conservation Work for State-Funded Institutions (*available in* PKULAW, CLI.4.5013832), all state-funded institutions are now obliged to contribute more to carbon peak and carbon neutrality.

101. The requirements for strengthened utilization of hydropower were laid out in NEA's document. See Guiding Opinions of the NEA on the Establishment of a Target Setting System for the Development and Utilization of Renewable Energy, 2016, *available in* PKULAW, CLI.4.265352.

102. Notice of the NDRC on Issuing the Measures for the Administration of the Guaranteed Buyout of Electricity Generated by Renewable Energy Resources, 2016, *available in* PKULAW, CLI.4.267392(EN); see also Circular of the NDRC and the NEA on Administrative Tasks for the Guaranteed Buyout of Electricity Generated by Wind and Solar PV Resources, 2016, *available in* PKULAW, CLI.4.271071.

103. For details, see government resources in Chinese: http://zfxgk.nea.gov.cn/auto87/201608/t20160823_2289.htm [NEA, Notification of the National Renewable Energy Power Development Monitoring and Evaluation (Aug. 16, 2016)]; http://zfxgk.nea.gov.cn/auto87/201704/t20170418_2773.htm [NEA, Notification of the National Renewable Energy Power Development Monitoring and Evaluation (Apr. 10, 2017)]; http://zfxgk.nea.gov.cn/auto87/201805/t20180522_3179.htm [NEA, Circular No. 43, Notification of the National Renewable Energy Power Development Monitoring and Evaluation (May 11, 2018)]; http://zfxgk.nea.gov.cn/auto87/201906/t20190610_3673.htm [NEA, Circular No. 53, National Energy Administration on the 2018 National Renewable Energy Power Briefings on Development Monitoring and Evaluation (June 4, 2019)]; http://zfxgk.nea.gov.cn/2020-05/06/c_139059627.htm [NEA, Circular No. 31, National Energy Administration's Circular on the 2019 National Renewable Energy Power Development Monitoring and Evaluation (May 6, 2020)]; http://zfxgk.nea.gov.cn/2021-06/20/c_1310039970.htm [NEA, Circular No. 31, National Energy Administration on Renewable Energy for 2020 Notification of the Results of the Power Development Monitoring and Evaluation (June 20, 2021)].

Companies and local governments have started to realize the importance of this program evaluation, but there is little evidence that existing forms of evaluation may actually lead to program improvements. The short evaluation time frame and simple parameters of “good,” “normal,” and “poor,” or “pass” and “fail,” would further intensify the race to keep pace with government policies at no cost and companies' greater interest in taking up as much of the market as possible before development quotas run out. Moreover, evaluations rely almost exclusively on the responses of provincial-level governments. This sole reliance on self-reporting contributes to the problem of local data manipulation and risk-averse behavior.¹⁰⁴

B. Ex Post Evaluations of Government Investment Projects

A crucial feature of the Chinese government's investment projects for energy conservation and environmental protection is their basis in new technologies and heavy assets. Of course, ex ante assessments of these programs (feasibility analysis and risk assessment, to name just two) are crucial. However, as most of China's environmental programs rely heavily on government investment and fixed assets,¹⁰⁵ ex post evaluations can produce more information that examines, describes, and explains the processes or outcomes of a program to influence and improve the use of government funds in a more cost-effective manner.

In July 2016, the CPC and the SC issued the Opinions on Deepening the Reform of the Investment and Financing System,¹⁰⁶ which calls for the establishment of an ex post evaluation system and names three circumstances under which ex post evaluations may be organized: “Expected results have not been achieved”; “Citizens, legal persons or other organizations offer more opinions”; or “The decision-making organ deems it necessary.”¹⁰⁷ Apart from the NDRC's ex post evaluation of government's investment projects, in March 2017, the NEA established an ex post evaluation system of the usage

opment Monitoring and Evaluation (Apr. 10, 2017)]; http://zfxgk.nea.gov.cn/auto87/201805/t20180522_3179.htm [NEA, Circular No. 43, Notification of the National Renewable Energy Power Development Monitoring and Evaluation (May 11, 2018)]; http://zfxgk.nea.gov.cn/auto87/201906/t20190610_3673.htm [NEA, Circular No. 53, National Energy Administration on the 2018 National Renewable Energy Power Briefings on Development Monitoring and Evaluation (June 4, 2019)]; http://zfxgk.nea.gov.cn/2020-05/06/c_139059627.htm [NEA, Circular No. 31, National Energy Administration's Circular on the 2019 National Renewable Energy Power Development Monitoring and Evaluation (May 6, 2020)]; http://zfxgk.nea.gov.cn/2021-06/20/c_1310039970.htm [NEA, Circular No. 31, National Energy Administration on Renewable Energy for 2020 Notification of the Results of the Power Development Monitoring and Evaluation (June 20, 2021)].

