CHINA'S REGULATORY PATHWAY TO GREEN FINANCE[*]

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Abstract

China's green credit balance and green bond stocks have surged to become the world's largest within five years. China's regulatory pathway to this and other achievements in green finance remains an underexplored question. We explain the distinct green finance regulatory model that China has developed, including its use of a richer set of regulatory styles than might be expected from a system ostensibly based only on central planning. The Chinese green finance regulatory model encompasses two parts, the pressure driving mechanism and experimental governance. The pressure driving mechanism swiftly injects green finance targets into all levels of bureaucracy. Experimental governance through green finance pilot zones aggregates real-world information about probabilities attaching to the failure or success of a given regulatory approach, and so overcomes Hayekian suspicion that centralised planning may not calculate accurately. The pressure driving mechanism further adjusts targets and tasks based on information from multi-level reporting loops. Coordinating the transformation of financial systems into green or sustainable finance is a global challenge. The Chinese regulatory practices that we identify shed light on how to overcome these challenges, something that other jurisdictions may learn from, in particular other developing economies.

Keywords: Chinese Green Finance Regulation; Pressure Driving Mechanism; Experimental Governance; Sustainable Finance; Green Finance Pilot Zones

I. INTRODUCTION

In this paper we focus on China's approach to financial regulation and ask how its system of decision-making might create regulatory pathways to green finance.[1] Many jurisdictions, including the EU, UK, France, and the Nether-

[1] A related concept is sustainable finance. *See for instance*, OECD, DEVELOPING SUSTAINABLE FINANCE DEFINITIONS AND TAXONOMIES (2020), https://www.oecd-ilibrary.org/finance-and-investment/developing-sustainable-finance-definitions-and-taxonomies_134a2dbe-en (last visited Apr. 22, 2021); Christoph Nedopil Wang, Mathias Lund Larsen & Y. Wang, *Addressing the Missing Linkage in Sustainable Finance: The "SDG Finance Taxonomy"*, 12 J. SUSTAIN. FIN. & INVEST. 630 (2022); Duco Claringbould, Martin Koch & Philip Owen, *Sustainable Finance: The European Union's Approach to Increasing Sustainable Investments and Growth – Opportunities and Challenges*, 88 VIERTELJAHRSHEFTE ZUR WIRTSCHAFTSFORSCHUNG 11 (2019), https://www.econstor.eu/handle/10419/213121; Kim Schumacher, Hugues Chenet & Ulrich Volz, *Sustainable Finance in Japan*, 10 J. SUSTAIN. FIN. & INVEST. 213 (2020). The scope of sustainable finance is broader than green finance as it includes comprehensive environmental, social, and governance (ESG) considerations in particular parameters for social impacts such as labour standards and other human rights issues in addition to green/environmental considerations. Nonetheless, internationally the enforcement of sustainable finance

lands, etc., are now developing the regulatory classifications and definitions needed for a system of green finance.[2] Asian countries like Japan, and Singapore are scaling up their green finance activities and regulation.[3] While the Chinese green finance system only officially launched in 2016, its growth has been fast. The balance of green loans at nearly ¥12 trillion was the world's largest and the stock of green bonds at ¥ 813.2 billion was the second largest at the end of 2020.[4] Chinese green finance regulation has taken a state-led pathway[5] in contrast with most liberal market economies where private ethical investors and consumers have exercised much more regulatory influence,[6] the fossil fuel divestment movement being one prominent example.[7] While the role of central banks in scaling up green finance has been acknowledged,[8] Chinese green finance regulation involves multiple regulators in addition to its central bank and mobilized levels of government in the joined-up governance of green finance.

This paper, drawing on regulatory theory, explains how China is building its distinctive green finance regulatory model. The question of how China is developing its own regulatory approach has been given little attention even though the efficacious building of a green finance system is fundamental to China's climate future, as well as the world's climate future. Much of the literature has focused on specific green finance regulatory instruments in China.[9] Reductionist explanations for Chinese green finance regulation such

mainly relies on voluntary taxonomy and disclosure of ESG related information. As will be discussed in this paper, there are richer regulatory instruments for green finance enforcement in China despite the scope of eligible projects to be supported by green finance being narrower than sustainable finance. While a comparative analysis of these and other differences is a valuable research agenda in the future, it is out of the scope of this paper.

2 *See* Christoph Nedopil, Truzaar Dordi & Olaf Weber, *The Nature of Global Green Finance Standards–Evolution, Differences, and Three Models*, 13 SUSTAINABILITY 3723 (2021).

3 *See* Dina Azhgaliyeva & Brantley Liddle, *Introduction to the Special Issue: Scaling Up Green Finance in Asia*, 10 J. SUSTAIN. FIN. & INVEST. 83 (2020).

4 *See* State Council Information Office of China, *Guoxinban Lüse Jinrong Youguan Qingkuang Chuifenghui Wenzi Shilu* (国新办绿色金融有关情况吹风会文字实录) [*Transcript of the Briefing on Green Finance*], THE PAPER (澎湃新闻) (Feb. 9, 2021), https://www.thepaper.cn/newsDetail_forward_11293431.

5 *See* Tao Huang & Qingyue Yue, *How the Game Changer Was Generated? An Analysis on the Legal Rules and Development of China's Green Bond Market*, 20 INT'L ENVTL AGREE.: POL., L. & ECON. 85 (2020).

6 *See* Stephen Kim Park, *Investors As Regulators: Green Bonds and the Governance Challenges of the Sustainable Finance Revolution*, 54 STAN. J. INT'L L. 1 (2018).

7 *See* Julie Ayling & Neil Gunningham, *Non-State Governance and Climate Policy: The Fossil Fuel Divestment Movement*, 17 CLIMATE POL'Y 131 (2017).

8 *See* Neil Gunningham, *A Quiet Revolution: Central Banks, Financial Regulators, and Climate Finance*, 12 SUSTAINABILITY 1 (2020); Aziz Durrani, Masyitah Rosmin & Ulrich Volz, *The Role of Central Banks in Scaling Up Sustainable Finance–What do Monetary Authorities in the Asia-Pacific Region Think?*, 10 J. SUSTAIN. FIN. & INVEST. 92 (2020).