104. Kevin Lo et al., *Climate Experimentation and the Limits of Top-Down Control: Local Variation of Climate Pilots in China*, 63 J. ENV'T PLAN. & MGMT. 109, 116 (2020).

105. Facing a tight cash flow and often delayed subsidy payments, more and more renewable energy companies are forced to introduce state-owned assets into their operation.

106. Opinions of the CPC Central Committee and the SC on Deepening the Reform of the Investment and Financing System, 2016, *available in* PKULAW, CLI.16.275879(EN).

107. Interim Regulation, *supra* note 92.

of government investment funds in the energy industry (including a blacklist system).¹⁰⁸

The ex post evaluation system of programs funded by the central government began on a trial basis in January 2009,¹⁰⁹ but has not yet been widely implemented. In practice, most renewable energy programs and national demonstration projects in the electricity sector are subject to the NEA's three-month ex post evaluations one year after being put into operation. Both self-evaluation and ex post evaluation can be consigned to nonoverlapping engineering consultants with corresponding qualifications.

Presently, evaluation is still imposed on those project owners to ensure better supervision of these projects, on par with strong governmental supervision in the field of climate governance. For example, when faced with environmental audits to decide local officials' promotions,¹¹⁰ local officials may unexpectedly distort how environmental policy is made and implemented either in a rush to please or for fear of being sacked. Such reports can have unwanted consequences. Moreover, while the NEA's investment efficiency supervision program of 10 extra-high voltage (EHV) power grid projects of the State Grid Corporation¹¹¹ may serve as a positive example for evaluating gigantic government-sponsored infrastructure projects in the environmental and energy field, it is too soon to tell whether this will encourage more informed and more effective state-led policies and programs.

C. National People's Congress' Mid-Term Evaluation of China's FYPs and Evaluation of Renewable Energy Law Implementation

As China's top legislative bodies, the National People's Congress (NPC) and its Standing Committee (NPCSC) are responsible for pre-deliberating and deliberating China's FYPs drafted by the SC and the NDRC. The national and local people's congresses are also responsible for post-legislation evaluations and periodic reexaminations of existing laws and regulations.

A particular advantage of these two approaches is that evaluations are not conducted by supervisory authorities, allowing for direct reports on the effectiveness of a policy or program with the complying industries or affected firms/households in a timely fashion. The former approach

assesses individual and institutional responses to the implementation of past, current, and future governmental plans for ecology and environmental protection and energy innovation. It is designed to generate periodic information for better implementation, revision, or reformulation.¹¹² The latter is designed to evaluate the implementation of the Renewable Energy Law and to produce third-party evaluation reports on which agencies, investors, and citizens base their decisions.

However, the NPC's evaluation programs have not attracted significant public attention nationwide and economywide.

D. Evaluations of China's Solar PV Poverty Alleviation Programs

China's war against poverty is "a battle that must be won," and has been front and center on the government's agenda. It is also a battle waged at least partly through environmental policy.¹¹³ In order to completely eradicate poverty, the government's agenda has focused on controlling pollution, improving the overall environment and citizens' quality of living, adjusting and upgrading industrial and energy structures, and eliminating outdated capacity, especially for poverty-stricken areas, among which the Solar PV Poverty Alleviation Program has attracted the most attention.¹¹⁴

Environmental program evaluation might be useful in the larger battle to alleviate poverty, as the poverty alleviation projects must be "reliable in the long-term."¹¹⁵ The Leading Group Office of Poverty Alleviation and Development (CPAD)¹¹⁶ also has the first separate internal Department of Examination and Evaluation among China's government agencies.

However, the evaluation of poverty alleviation measures is challenging, and involves taking into account the interests of a particular group and the impacts of the program on the poor. It is one thing to set up a program that contributes to local economic prosperity, and quite another to consider the long-term community impacts. Also, poverty alleviation programs have been highly rated in cadre performance evaluations because they were politically impor-

108. Notice of the NEA on Issuing the Implementation Opinions on Deepening Reforms of the Investment and Financing System of the Energy Sector, Mar. 27, 2017, available in PKULAW, CLI.4.294311.

109. Notice of the NDRC on Issuing the Administrative Measures for the Post-Evaluation of Projects Funded by the Central Government (Trial), 2008, available in PKULAW, CLI.4.110526(EN).

110. Yu Liang, *China Focus: Environmental Audits to Decide Official Promotions*, XINHUA NET (July 6, 2017), http://www.xinhuanet.com/english/2017-07/06/c_136422947.htm; see also Notice of the General Office of the SC on Issuing the Measures for Evaluating the Implementation of the Air Pollution Prevention and Control Action Plan (Trial), 2014, available in PKULAW, CLI.2.226448(EN).

111. Notice of the General Office of the NEA on Carrying Out the Investment Efficiency Supervision of the Jiuhu EHV Direct-Current and Other Key Grid Projects, 2021, available in PKULAW, CLI.4.5013037.