9 *See for instance*, Shengling Zhang et al., *Fostering Green Development with Green Finance: An Empirical Study on the Environmental Effect of Green Credit Policy in China*, 296 J. ENVTL MANAGE. 113159 (2021).

as "top-down"[10] or "command and control"[11] or "fragmented authoritarianism" (Section 2) cannot capture the rich regulatory styles present in Chinese green finance regulation either. Although we find within the financial sector the deployment of a greater variety of regulatory styles than might be expected from the command nature of an authoritarian system, such as responsive regulation,[12] meta-regulation,[13] and smart regulation,[14] these theories, by and large, are embedded in Levi-Faur's notion of "regulatory capitalism."[15] China's Communist Party presides over a uniquely evolved set of interlocking institutions and networks, the regulatory dynamics of which remain imperfectly understood from external analyses entrenched in varieties of regulatory capitalism. After all, the constraints on the autonomy of the Chinese state are limited, with the Party carefully monitoring for any potential incursions and threats. This in turn reduces the likelihood of China being trapped in a rule complexity where the main game is seen as "the regulation of/for/and/with commodification."[16] Tragedies of commodification such as patents over essential medicines or poorly performing carbon markets are less of a danger.[17]

Confronting the ecological crisis, Western regulatory authorities find themselves struggling to escape the politics and polarization of neo-liberal economic theories of regulation and find only contested spaces for engaging with ecological issues.[18] Regulatory studies have started exploring new models or approaches for ecological regulation.[19] Examples include the UK and Netherland's community-based model where renewable energy communities are considered as socio-legal institutions embedded in civil energy networks to shape a new just energy transition.[20] Our case of the Chinese model in green

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[10] *See* DIFANG LÜSE JINRONG FAZHAN ZHISHU YU PINGGU BAOGAO 2018 (地方绿色金融发展指数与评估报告) [LOCAL GREEN FINANCE DEVELOPMENT INDEX AND EVALUATION REPORT 2018] (Wang Yao (王遥) & Pan Dongyang (潘冬阳) eds., 2018).

[11] *See* Wei Ping He, *Banking Regulation In China: What, Why, and How?*, 20 J. FIN. REG. & COMPLIANCE 367 (2012).

[12] *See* IAN AYRES & JOHN BRAITHWAITE, RESPONSIVE REGULATION: TRANSCENDING THE DEREGULATION DEBATE (1992).

[13] *See* Peter Grabosky, *Meta-regulation*, *in* REGULATORY THEORY: FOUNDATIONS AND APPLICATIONS, 149, 149–62 (Peter Drahos ed., 2017), https://library.oapen.org/bitstream/handle/20.500.12657/31596/626829.pdf?sequence=1#page=185 (last visited Apr 23, 2021).

[14] *See* NEIL GUNNINGHAM, PETER GRABOSKY & DARREN SINCLAIR, SMART REGULATION: DESIGNING ENVIRONMENTAL POLICY (1998).

[15] *See* David Levi-Faur, *Regulatory capitalism*, *in* REGULATORY THEORY: FOUNDATIONS AND APPLICATIONS, 289, 289–302 (Peter Drahos ed., 2017).

[16] *Id.* at 293.

[17] *See* Peter Drahos, *Responsive Science*, 16 ANN. REV. L. & SOC. SCI. 327 (2020).

[18] *See* Tobias Besselink & Kutsal Yesilkagit, *Market Regulation Between Economic and Ecological Values: Regulatory Authorities and Dilemmas of Responsiveness*, 36 PUB. POL'Y & ADMIN. 304 (2021).

[19] *See* Christine Parker & Fiona Haines, *An Ecological Approach to Regulatory Studies?*, 45 J. L. & SOC'Y 136 (2018).

[20] *See* Michiel A. Heldeweg & Séverine Saintier, *Renewable Energy Communities as "Socio-Legal Institutions": A Normative Frame for Energy Decentralization?*, 119 RENEW. & SUSTAIN. ENERGY REV. 109518 (2020).

finance regulation is admittedly very different to the examples above, but the sheer scale and impact of China's approach makes it a vital case.

Our reasons for focusing on China and its regulatory capacities in the context of finance can be shortly stated. China is standardly categorized as an authoritarian state.[21] There are, as we will specify in a moment, arguments for why an authoritarian state cannot build lasting regulation for environmental problems. China is also the world's largest emitter of greenhouse gases and so is a necessary part of any globally-coordinated strategy to hold, as the IPCC recommends, warming to less than 2 degrees.[22] Its domestic energy sector is highly dependent on coal-fired power, much of which has been recently built thereby creating, at least on ordinary investment principles, an incentive to keep it in operation for a few more decades.[23] Internationally China has, through its Belt and Road Corridor projects, created infrastructure investment opportunities in the 140 countries now participating in these projects.[24] Infrastructure investment on this networked scale will affect climate change risk. Whether it does so positively or negatively will depend on how China regulates the links between the financing of these projects and the goal of environmentally sustainable development. The fossil fuel divestment movement has become significant.[25] But if most of the world's existing fossil fuel reserves are to stay in the ground, then all large investors need credible investment alternatives so they can exit fossil fuel. For financial regulators, climate risks have become a new source of systemic risk.[26] By regulating the financing of Belt and Road projects China could create forms of conditionality for lowering climate risks that only a few states could match.

Clearly, China's approach to financial regulation will deeply affect which of the many possible and increasingly turbulent pathways of climate mitigation and adaptation all states will eventually tread. That said, there is well-grounded skepticism about whether authoritarian systems can deliver when it comes to protecting the environment. Powerful authoritarian governments, rational actor theory suggests, will do little to address negative environmental externalities because environmental regulation will reduce the personal opportunities of authoritarian elites to grasp wealth.[27] In the case of China, this political rationality of rent-seeking at the expense of environmental goals has a specific

[21] The Economist Intelligence Unit classifies China as an authoritarian state and ranks it 151 in its Democracy Index 2020.

[22] *See* IPCC, *Summary for Policymakers*, *in* GLOBAL WARMING OF 1.5°C, 1–4 (2018), https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/ (last visited Apr. 22, 2021).

[23] *See* IEA, CLEANER COAL IN CHINA (2009).

[24] *See* Belt and Road official website, https://www.yidaiyilu.gov.cn/gbjg/gbgk/77073.htm (last visited Oct. 18, 2021).

[25] *See* Ayling & Gunningham, *supra* note 7.

[26] *See* PATRICK BOLTON ET AL., THE GREEN SWAN – CENTRAL BANKING AND FINANCIAL STABILITY IN THE AGE OF CLIMATE CHANGE (2020), https://www.bis.org/publ/othp31.pdf (last visited Apr. 23, 2021).

[27] *See* Thomas Bernauer & Vally Koubi, *Are Bigger Governments Better Providers of Public Goods? Evidence from Air Pollution*, 156 PUB. CHOICE 593 (2013).

application in the form of fragmented authoritarianism. Provincial and local governments will continue to chase profits, say from fossil fuel investment, even if the Centre is more committed to environmental change. Authoritarian power is more likely to cross over into deadly violence against environmental activists on whose shoulders rest practical action.[28] Empirical work on the former Soviet Union shows that it was only second to the US in terms of harmful emissions, even though its gross national product was about half that of the US.[29] China is now the world's biggest emitter of greenhouse gases, a fact that bolsters the environmental critique of authoritarianism. True enough, there have been suggestions that authoritarianism and environmentalism might combine to produce more optimal outcomes for the environment,[30] but for the moment authoritarianism's track record suggests otherwise.