112. For a series of government documents on suggested evaluation methods and measures and a possible amendment process, see the Notice of the NDRC on Carrying Out the Mid-Term Evaluation of the Implementation of the 13th FYP, 2018, available in PKULAW, CLI.4.310135; see also Notice of the NEA on Issuing the Measures for the Administration of Power Planning, 2016, available in PKULAW, CLI.4.271835.

113. Jie Meng, *Xi Stresses Efforts to Win "Three Tough Battles"*, XINHUA NET (Apr. 2, 2018), http://www.xinhuanet.com/english/2018-04/02/c_137083515.htm.

114. Notice of the NEA and the Leading Group Office of Poverty Alleviation and Development (CPAD) on Issuing and Implementing the Work Plan of the Solar PV Poverty Alleviation Projects, 2014, available in PKULAW, CLI.4.237806.

115. Opinions of the NDRC, CPAD, NEA, China Development Bank, and China Agricultural Development Bank on the Plan for Implementing Solar PV Poverty Alleviation Projects, 2016, available in PKULAW, CLI.4.267627.

116. This is the top governing body of China's various poverty alleviation and development programs. It is one of the deliberation and coordination organs directly under the SC.

tant. It remains to be seen how these systems will evolve and impact solar PV poverty alleviation project activities now that the 2020 deadline has passed.

E. *The Ministry of Ecology and Environment's Regulatory and Evaluation Index System and Protection Effectiveness Evaluation System for China's Ecological Conservation Red Line Initiative*

China's Ecological Conservation Red Line (ECRL) Initiative is a national policy aimed at protecting rare and endangered species and their habitats, and stimulating trans-jurisdictional, cross-sectoral, long-term thinking about adaptable climate countermeasures. It covers multiple types and levels of ecosystems across China's vast geographic range.¹¹⁷ In its design, these conservation areas are considered by government-arranged environmental scientists to be the most valuable for China's ecological civilization, based on their biodiversity and natural beauty, ecosystem services, or the environmental capacity to buffer natural disasters.¹¹⁸

The Ministry of Ecology and Environment (MEE) published a series of technical specification and evaluation indicators for supervision of the ECRL and its nationwide implementation.¹¹⁹ Under the proposed trial evaluation system, the MEE and its local and regional branches will evaluate the protection effectiveness of ECRL-covered regions annually and every five years, to ensure their total area, land character, and ecological function *remain the same*, and the agencies' management abilities are under *strict supervision*. Highlights of this evaluation system include both quantitative and qualitative detailed environmental and performance indicators, requirements for information disclosure, public satisfaction, and calls for utilization of evaluation results for ecological compensation purposes.

However, the evaluation criteria of this system remain conservative. Moreover, the MEE claims that evaluation reports will serve as "important evidence for cadre post-term audit, performance evaluation, reward, punishment, selection, appointment, and sanction."¹²⁰ Thus, local variations in ecological conservation efforts will be intensified due to cadres' personal aggrandizement in the form of career advancement or job security.¹²¹

China's complex and fragmented climate governance and energy regulatory system has provided a chance for environmental program evaluation to develop and grow as an important part of China's administrative law reform. Despite the above-mentioned limitations, problems run much deeper. The next section further analyzes reasons and systematic obstacles behind such limitations, and how to address the obstacles when certain evaluation policy is applied.

III. Reasons for the Limitations and How to Do Better

A. Common Limitations of Current Evaluations and Obstacles

Following China's newly revised Constitution and President Xi's involvement and support, new regulatory policies have required central and local governments to develop environmental legislation and accompanying programs to implement China's policy shift to address climate change. However, variations are significant between local governments in terms of their willingness and resources to comply with the intent of the central government.¹²² Present statutory mandates are extremely unpredictable, and often result in spending large sums of money without comparable gains in ecological and public health. The term "evaluation" is applied loosely in government documents.

To look deeper into the causes of such limitations, while it is hard to exhaust political, institutional, and cultural obstacles behind the idea of using environmental program evaluation, this Article looks into two specific rationalizations required to promote certain evaluation policies within and around government.¹²³

One rationalization lies in the perceptions of trustworthiness of a "horizon-scanning and comparison, trialing and adoption"¹²⁴ process that is rational in terms of policy experimentation. The idea of evidence-based policy was built on a theory that government authorities should focus on building stronger evidence and governance capacity to ensure the smooth implementation of government policies and programs. This is in contrast with policies and programs governed by political or ideological elites and their own "views or perceptions of justice."¹²⁵

117. Ping He et al., *China Integrating Conservation Areas Into Red Lines for Stricter and Unified Management*, 71 LAND USE POL'Y 245, 246 (2018).