To be clear, our paper is neither a critique nor a defense of China's authoritarianism. Moreover, we agree with Marlies Glasius when he argues that political science has to shift away from a myopic preoccupation with authoritarian regimes and personality classification and instead focus on operational understandings of practices embedded in those regimes.[31] Without a focus on the actual and the operational, we will miss the deeper shifts taking place in systems of governance. The practice perspective has been a natural starting point for scholars of regulation because the origins of this scholarship lie in a socio-legal tradition focused on understanding people's lived experience of rules rather than rules as a formal edifice.[32]

We begin our practice perspective with the fact that China is one of the states attempting to create a regulatory taxonomy of sustainable finance. It has some incentives to attempt the task. One Chinese study estimates that the average probability of default of representative Chinese companies providing coal-fired power could, because of factors such as demand reduction and carbon price increases, rise from the present level of approximately 3% to 23% by 2030.[33] Given China's incentives, our question is how China might accomplish the hugely complex and globally important shift into sustainable finance. As we have outlined, the political rationality of authoritarianism

[28] *See* Nick Middeldorp & Philippe Le Billon, *Deadly Environmental Governance: Authoritarianism, Eco-populism, and the Repression of Environmental and Land Defenders*, 109 ANNALS AM. ASSOC. GEOGRAPHERS 324 (2019).

[29] *See* Maria Shahgedanova & Timothy P. Burt, *New Data on Air Pollution in the Former Soviet Union*, 4 GLOBAL ENVTL CHANGE 201 (1994).

[30] *See* Mark Beeson, *The Coming of Environmental Authoritarianism*, 19 ENVTL POL. 276 (2010).

[31] *See* Marlies Glasius, *What Authoritarianism Is … and Is Not: A Practice Perspective*, 94 INT'L AFF. 515 (2018).

[32] *See* Susan Silbey, *Law and Society Movement*, *in* 2 LEGAL SYSTEMS OF THE WORLD: A POLITICAL, SOCIAL AND CULTURAL ENCYCLOPEDIA (Herbert M. Kritzer ed., ABC-CLIO, 2002).

[33] *See* Research Center for Green Finance Development Tsinghua University, *Assessing the Impact of Climate-Related Transition on Default Probabilities of Thermal Power Companies*, *in* CASE STUDIES OF ENVIRONMENTAL RISK ANALYSIS METHODOLOGIES 107, 107–120 (Jun Ma, Ben Caldecott & Ulrich Volz eds., 2020). Dr. Ma Jun, Special Advisor to PBC Governor as well as the Chairman of China Green Finance Committee (GFC), is a co-author of this research.

militates against such a shift. Moreover, authoritarian systems are usually not seen as possessing the sophisticated pluralism of regulatory tools and forms needed to design, implement and operationalize a system of sustainable finance. Partly as a result of the legacy of Marxism-Leninism and Stalinism authoritarian systems are associated with brutal command rather than the subtle craft of steering networked governance to solve the negative externalities and free-rider problems that characterize environmental pollution and crisis.

Drawing on indigenous accounts of Chinese governance, our study supplies an explanatory answer to the "how" question when it comes to China's creation of green finance regulatory pathways. The Chinese green finance regulatory model encompasses two parts, the pressure driving mechanism and experimental governance. Once deployed, the pressure driving mechanism swiftly injects green finance targets into all levels of bureaucracy. Experimental governance through green finance pilot zones aggregates real-world information about probabilities attaching to the failure or success of a given regulatory approach. The pressure driving mechanism further adjusts targets and tasks based on information from multi-level reporting loops. As we will see, the pressure driving mechanism has been identified by Chinese scholars as a distinctive mechanism of Chinese governance. It is China's primary answer as to how government can, in a complex and multi-agency regulatory sector, achieve joined-up governance to overcome the coordination problem among regulatory actors.

In the next section, we set out the components of the pressure driving mechanism. In Section Three, drawing on multiple examples of how experimental governance supplements the pressure driving mechanism, we show how China's green finance regulation achieves an integrative function from the ministerial level to the provincial and local levels.

II. THE PRESSURE DRIVING MECHANISM IN GREEN FINANCE

China's approach to regulation and governance has often been analyzed as an example of fragmented authoritarianism, a concept that was used in the 1990s to capture the shift from absolutist authoritarianism in Chinese regulation to a system where bargaining and blocking behavior by the governmental subunits of the system played a much greater role in decision outcomes.[34] The model has been updated as fragmented authoritarianism 2.0.[35] to include public participation in decision-making.

The model of fragmented authoritarianism, in emphasizing the many divisions of decision-making and budgetary authority among the various bureaucratic levels of China, sets up a puzzle. If authority is scattered to the

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[34] *See* Kenneth G. Lieberthal, *Introduction: The "Fragmented Authoritarianism" Model and Its Limitations*, *in* BUREAUCRACY, POLITICS, AND DECISION MAKING IN POST-MAO CHINA (Kenneth G. Lieberthal & David M. Lampton eds., 1992).

[35] *See* Andrew Mertha, *"Fragmented authoritarianism 2.0": Political pluralization in the Chinese policy process*, 200 China Q. 995 (2009).

corridors of central,[36] provincial, county and town bureaucracies, then central communist party leaders will struggle to unify these many self-interested fragments when it comes to meeting the big priority goals generated by China's planning system. In the case of green finance, this model implies that achieving consensus on the standards, classifications and definitions of sustainable finance will be a long internal road for China, full of twists and turns. Yet the Chinese green credit and green bond markets surged to become the biggest in the world within only five years. Fragmented decision-making as a model of decision-making cannot explain the scale and speed of orchestration needed to produce this result.

Originally developed by Chinese scholars, the pressure driving mechanism[37] is key to solving this puzzle. We use the term mechanism here because it is a tool deliberately designed and deployed to achieve a certain effect. The pressure driving mechanism we find to be operating in China is another mechanism that can be added to the family of mechanisms identified by Braithwaite and Drahos[38] as central to explaining how regulation occurs. In this particular case, however, it is a mechanism of distinctively Chinese origin rather than the more standard mechanisms of regulation discussed by Braithwaite and Drahos. Within the crisscrossed horizontal and vertical relations of the bureaucratic hierarchies that make up the Chinese state, the pressure driving mechanism deals with coordination within the leviathan when it comes to large scale problem-solving. Successful joined-up government interventions remain a desirable but often elusive goal.[39] In list form the mechanism deals with the following: identifying the problem, agenda-setting, deploying specific and temporal tasks (who will be responsible for what by when), mobilizing implementation, and evaluating performance. The mechanism has been used to explain how China built the world's biggest patent office and its rise up the ranks of high technology patenting.[40] Its application is particularly useful in a case such as green finance where the sphere of regulation is new and cross-cutting with no regulatory mandate being specifically allocated to a specific

[36] Central level or "Centre" is translated from Chinese directly ("中央"), this is short for the Central People's Government which is the highest-level administration in China.

[37] *See* Rong Jingben (荣敬本) et al., *Xian Xiang Liangji De Zhengzhi Tizhi Gaige, Ruhe Jianli Minzhu De Hezuo Xin Tizhi* (县乡两级的政治体制改革，如何建立民主的合作新体制) [*Political Reform in the County and Township Level: How to Establish a Democratic Cooperative Institution*], 4 JINGJI SHEHUI TIZHI BIJIAO (经济社会体制比较) [COMP. ECON. & SOC. SYSTEMS] 6 (1997); YANG XUEDONG (杨雪冬), SHICHANG FAYU, SHEHUI SHENGZHANG HE GONGGONG QUANLI: GOUJIAN YI XIAN WEI WEIGUAN FENXI DANWEI (市场发育、社会生长和公共权力：构建以县为微观分析单位) [DEVELOPMENT OF MARKET, GROWTH OF SOCIETY AND THE CONTRUCTION OF PUBLIC POWER: AN MICRO ANALYSIS ON THE COUNTY LEVEL] (2002); Yang Xuedong (杨雪冬), *Yali Xing Tizhi: Yige Gainian De Jianming Shi* (压力型体制：一个概念的简明史) [*Pressure Driving Mechanism: A Concise History of the Concept*], 11 SHEHUI KEXUE (社会科学) [SOC. SCI.] 4 (2012); Wenting Cheng & Peter Drahos, *How China Built the World's Biggest Patent Office – The Pressure Driving Mechanism*, 49 IIC – INT'L REV. INTELL. PROP. & COMPET. L. 5 (2018).

[38] *See* JOHN BRAITHWAITE & PETER DRAHOS, GLOBAL BUSINESS REGULATION 15–17 (2000).

[39] *See* OECD, IMPROVING GOVERNANCE WITH POLICY EVALUATION: LESSONS FROM COUNTRY EXPERIENCES (2020).

[40] *See* Cheng & Drahos, *supra* note 37.

ministry and requiring multiple actors to coordinate across portfolios and levels of government.

As the mechanism's name connotes, the origin of its operation lies in a source of pressure that, at first, may well be diffuse, perhaps vague and suggestive rather than intimidatory, but over time begins to take on the form of an imperative. We begin by examining the pressure formation process behind the start of green finance in China.

A. Pressure Formation and Priority Promotion

China has long prioritized economic growth, which has also been the main focus of the pressure driving mechanism, over environmental protection, sustainability, and quality of life for its people. Some recognition of the importance of environmental issues in China can be found in the concept of "ecological civilization." Ecological civilization as a Chinese route to sustainability has attracted increasing attention as a matter of discourse analysis.[41] For our purposes what matters is how this concept, which begins life as an abstract value, progressively enters the pressure driving mechanism, serving to unify and direct policy-making, drawing commitments to tasks from officials and ultimately gaining expression through rules of regulation.

Although the term "ecological civilization" was first coined in the 1980s, it gained much wider currency since President Hu Jintao's use of it in the report of the Seventeenth National People's Congress in 2007. Its concreteness as a value has grown through President Xi's repetitive emphasis on its importance.[42] Despite its vagueness as an overarching concept, ecological civilization has become a new pressure within China's many-layered bureaucracy because it has been prioritized by the leadership and consolidated by the Chinese Communist Party (CCP) and the State Council. In an important document of April 2015, *Opinions on Accelerating the Construction of Ecological Civilization*,[43] we find: "Development shall be green development, circular development, low-carbon development, and the relationship between development and environmental protection shall be balanced".

This may read like a rambling greenie wish list, but in the context of China's system, this statement pegs out the policy space in which senior Party members are looking for further study, development and implementation of policies. For

[41] *See* Coraline Goron, *Ecological Civilisation and the Political Limits of a Chinese Concept of Sustainability*, 4 CHINA PERSP. 39 (2018).

[42] *See* Zhihe Wang, Huili He & Meijun Fan, *The Ecological Civilization Debate in China: The Role of Ecological Marxism and Constructive Postmodernism - Beyond the Predicament of Legislation*, 66 MONTHLY REV. 37 (2014), https://monthlyreview.org/2014/11/01/the-ecological-civilization-debate-in-china/.

[43] *See* Central Committee of the Chinese Communist Party (CCCCP) & the State Council, Zhonggong Zhongyang Guowuyuan Guanyu Jiakuai Tuijin Shengtai Wenming Jianshe De Yijian (中共中央国务院关于加快推进生态文明建设的意见) [Opinions on Accelerating the Construction of Ecological Civilization], ST. COUNCIL GAZ., no. 14, para.1.1 (2015), http://www.gov.cn/gongbao/content/2015/content_2864050.htm. In 2018, the concept of ecological civilization was incorporated into the Constitution of China.

ministries affiliated with the State Council, this is a signal to begin exploring opportunities for organizational, policy, and regulatory innovation.

Sweeping policy goals of the kind articulated in this statement do not just communicate the coming of a wave of new policies but are themselves expressions of prior agenda-setting processes. When ecological civilization was gaining momentum as a source of policy, the People's Bank of China (PBC) guided the practices of commercial banks in green credit and green lending. It also collaborated with other ministries in implementing seven pilot carbon emission trading programs in China.[44] In this period it moved on to the opportunity for building a more ambitious green finance system. In 2014, the PBC and the United Nations Environment Program (UNEP) jointly established a Green Finance Taskforce, which issued a report, *Establishing China's Green Financial System.*[45] The report, supported by 16 detailed sub-reports, argues the case for a green financial system in bold terms. Such a system would allow China to attract private capital to green industries, reduce fiscal pressure, create a new growth area, and enhance economic growth, stability, and restructuring. The report details the policies and regulations needed to construct China's green financial system (See Table 1).