118. Jixi Gao, *How China Will Protect One-Quarter of Its Land*, 569 NATURE 457 (2019).

119. Technical Specification for Supervision of Ecological Conservation Red-line—Protection Effectiveness Evaluation (Trial) (2020), <http://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/stzl/202011/W020201127554755752149.pdf>; see also Indicator System for Supervision of Ecological Conservation Red-line (2020), <http://sthjj.lanzhou.gov.cn/module/download/downloadfile.jsp?classid=0&filename=f269c48e8476421c92528931f5d96072.pdf> [hereinafter Indicator System].

120. Indicator System, *supra* note 119, at 15.

121. 45 JOHN W. KINGDON & ERIC STANO, *AGENDAS, ALTERNATIVES, AND PUBLIC POLICIES* 123 (1984).

122. A series of guiding cases released by MEE's local bureaus can be found on the MEE's website, MEE, *To Promote the Reform of the Case to the Interpretation of the Case All Local Ecological Environment Departments Actively Establish and Improve the Case Guidance System*, http://www.mee.gov.cn/ywgz/sthjz/zfzdyxzc/202107/t20210706_845563.shtml (last updated July 6, 2021). The application of case guidance in the field of climate change as the instrument to improve environmental law enforcement and public interest litigation is a promising sign for more flexible climate governance with due consideration of specific environmental problems.

123. KINGDON & STANO, *supra* note 121, at 45.

124. Husain, *supra* note 63, at 23.

125. Yi Li Guan (义利观) [viewpoint on justice and interests]. See Alexander Semenov & Anatoly Tsyk, *The Approach to the Chinese Diplomatic Discourse*,

The ambiguity over China's ideology of values and responsibilities and the uncertainty of what leads to program success imply different viewpoints and behaviors across issues. Perceptions and attitudes differ across government agencies, as well as across governmental levels, so each approach to these values and responsibilities must be looked at on its own terms and contexts.¹²⁶ Among key factors contributing to program success, rational insight is less important in China than morality conditioned by one's prior understandings and perceptions of the world,¹²⁷ and information gained through one's personal networks.¹²⁸

In parallel, China believes that program failure confers priceless benefits on society, just as sure as the spring will follow the winter. This is a belief that given the existing complexities and controversies of achieving a low-carbon economic transition, the ability of both central and local governments to formulate and impose sound and rigorous policies is limited, that chaos would lead to pressure, and that pressure would stimulate government policy innovations to address the most pressing issues through an anti-driving mechanism.

The other rationalization rests with China's overshadowed public budget process and local officials' motives and interests. First, the NPCSC's existing government spending review does not take into account the scale of changes in both national and local budgets caused by the central government's ambitious climate targets.¹²⁹ A few pieces of Chinese literature on policy evaluations have been focused on efficiency evaluations (cost-benefit analysis, climate risk assessment, etc.).¹³⁰ However, even those who believe in evaluation as a tool for public budgeting tend to focus on advancing the utilization of their evaluation results rather than a more diversified view of "the use of evaluation" and what actually is used.

Second, existing local policy innovations largely focus on technological and administrative innovations, described as some kind of "ad hoc fine tuning," or "tinkering" with China's existing system in response to local governance problems, while keeping it in place.¹³¹ Evaluation of the impacts on social welfare beyond purely environmental benefits seems both undesirable for political economy reasons and difficult to accomplish, as such innovations in political and governance processes are clearly riskier.

Finally, China's government officials are profoundly skeptical that evaluation programs would bring them additional resources, or relieve them of certain undue pressure under President Xi's strict governance style, and this skepticism has only deepened over time.

B. How to Address the Obstacles and Advice to the Government

An examination of perceptions and motivations required for the development of environmental program evaluation in China also reflects the uncertainties and conflicting objectives involved in the relationship between research, policy, and practice. A related reason is the difficulty of establishing linkages between environmental program evaluation and better environmental policies and programs, including a range of methodological issues that are beyond the scope of this Article. However, it highlights the need to address several conceptual issues that are largely neglected.

In order to deal with the first rationalization, it will be necessary to focus on a restructured evaluation theory, and the ideas and generalizations that do justice to the reality of China's policymaking. Since most of China's environmental programs are relatively new, it may take some time to sort out their impacts and costs over time.¹³² If such programs' legitimacy is largely lost following a gradual decrease in their social acceptance, "this may change the political power balance and open new windows of opportunities for policymaking as well as evaluations."¹³³ While evaluation criteria related to program effectiveness and benefits are crucial for China's transition to a green economy to be seen as feasible and worthwhile, evaluation criteria related to distributions of program impacts, such as equity, and about processes, for example acceptability and transparency, are crucial for the transition to be seen as legitimate and fair.¹³⁴ By applying a "multi-criteria based evaluation" system, a program evaluation could also play a central role in the legislative and agency agenda-setting process.