TABLE 1. POLICY RECOMMENDATIONS FROM ESTABLISHING CHINA'S GREEN FINANCIAL SYSTEM
(Authors' compilation based on PBC and UNEP (2015))

Specialized Investment Institutions for Green Credit and Green Investment	**Fiscal and Financial Policy Support**	**Financial Infrastructure**	**Legal Infrastructure**
• Creating green banks • China Ecological Development Bank • Local green banks • Ecological finance department in commercial banks • Green funds • Promote the development of green industry funds through public-private	• Discounted Green Loans • Improve the system for providing interest subsidies for green loans • Green bonds • Develop the green bonds market by issuing green bond guidelines, permitting and encouraging banks and enterprises to issue	• Carbon markets • Accelerate the formation of markets for emission trading • Green ratings • Establish a green rating system to measure the environmental performance of enterprises and projects • Green Equity Indices • Promote the creation and use of green equity	• Green Insurance • Implement compulsory green insurance in areas where environmental risks are high. • Lender liability • Identify and clarify environmental liabilities of banks • Compulsory Disclosure • Establish mandatory environmental

[44] *See* PBC & UN ENVIRONMENT PROGRAMME, ESTABILISHING CHINA'S GREEN FINANCIAL SYSTEM: REPORT OF THE GREEN FINANCE TASK FORCE (2015), UN ENVIRONMENT PROGRAMME INQUIRY, http://unepinquiry.org/wp-content/uploads/2015/12/Establishing_Chinas_Green_Financial_System_Final_Report.pdf.

[45] *See id.*

partnership arrangements • Green Development Banks • Adopt environmental policies for overseas development institutions.	green bonds and providing incentives • Green IPO • Improve the mechanism through which environmental performance of listed companies is communicated and recognized in equity markets	indices that orient the capital market to green industry • Environmental Cost Analysis • Create a non-profit environmental cost analysis system and database • Green Investor Network • Create a green investor network to foster the expertise and capabilities of institutional investors in investing in green industries	disclosure requirements for listed companies

Perhaps more important than the report itself was the policy network-building exercise lying behind the report. The Green Finance Taskforce took on board 40 policy-makers and leading scholars as authors, as well as soliciting comments from other government agencies. Whether one sees this process of network formation in terms of epistemic community creation or policy network formation does not matter since both concepts can accommodate the idea that a group of linked technical actors can be agents of policy change. Within China's socialist regime, such a high-level agenda-setting exercise constitutes a serious investment of reputational and career capital for those who agree to be part of the network enterprise. After the publication of the PBC & UNEP report, the Green Finance Taskforce was transformed into the Green Finance Committee (GFC) under the Chinese Institute of Finance. The GFC has been a key focal point for institutional design and innovation in the financial sector ever since. The first signs of priority promotion of the PBC's agenda for a green finance system appeared in September 2015 with the publication of the *Overarching Plan for Ecological Civilization Institutional Reform* by the CCP and the State Council. In March 2016, the PBC's agenda made the all-important jump into China's planning machine. Included in the Thirteenth Five-year Plan of China were the goals of "establishing a green finance system, developing green credits and green bonds, and founding a green development fund."[46]

One can see from this timeline that within one year, green finance was transformed from a blueprint by the PBC into an integral part of the CCP's

[46] Guomin Jingji He Shehui Fazhan Di Shisan Ge Wunian Guihua Gangyao (2016-2020 Nian) (国民经济和社会发展第十三个五年规划纲要(2016-2020年)) [Outline of the 13th Five-Year Plan for the National Economic and Social Development of China (2016-2020)], sec. 1, chap. 48, http://www.12371.cn/special/sswgh/wen/ (last visited Oct. 18, 2021).

agenda for ecological civilization and a work plan for the next five years. For those sitting at the desks of China's many layers of bureaucracy, this was a signal that green finance had entered the pressure driving mechanism. For the PBC, it was an elevation of the importance of its agenda, a bestowing of more clout when it came to soliciting help from other ministries and requesting local governments to prioritize the building of the green finance system. For local government officials, it was a message that frustrating the pace of this agenda would be personally costly.

After March 2016 the pace continued. In August 2016, the joint efforts of the central ministries crystallized into the *Guidelines for Establishing the Green Financial System* (GFS Guidelines 2016).[47] Issued by the PBC, together with six other ministries of the State Council, these guidelines were positioned as "an essential next step for implementing the overall strategy of promoting ecological civilization, formulated by the CCP and the State Council" (Preamble, GFS Guidelines 2016). Almost all the recommended green finance instruments from the PBC & UNEP report found a place in these guidelines.[48] The guidelines focused on the fast and large-scale deployment of green finance, incorporating various green finance instruments into existing monetary and fiscal regulatory arrangements, or creating new ones when necessary. A case of the former was the incorporation of green credit into macro-prudential assessment (MPA) – something not mentioned in the PBC & UNEP report, but a key tool for the PBC to regulate commercial banks (for a full explanation of the MPA, see para. 2.5, GFS Guidelines 2016 and Section 2.3).

Guidelines within modern regulatory systems carry authority in degrees, ranging from suggestion to authoritative instruction. In China, guidelines with a lineage that runs back to the endorsement of a new policy and work program by the CCP exist on the binding end of the spectrum of authoritativeness. The GFS Guidelines 2016 were an authoritative communication with both horizontal and vertical effects. At the horizontal level all seven ministries of the State Council involved in issuing the GFS Guidelines understood the need to coordinate and jointly reinforce the promotion of green finance, strengthen financial information infrastructure, and share information and statistics. They were obliged to closely monitor and evaluate policy incentives and supervisory rules and make appropriate policy adjustments in time (para. 33, GFS Guidelines 2016). As discussed before, these joint efforts were simultaneously incentivized and pressured by the CCP's call to implement the overarching objective of ecological civilization, an objective that was now being supported

[47] *See* PBC, Ministry of Finance (MOF), National Development and Reform Commission (NDRC), Ministry of Environmental Protection (MEP), China Banking Regulatory Commission (CBRC), China Securities Regulatory Commission (CSRC), & China Insurance Regulatory Commission (CIRC), Guanyu Goujian Lüse Jinrong Tixi De Zhidao Yijian (关于构建绿色金融体系的指导意见) [Guidelines for Establishing the Green Financial System] (2016). An unofficial English translation available at http://rccef.cufe.edu.cn/info/1002/1385.htm (last accessed Oct. 18, 2021).

[48] One exception was the proposal for establishing specialized green policy banks. Instead, the guidelines required commercial banks of all sizes to absorb green bank appraisal as part of their performance evaluation.

by a growing edifice of rules and guidelines. The effect was to accelerate the pace of knowledge dissemination and consensus building through the informal network of the GFC (and its predecessor the Green Finance Taskforce), as well as enhancing the priority of green finance through various joint policies issued by the CCP and State Council. The PBC, it should be pointed out, is only one financial regulator. Without the delivery of enhanced priority and the attendant promise of resources, the collaboration of other ministries in promoting green finance would have been far harder to secure.