Moreover, ideas and generalizations that are used by various international actors to describe China's approaches need to draw a more complete picture of the functioning of the public distribution system in China with a broadened understanding of which evaluations are actually being used. Existing literature is largely silent on what other countries might learn from China in this regard. China's global image is partly constructed/developed by the implications of different belief systems to analyze the link between evaluations and informed state-led policies and programs. Viewing China's approaches and responses to the growing need of government accountability, and the interplay between different actors, institutions, and

¹⁴ FUDAN J. HUMANITIES & SOC. SCI. 565 (2021), <https://doi.org/10.1007/s40647-021-00321-x>.

¹²⁶ TIM SUMMERS, ROYAL INSTITUTE OF INTERNATIONAL AFFAIRS, CHINA'S GLOBAL PERSONALITY (2014).

¹²⁷ FRANÇOIS JULLIEN, THE PROPENSITY OF THINGS: TOWARD A HISTORY OF EFFICACY IN CHINA (1999).

¹²⁸ Teets et al., *supra* note 12.

¹²⁹ Decision of the NPCSC to Strengthen the Review and Supervision of Central Budgets (2021 Revision), 2021, available in PKULAW, CLI.1.5012458(EN).

¹³⁰ Jianhua Xu et al., *Huanjing Fengxian Guizhi de Jingji Chengben Ji Cisheng Yingxiang—Juece Zhong Xuyao Zhongshi de Xiangdu [The Economic Cost and Ancillary Impacts of Environmental Risk Regulation—The Dimensions Needing Attention]*, 12 CHINESE J. ENV'T MGMT. 56 (2020).

¹³¹ BRADEN ET AL., *supra* note 18, at 331; see also Jessica C. Teets, *What Does Xi Jinping's Top-Down Leadership Mean for Innovation in China?*, CHINA FILE (Oct. 27, 2016), <https://www.chinafile.com/conversation/what-does-xi-jinping-s-top-down-leadership-mean-innovation-china>.

¹³² Mickwitz, *supra* note 23, at 428.

¹³³ Per Mickwitz et al., *A Theory-Based Approach to Evaluations Intended to Inform Transitions Toward Sustainability*, 27 EVALUATION 281, 294 (2021).

¹³⁴ *Id.* at 298.

technological factors,¹³⁵ also opens up a range of possible scenarios for evaluators to produce the most useful and actionable evidence and to maintain neutrality and expertise in the long run.

The second rationalization could be addressed by applying environmental program evaluation with a special emphasis on its functions as a feedback and incentive system, instead of focusing on its steering and control functions.¹³⁶ On the one hand, evaluating the effectiveness of budgeting as a tool for expenditure prioritization has a crucial role to play in China's transition to a green economy by supporting climate mitigation measures not only financially, but also by providing resources and know-how. In addition to the use of evaluation findings and recommendations, "the evaluation process itself can be used as a forum for dialogue and learning."¹³⁷ "The focus and the measures used in the evaluation can be used to change program implementation."¹³⁸ If, for example, public satisfaction is one focus of an evaluation, some part of the implementation process that has not previously been prioritized may become more important for the promotion of effective and efficient government service delivery.

On the other hand, multiple forms of environmental program evaluation function as an incentive system and can serve several purposes. As this Article has discussed, the various evaluation programs of California A.B. 32 allow the public and companies¹³⁹ to better understand the long-term delayed harms and multigenerational effects of global warming, and can serve as a model for China. Institutional evaluations of China's banking system with a set of green finance evaluation indicators¹⁴⁰ will provide a sustainable driver of so-called green growth. Program accomplishment can be measured and publicized in terms of the process: the number of enforcement actions taken, permit applications processed, permits issued, reviews completed, and contracts issued during the year under review, as well as the figures compared to those of previous years. Evaluations focusing on democracy-related criteria¹⁴¹ with multiple audiences can enable increased transparency, investor protection, and thus overall market participation, as individuals become the clients of public programs.

Methodologically, greater reliance should be placed on relatively simple evaluation designs that can be carried out in a reasonable amount of time, and evaluators should use multiple methods and approaches to mitigate weaknesses in individual approaches. It is also important to make sure that the environmental evaluation process itself does not become perfunctory. However, while "ad hoc fine tun-

ing" proceedings are "necessary and politically inevitable," "program evaluation should not be seen as primarily an administrative function."¹⁴² Results-oriented evaluation¹⁴³ programs with simple answers can also be dangerous. The importance of more transformative experiments on China's evaluation policies must be highlighted in order "to eliminate persistent market barriers,"¹⁴⁴ and to foster and sustain all features of policy success, especially the ones that are in shorter supply in government than the budget is.¹⁴⁵

Probably the most important consideration is that, despite the high risk, uncertain reward, and short time for an evaluator to apply evaluation programs, there is the risk that evaluators will try to inappropriately advance the use of their evaluations (especially politically). "A heavy emphasis on use could result in more evaluations that simply confirm already established views."¹⁴⁶ While evaluators must work with politically influential officials to ensure the acceptance of their findings and recommendations, program evaluation also needs to challenge politicians to reconsider the way they formulate and administer environmental policies. The long-vacant program and policy evaluator positions in many agencies should be filled and generously funded; otherwise, evaluators may feel the need to avoid being too critical just to make a living.

That said, this Article strikes a fine balance between positive and negative attitudes¹⁴⁷ toward the role that environmental program evaluation should play in filling informational gaps in policymaking, and in how government administrations and politics relate in China. Close examination of China's agency practice and experience might, without data, call into question not only why single-system government agencies failed to yield the insights possible from a multiplicity of perspectives and approaches, but also why some pilots did better on policy transparency while others failed or simply neglected it in the first place.

It may also be helpful to have a heightened awareness of the role that evaluations can play in ways that would spare local grassroots groups the heavy burdens imposed by overlapping monitoring, auditing, inspection, investigation, and other control activities. More specifically, if both anticipated and unanticipated policy and program impacts or the absence of impacts can be traced back to specific phases of intervention theories,¹⁴⁸ they can be used to point to the key responsible person or a shared responsibility. For those seeking to counter public dissatisfaction, sometimes

135. *Id.* at 289.

136. Heberer & Senz, *supra* note 60, at 90-91.

137. Mickwitz, *supra* note 23, at 431.

138. *Id.*

139. A list of companies, Californian organizations, and individuals supporting California A.B. 32 is provided at *Climate Change Controversy in California*, *supra* note 47.

140. Notice by the People's Bank of China of Issuing the Plan for the Green Finance Evaluation of Banking Financial Institutions, 2021, *available in* PKULAW, CLI.4.5015153.

141. Mickwitz, *supra* note 23, at 427.

142. BRADEN ET AL., *supra* note 18, at 322, 333.

143. The newly proposed "objectives-based evaluation system" of China's environmental governance, for example, will lead to neglect of a systematic analysis of the purpose, process, and impacts of the accomplished objectives. *See* Guiding Opinions on Building a Modern Environmental Governance System Issued by the General Office of the CPC Central Committee and the General Office of the SC, 2020, *available in* PKULAW, CLI.16.340013.

144. Farber, *supra* note 49, at 495-96.

145. Sofie Sandin, *Making Use of Evaluations to Support a Transition Towards a More Sustainable Energy System and Society—An Assessment of Current and Potential Use Among Swedish State Agencies*, 12 SUSTAINABILITY 8241 (2020).

146. Mickwitz, *supra* note 23, at 431.

147. MICHAEL Q. PATTON, *BLUE MARBLE EVALUATION: PREMISES AND PRINCIPLES* (2019).

148. Mickwitz, *supra* note 23, at 424.

even the fact that an evaluation is undertaken may be used “to legitimize the seriousness of the management style or the policy instrument.”¹⁴⁹

IV. Implications of the China Case for Understanding “Program” and “Evaluation”

This Article’s focus is primarily on applying and improving environmental program evaluation throughout the environmental policy and program cycle. It does not discuss how the more informal policy processes and institutional engagement that are often not outlined in law can also contribute more diffusely to climate governance and energy regulation. Although it emphasizes China’s environmental law, it has such a strong international perspective that its insights likely apply to other jurisdictions.

First, the existence of China’s comprehensive, cross-sectoral development plans provides a strong indication of the political commitment to the crucial role of planning, and illustrates how a government relates to program evaluation in the overall decisionmaking and plan-formulation context.

The interdependent relationship between planning, evaluation, and policy development has been known to policy practitioners in the field of public governance regardless of nationality. In practice, general plans adopted by government authorities set out overall policies and proposals, while detailed plans guide and shape day-to-day implementations of government decisions more precisely. Although government plans are not usually legally binding, they serve as an important basis for consistent enforcement of government policies and programs.

Today, many countries have determined their climate goals and aspirations voluntarily.¹⁵⁰ Evaluations mainly focus on measuring program progress, and whether the program might be able to affect the environment favorably or in a more cost-effective manner. As previous sections discuss, China serves as an interesting case study as most of its plans are clearly top-down products of elite decision-making bodies. Instead of using environmental program evaluations, China’s anti-driving mechanism focuses on measuring the negative effects of cadres’ decisions and activities on the environment against adopted climate plans or certain set criteria. As China’s current cadre selection, promotion, and audit system increasingly includes environmental indicators,¹⁵¹ it forces local officials to act on climate change under outside pressure.

However, “green growth” will not be achieved easily. Currently, China’s green industry still comprises stake-

holders with a wide range of sizes, strengths, technological levels, experiences, and intentions. Price signals in the energy sector may not be appealing enough to coordinate the needed behavioral responses that are both rational and collective.¹⁵² The task of managing market expectations alongside climate change adds to the complexity of the task at hand.