The GFS Guidelines 2016 became and remain a source of vertical pressure for networks of local actors. They inform local branches of relevant ministries, banks of all sizes, bond and fund issuers, rating institutions, and insurers that green investment is encouraged by the central government in various ways and, more importantly, that their performance in green finance will be evaluated. For example, concerning green credit, the GFS Guidelines 2016 state that the PBC will support green credit through its re-lending operations, specialized guarantee mechanisms and other measures, and will allow projects supported by green loans to apply for fiscal subsidies on interest payments. Green credit performance and green banking are, under the Guidelines, a key MPA indicator of performance evaluation (para. 29, GFS Guidelines 2016). The Guidelines dangle carrots of various kinds. For instance, under the Guidelines, local governments can expect support if they use the green bond market to finance medium/long-term green projects (para. 19, GFS Guidelines 2016). There are also obligations. For example, local governments have to develop plans for promoting green finance, to clarify the division of labour and responsibility, and to incorporate green finance development into their annual performance targets (para. 19, GFS Guidelines 2016). As explained by the promotion tournament model[49] and exemplified in a patent case study,[50] the pressure driving mechanism turns missives into specific tasks that are expected to be carried out. We discuss the task disaggregation phase of the pressure driving mechanism in more detail in the next section.

B. Task Disaggregation

1. Task Disaggregation Among Central Financial Regulators. Less than 12 months after the GFS Guidelines 2016, the PBC in June 2017 issued the *Task Disaggregation Plan for Implementing Guiding Opinions on Building a Green Financial System* (the Task Disaggregation). Task disaggregation is the starting point for the micro-detail of implementation. It is a phase in which specific timelines and performance evaluation measures are set. The pressure driving mechanism continues the process of pushing and dividing tasks until a

[49] *See* Zhou Li'an (周黎安), *Zhongguo Difang Guanyuan De Jinsheng Jinbiaosai Moshi Yanjiu* (中国地方官员的晋升锦标赛模式研究) [*Governing China's Local Officials: An Analysis of Promotion Tournament Model*], 7 JINGJI YANJIU (经济研究) [ECON. RES. J.] 36 (2007).

[50] *See* Cheng & Drahos, *supra* note 37.

final implementer is located. If, for example, a task-taker is not directly responsible for implementation, it will further disaggregate the task to a lower level of government, being careful to design a performance evaluation system for monitoring implementation.

2. Pressure Transmission to Local Governments. Through the vector of vertical pressure, the driving mechanism sees tasks cascading down to lower levels of government, particularly provincial governments. The effect is to produce a burst of planning at the local level, with each local government setting targets to match its ambitions. Shenzhen's implementation plan, for example, reveals its determination to be the national leader in green finance:

> "The proportion of green credits among all credits will have increased year by year. In 2020, Shenzhen will have ranked No. 1 nationally… Shenzhen's ecological environment conditions will continue its leading position nationally; the competitiveness of urban development will have ranked the world's first-class."[51]

These implementation plans function as a pledge by an implementer, demonstrating the level of accountability to which the implementer is consenting when it comes to fulfilling the goals of green finance. At this stage of the process, all officials enter into commitments to deliver their part of the plan. Chains of commitment and expectation form, binding officials to become busy in service of the planning priorities. Careers and promotions are now on the line. These plans also become the basis of regulatory coordination and knowledge dissemination at the lower levels of government, mirroring the coordination to be found at higher levels of government. Formulating an implementation plan is an opportunity for local governments to emphasize and educate other local regulators about the importance of green finance.

Another important effect of local implementation plans is the peer pressure created through the implementation process.[52] Temporal and regional variations exist in the implementation of green finance regulation. Therefore, inland western provinces will not benchmark themselves with Shenzhen because aiming to be No. 1 in green finance is a goal they cannot hope to reach. There is a process of reflection by local governments on how they might best position themselves. For instance, in the Jilin implementation plan, one finds the admission that "although our province is actively promoting green finance, there is still a big gap with developed regions. The gaps include the relatively low proportion of green credit and insufficient source of funds outside the banking

[51] Shenzhen Municipal People's Government, Shenzhen Shi Renmin Zhengfu Guanyu Goujian Lüse Jinrong Tixi De Shishi Yijian (深圳市人民政府关于构建绿色金融体系的实施意见) [Implementation Opinions of Shenzhen Municipal People's Government on Building the Green Finance System], para.1.2 (2018), http://www.sz.gov.cn/cn/xxgk/zfxxgj/zcfg/szsfg/content/post_6580493.html.

[52] *See* Cheng & Drahos, *supra* note 37.

system."[53] There are always peers with which local governments can calibrate, and gaps that they can identify. This peer pressure, together with the top-down pressure, serves to penetrate layers of bureaucracy, allowing for the identification of capabilities at lower levels of government and the optimal distribution of tasks within those levels.

The third effect of these implementation plans is to encourage institutional innovation and identify best practices. Provinces with better economic and capability foundations may issue an ambitious local implementation plan. For instance, Beijing's implementation plan aims to "bring into full play Beijing's advantages as an international exchange center, support Beijing-based companies and financial institutions in drawing on international experience in green credit and responsible investment, and contribute to international green finance standard-setting."[54] Local institutional innovation will always be a credit in any reckoning of the performance of local governors (Section 3). The first local government to formulate standards in an area where no national standards have been set means that it can have more flexibility in tailoring a standard to augment local strength, as well as gaining the esteem that comes with having a local standard adopted as a national standard.

3. Performance Evaluation. In China, performance evaluation is much more deeply connected with state legitimacy.[55] Constant performance evaluation up and down the rungs of bureaucratic and organizational hierarchy is a central part of a system designed to check that the expectations of performance have been met. Performance evaluation is also central to understanding how implementation works in the pressure driving mechanism, especially in the lower levels of government. China has 34 provincial administrations, 333 prefectures, and 2, 862 counties. The central-local relations in China consist of two interrelated dimensions – decentralization in economic and social responsibilities and political authoritarianism in organizational and personnel institutions.[56] Because of their relative economic independence, local governments are not necessarily responsive to calls from the central government. It is this relative autonomy that grounds the model of fragmented authoritarianism. Economic autonomy, however, is only one dimension of task implementation.

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[53] Ecology and Environment Department of Jilin Province, Jilin Sheng Renmin Zhengfu Bangongting Guanyu Tuijin Lüse Jinrong Fazhan De Ruogan Yijian Zhengce Jiedu (《吉林省人民政府办公厅关于推进绿色金融发展的若干意见》政策解读) [Interpretation on Several Opinions of the General Office of the People's Government of Jilin Province on Promoting the Development of Green Finance], para.1 (2019), http://xxgk.jl.gov.cn/szf/zcjd/201911/t20191108_6135327.html (last accessed Oct. 18, 2021).

[54] Beijing Municipal Bureau of Financial Affairs, Guanyu Goujian Shoudu Lüse Jinrong Tixi De Shishi Banfa (关于构建首都绿色金融体系的实施办法) [Implementation Measures for Establishing a Green Financial System in Beijing], para.18 (2019), https://www.beijing.gov.cn/zhengce/gfxwj/201905/t20190522_60487.html (last accessed October 18, 2021).