Without a more systematic approach to program evaluation and governmental supervision, different departments and industries will continue to operate in isolation when facing environmental inspections and enforcement. Further, without detailed plans and clear measurements of the so-called Green GDP, the effectiveness and efficiency of such an anti-driving mechanism in tackling climate change in the long run awaits further empirical proof. The twin issues of the contribution of strong leadership support for climate actions, coupled with concerns about the vulnerability of the green market to the impacts of excessive government intervention, further complicates the puzzle.

It is also worth exploring the rule of law—one that does not always contrast sufficiently with the rule of men in China, and its vital role in the course toward a modern public governance system, which remains a working political idea. For example, owing to legislation passed by the local people’s congress, the Shenzhen ETS stayed relatively independent from government intervention,¹⁵³ and yet the control and influence of the central government on local legislation realized through CPC personnel and investigatory measures is decisive.¹⁵⁴ Issues regarding whether the evaluation theories should emphasize a more conceptual use of evaluations or evaluations that require direct actions will remain, especially in a single-system country.

Second, in addition to planning, government authorities need to be better prepared for things that do not go as planned. This continues to be prevalent throughout the fragmentation, inconsistency, tension, and misguided and countervailing forces post-coronavirus pandemic. The driving dynamics behind these trends lie not only in how government administrations and politics relate, but also in the absence of a clearer understanding of the importance of evidence-based public governance and a well-informed public sector for maintaining a country’s constitutional values under unexpected circumstances.

Applying the theory of citizen science¹⁵⁵ to China’s transition to a green economy, a more participatory bottom-up vision for the new governance of environmental science needs to be incorporated into the process of setting the agenda; determining the questions to be addressed; deciding the mechanisms and tools to be used; choosing

149. *Id.* at 431.

150. Marianne Lehnis, *How 2020 Turned the Tide Towards a Global Green Economy*, FORBES (Dec. 29, 2020), <https://www.forbes.com/sites/mariannelehnis/2021/12/29/how-2020-turned-the-tide-towards-a-global-green-economy>.

151. See Indicator System, *supra* note 119. And, more recently, the level of success at reaching peak carbon emissions before 2030 was included in central environmental inspections.

152. Farber, *supra* note 49, at 498-99.

153. ROBERT N. STAVINS & ROBERT C. STOWE, HARVARD PROJECT ON CLIMATE AGREEMENTS, SUBNATIONAL CLIMATE CHANGE POLICY IN CHINA 18 (2020).

154. Philipp Renninger, *Local Legislation Despite the Risks of Decentralization: Theory of Central-Local Relations in the P.R. China*, in RECHT UND RISIKO 17 (Dario Haux et al. eds., Schulthess 2019), <https://papers.ssrn.com/abstract=3599796>.

155. Justin Dillon et al., *Introduction to the Special Section Moving From Citizen to Civic Science to Address Wicked Conservation Problems, Corrected by Erratum 12844*, 30 CONSERVATION BIOLOGY 450 (2016).

how to monitor, evaluate, and interpret data; and choosing the course of action to take.¹⁵⁶ This whole process of information generation and knowledge transfer from law, policy, and scientific realms to stakeholders, citizens, and local communities could restore mutual learning and trust, and could enhance representation, communication, transparency, participation, and accountability in public governance.¹⁵⁷ Hence, concrete proposals for restructuring China's institutional mechanisms and a change in routines and norms of conducting evaluations and utilizing evaluation results are required for fostering law-science linkages given the complexity of climate issues.

Finally, there is the fragile balance reached by international cooperative initiatives on climate change. China, the United States, the European Union, and the United Kingdom have all pledged ambitious climate goals in late 2020, which have helped turn the divided post-coronavirus world toward a global green economy.¹⁵⁸ However, as the green economy portion of the global market capitalization grows and the fossil fuel sector continues to shrink,¹⁵⁹ the global green race accelerates, with more and more economies joining. Countries with binding emission targets and higher carbon prices are looking at applying a carbon tariff to address international/transnational carbon leakage issues, which would add significant tax revenue streams to efforts supporting climate adaptation and clean technology in developing countries.¹⁶⁰

Insufficient and inadequate knowledge among the public aggravates the narrowing of alternatives and growing skepticism of both governmental and corporate science.¹⁶¹ This issue looms large in China, partly because there is a lack of shared understanding for coupling third-party evaluation with public policy processes. It is a unique feature of third-party evaluation that it provides opportunities for learning about whether a certain proposed legal change is truly aimed at deeper emissions cuts, or is just another form of rational-instrumental control by means of bureaucratic and scientific expert systems.¹⁶²

In China, apart from the environmental program evaluation departments within government, external evaluation bodies and other entities have been involved in implementing specific third-party evaluation projects through directional authorization or public bidding,¹⁶³ including

well-known research institutions, evaluation advisory bodies, and think-tanks both at home and abroad. Most of these institutions are nongovernmental, but they are not completely independent. Many of these third-party evaluation institutions' appointed directors and high-ranking council members are former officials or directors of government agencies and large SOEs, many directly under the SC, and many are under subsidiary corporations of large SOEs. In sum, political pressure to "look good" and avoid negative evaluations also emerges when governmental agencies commission such external organizations to conduct evaluations.¹⁶⁴

The root of the public's trust in the perceived "independence" of science authorized by nongovernmental organizations is the science-law interface¹⁶⁵—a place that compromising scientific quality and politicizing scientific expertise cannot reach. Once the public experiences that science can be both contested and uncertain, the policy-process and third-party evaluation lose credibility.¹⁶⁶ For this reason, evaluations should include meaningful and transparent public participation to foster science-law linkages. However, a key question is what counts as credible, authoritative, and legitimate expert knowledge that is accepted in the public eye instead of scientific knowledge and practices operating inside politics.¹⁶⁷

In addition, greater worldwide political predictability is necessary for encouraging long-term investment in emission reduction. Both national and international efforts to address climate change will have to face challenges, including government transition, department reorganization, and elections in the United States, China, and worldwide. We must recognize the importance of political constraints in program evaluation and ensure that evaluations are not wasted because of their incompatibility with political concerns. To this end, it would be useful to conduct a comparative study of China's FYPs of the electricity sector and renewable energy industry and the California A.B. 32 scoping plan. It is also worth examining the political support of climate change actions in California before and after the 2020 presidential election, given the Donald Trump Administration's elimination of more than 20 different regulations on issues such as climate change.¹⁶⁸

This Article, though, is not trying to push an entirely independent third-party evaluation mechanism. Strictly third-party evaluations on a large scale are currently not feasible for China, nor should they ever be seen as miracle cures. In fact, the majority of political communications, program evaluation work, and learning processes in China are conducted informally through a number of resources—

156. *Id.* at 452.

157. Tabea Turrini et al., *The Threefold Potential of Environmental Citizen Science—Generating Knowledge, Creating Learning Opportunities, and Enabling Civic Participation*, 225 *BIOLOGICAL CONSERVATION* 176 (2018).

158. Lehnis, *supra* note 150.

159. FTSE RUSSELL, *INVESTING IN THE GLOBAL GREEN ECONOMY: BUSTING COMMON MYTHS* (2018), <https://www.ftserussell.com/research/investing-global-green-economy-busting-common-myths>.

160. Marco Springmann, *Carbon Tariffs: An Instrument for Tackling Climate Change?*, AXA RSCH. FUND (June 27, 2018), <https://www.axa-research.org/en/project/marco-springmann>.

161. Karin Bäckstrand, *Civic Science for Sustainability: Reframing the Role of Experts, Policy-Makers, and Citizens in Environmental Governance*, 3 *GLOB. ENV'T POL.* 24, 30 (2003).

162. *Id.*

163. See NEA's announcement, for a list of winning entities for its 2018 energy planning evaluation and research projects, at <http://www.cnste.org/html/jiaodian/2018/0702/3366.html> (last visited Oct. 24, 2021).

164. Jonas Schoenefeld & Andrew Jordan, *Governing Policy Evaluation? Towards a New Typology*, 23 *EVALUATION* 274, 277 (2017).

165. Jonathan W. Moore et al., *Towards Linking Environmental Law and Science*, 3 *FACETS* 375, 381 (2018).

166. Bäckstrand, *supra* note 161, at 30.

167. *Id.* at 27.

168. Daniel A. Farber, *Regulatory Review in Anti-Regulatory Times*, 94 *CHI.-KENT L. REV.* 383, 384 (2019).

CPC party school training, exemplar campaigns, party meetings, or sometimes even gossip.¹⁶⁹

Global Western scientific knowledge needs to be put into use with local, indigenous, and everyday knowledge, agendas, needs, and concerns.¹⁷⁰ In this vein, information generated through peer networks—peer observation, learning, and monitoring within the CPC—contains specific agency agenda and program activities that can be vitally important for international/transnational investment and understanding program progress, although such information does not display the systematic and universal features of program evaluation, and is complex and difficult to ascertain at the international/transnational negotiation table.

V. Conclusion

Taken as a whole, this Article discusses the need for procedure control in modern climate governance from the following aspects, such as democracy-related evaluation criteria; distributions of long-term impacts and costs; internal evaluations focusing on effectiveness, benefits, and agency activities; third-party evaluations focusing on social and community impacts and side effects; feedback and incentive functions of evaluations; and evaluation capacity-building. The practical significance of these discussions can be applied in the process of establishing a more vigorous and diverse evaluation system, and an overall evaluation-oriented political communication system in China.

169. Teets, *supra* note 58, at 98.

170. Bäckstrand, *supra* note 161.