[55] *See* Hongxing Yang & Dingxin Zhao, *Performance Legitimacy, State Autonomy and China's Economic Miracle*, 24 J. CONTEMP. CHINA 64 (2015).

[56] *See* Xufeng Zhu, *Mandate Versus Championship: Vertical Government Intervention and Diffusion of Innovation in Public Services in Authoritarian China*, 16 PUB. MANAGE. REV. 117 (2014).

The selection, appointment, assessment, and promotion of party members and cadres and other government officials operate within the dimension of political authoritarianism. This enables China to inject non-economic key performance indicators into the pressure driving mechanism when necessary. Performance evaluation is a clear signal of what is expected by the central government, as well as an information collection mechanism. Task disaggregation may be ambitious and mission-oriented, but performance evaluation criteria are down-to-earth. Moreover, the evaluation itself becomes the source of pressure for lower levels of government to implement certain tasks if they have not yet comprehended the rationale to do so.

Green finance performance can be considered as a process of embedding "green" criteria into existing financial performance evaluation. For instance, the PBC introduced a macro-prudential assessment (MPA) mechanism in 2016 in order to prevent systemic financial risks. Under the MPA, the performance of financial institutions is assessed using many indicators such as capital adequacy ratio and liquidity measures.[57] In June 2018, the PBC started performance evaluation for banks and other financial institutions taking deposits. Green credit performance is now included in a commercial bank's quarterly MPA, with performance being measured by indicators such as the proportion of green loan balance, the year-on-year growth rate of green loan balance, and the non-performing rate of green loans. By embedding green finance as part of existing MPA, there is now the clear possibility of punishment for under-performance on the green finance front. According to the PBC's China Financial Stability Report, institutions with a higher risk in terms of MPA will face more stringent requirements from the PBC when it comes to obtaining financial support, access to preferable monetary instruments, and relending opportunities. Institutions that fail their MPA are further regulated by the PBC in order to maintain their stable operation.[58] This evaluation scheme was further revised in 2021, which takes a holistic approach to evaluation including green securities, green equity investments, green leases, green trusts, green wealth management, etc.[59]

Performance evaluation can be formal or informal. In the promotion-tournament model,[60] the formal performance evaluation of local governors is the focus. However, in our case of green finance, the performance evaluation is

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[57] *See* Yi Gang, *China's Monetary Policy Framework – Supporting the Real Economy and Striking a Balance between Internal and External Equilibrium* 1, speech at the Chinese Economists 50 Forum, Tsinghua University, Beijing, Dec. 13, 2018, https://www.bis.org/review/r190130b.htm (last accessed Nov. 27 2020).

[58] *See* Xu Jiaxuan (徐稼轩), *Green Development of the Banking Industry: A Discuss Based on China Financial Stability Report (2018)*, IIGF (Nov. 16, 2018), http://iigf.cufe.edu.cn/info/1012/1076.htm (last accessed Apr. 24, 2021).

[59] *See* PBC, Zhongguo Renmin Yinhang Guanyu Yinfa Yinhangye Jinrong Jigou Lüse Jinrong Pingjia Fang'an De Tongzhi (中国人民银行关于印发《银行业金融机构绿色金融评价方案》的通知) [Notice on Performance Evaluation Scheme of Green Finance in Banking Financial Institutions] (2021), http://www.gov.cn/zhengce/zhengceku/2021-06/11/content_5616962.htm (last accessed Oct. 18, 2021).

[60] *See* Zhou, *supra* note 49.

more diversified in terms of the authority of the evaluator, the form of evaluation and the entities to be evaluated. But the short-term time frame (annually or even quarterly) and specificity of the performance indicators are the same.

Green finance is not a domain in which there is one clear leading regulator. Since green finance is a priority for the central government, this produces pressure for a holistic performance evaluation of all aspects of green finance among all provinces. A key player in managing this evaluation has been the International Institute of Green Finance of the Chinese University of Finance and Economics (IIGF). Since 2018 the IIGF has issued *Local Green Finance Development Index and Evaluation Report* (IIGF Local Index) every year.[61] These reports measure the position of each province and provide breakdowns of policy promotion efforts and market performance using a system of 13 secondary indicators and 60 tertiary indicators. The IIGF is one of the GFC's key members and so is part of a chain of authoritativeness in the pressure driving mechanism. For local officials its index has a quasi-official status, one to which they pay attention.

For the present purposes, we will highlight one indicator here – policy penetration.[62] The 2019 Local Index lists the guiding policies issued by prefectural governments (such as implementation plans), as well as the specific policies issued by prefectural PBC branches and environmental protection departments to promote green finance. One function of the listing is to acknowledge and demonstrate achievement. But the listing also serves to sum policies that in turn can be used as an indicator to evaluate the performance of provincial governments, instead of the implementer (prefectural government). This cross-level performance evaluation of layers of government is an example of how the pressure of evaluation acts to unite the layers that might otherwise remain in fragmented mode, to borrow the metaphor of fragmented authoritarianism. This form of evaluation binds layers of government together. Success at the prefectural level also becomes a metric for those sitting in provincial offices. And, of course, provincial-level officials cannot sit in their offices but have to be active in ensuring that the prefectural level keeps its nose to the grindstone of task implementation. The mantra of whole-of-government is not just to be preached but practiced, because there are detailed metrics to measure the practice. For each prefectural government, the combination of pressure from above and performance evaluation becomes a reason to coordinate resources, explore best practices, and strive to do well in peer comparisons.

[61] *See* Wang & Pan, *supra* note 10.

[62] It is reflected by indicators such as "comprehensive guiding policies" and "implementing policies at the prefectural level" in the reports.

III. EXPERIMENTAL GOVERNANCE: LEARNING, ADJUSTMENT, AND PRESSURE REINFORCEMENT

Experimental governance is a process in which central policy-makers "encourage local officials to try out new ways of problem-solving and then feed the local experiences back into national policy formulation," and "has been a pervasive feature in China's economic transformation,"[63] China uses experimental governance in many issue areas because, given the size of the country, the repercussions of implementing a policy and getting it wrong can be massive, and, much like the course of the Titanic, not easy to correct.[64] Experimental governance can also accommodate regional differences, rural/urban differences, and increasing social stratification. The relevant literature has already discussed the mechanisms and functions of experimental governance in Chinese regulation, with concrete case studies in the area of higher education,[65] the rule of law in pilot free trade zones,[66] new energy demonstration city,[67] local electricity markets,[68] local technology zones,[69] urban restructuring,[70] and low-carbon policies.[71]

This section does not aim to simply add one more case study of green finance to this already long list. Instead, we incorporate experimental governance as a complementary mechanism to the pressure driving mechanism. Pressure-driven central planning on its own faces an obvious Hayekian objection: the knowledge needed for planning calculation is too widely scattered within any society for planning to be successful. A pressure driving mechanism risks arriving at collapse or systemic failure sooner rather than later. One way for central planners to minimize the risks of fast scaling failure is to make a lot of use of experimental governance so as to gain real-world information about probabilities attached to the failure or success of a given regulatory approach. By its very nature experimental governance involves devolution to a variety of

[63] *See* Sebastian Heilmann, *From Local Experiments to National Policy: The Origins of China's Distinctive Policy Process*, 59 THE CHINA J. 1 (2008).

[64] *See* ANN M. FLORINI, HAIRONG LAI & YELING TAN, CHINA EXPERIMENTS: FROM LOCAL INNOVATIONS TO NATIONAL REFORM (2012).

[65] *See* Shuangmiao Han & David Mills, *"From Point to Surface": The Role of Policy Experimentation in Chinese Higher Education Reforms*, 69 BRITISH J. EDUC. STUD. 217 (2021).

[66] *See* Zuozhen Liu & Jiannan Li, *The Rule of Law Experiment in China's Pilot Free Trade Zones: The Problems and Prospects of Introducing Hong Kong Law into Guangdong*, 10 HAGUE J. RULE L. 341 (2018).

[67] *See* Jing Wu, Christian Zuidema & Katharina Gugerell, *Experimenting with Decentralized Energy Governance in China: The Case of New Energy Demonstration City Program*, 189 J. CLEANER PRODUCTION 830 (2018).

[68] *See* Helena Uhde & Gabriel C. Malima, *Experimenting with Local Electricity Markets in China – Multilevel Drivers and Barriers in the Sociotechnical Regime*, 69 ENERGY RES. & SOC. SCI. 101577 (2020).

[69] *See* Sebastian Heilmann, Lea Shih & Andreas Hofem, *National Planning and Local Technology Zones: Experimental Governance in China's Torch Programme*, 216 THE CHINA Q. 896 (2013).

[70] *See* Sonia Schoon, *Chinese Strategies of Experimental Governance: The Underlying Forces Influencing Urban Restructuring in the Pearl River Delta*, 41 CITIES 194 (2014).

[71] *See* Kevin Lo & Vanesa Castán Broto, *Co-Benefits, Contradictions, and Multi-Level Governance of Low-Carbon Experimentation: Leveraging Solar Energy for Sustainable Development in China*, 59 GLOBAL ENVTL CHANGE 101993 (2019).

areas and fields. For an authoritarian state that wants to retain central political control of planning, devolved experimental governance carries dangers if real-world information about experimental governance outcomes is not aggregated. The political risks of experimental governance have to be managed. Success has to be seen to be rewarded by the central government, as does punishment for failure. What happens in the name of experimental governance in Shenzhen cannot just stay in Shenzhen. The pressure driving mechanism has within it reporting loops and information flows that provide the state with data about the progress of its planning objectives and where, in terms of targets and tasks, adjustments are needed. Without these loops, the state could not centralize the volume of learning coming from the many governance experiments in China's regions. Top-down, bottom-up connections form only a skeletal beginning to understanding the complex texture of a unified dynamic in which multiple actors at different levels of decision-making are, through formal and informal channels, motivated to study the experience of others, adopt and adapt learning from those experiences and respond to each other's priorities while all the time jostling to be seen to be contributing to the chosen goals of communist party leaders. In the next section, we use green finance pilot zones (GFPZs) to illustrate how green finance experiments and the pressure driving mechanism produce a complementary dynamic.

A. Central Government Levers and The GFPZs

In June 2017, the State Council approved eight GFPZs at county or prefecture level in five provinces. GFPZs are, in effect prototypes, for the building of a green financial system. They were established to explore replicable and diffusible experiences in institutional design and implementation mechanisms, as well as to investigate ways to detect, prevent, and control contagion events within a green financial system. Seven ministries, the same that had issued the GFS Guidelines 2016, jointly issued five Overall Plans for GFPZs in June 2017.[72]

The rationale for site selection was further elaborated in a press conference by the Deputy Governor of PBC. Generally, there were three considerations: regional representability, existing green finance experience, and local governors' support.[73] Selected sites lie in the east (Zhejiang and Guangdong), central area (Jiangxi), and west (Guizhou and Xinjiang) of China, but geography does

[72] *See* PBC, NDRC, MOF, MEP, CBRC, CSRC, & CIRC, Overall Plans for Building GFPZ in (1) Huzhou and Quzhou in Zhejiang Province; (2) Guangzhou in Guangdong Province; (3) Hami, Changji, and Karamay in Xinjiang Uygur Autonomous Region; (4) Gui'an New District in Guizhou Province; and Ganjiang New District in Jiangxi Province (2017), http://www.greenfinance.org.cn/displaynews.php?id=1163 (last accessed Oct. 18, 2021).

[73] See *Lüse Jinrong Gaige Chuangxin Shiyan Qu Chuifenghui Wenzi Shilu* (绿色金融改革创新试验区吹风会文字实录) [*Transcribed Conference Brief for GFPZ*] (2017), http://news.sina.com.cn/o/2017-06-16/doc-ifyhfhrt4534198.shtml (last visited Apr. 23, 2021).

not explain why these five were selected – there are other provinces and counties in these regions. A notable omission from this list of sites is Shanghai.[74]

The second and third considerations combined reveal the dynamic of GFPZ selection within the pressure driving mechanism. To a large extent, being awarded the status of a GFPZ is a recognition of the work of local policy entrepreneurs by the central government. The Green Finance Guidelines 2016 mentioned the establishment of local pilots as a task to be implemented. What is important to note is the short window of time between the issue of the Guidelines and the GFPZ announcement - less than one year (August 2016 to June 2017). Yet within this short window, 18 provinces/prefectures put forward implementation plans.[75] Prominently, one of the GFPZs selected, Huzhou in Zhejiang, issued a comprehensive series of policies, including a green finance five-year plan, a green finance index, a 2016 action plan, as well as a special action plan for green finance within the financial system. These policies were issued in April 2016,[76] even before the national Green Finance Guidelines. Guangdong and Guizhou, two other GFPZs, also issued an implementation plan in 2016. Xinjiang was selected because of its abundant solar and wind energy, and because it was part of a prior pilot for compulsory green insurance.[77]

Why would one volunteer to be a pilot zone, risking the costs of being a first mover? Since all provinces have to comply eventually, why not sit back and study the compliance strategies of others? The answer lies in the competition that the pressure driving mechanism creates among peers. The mechanism is more subtle than a command from the Centre with sanctions attached. Becoming a GFPZ brings rewards, both tangible and intangible. GFPZ status brings with it the esteem of national attention. More tangible are the financial resources that the provinces have to divert to those working on making the zone a success. Being a GFPZ brings with it the freedom to experiment, giving those within the zone a chance to develop standards rather than being forced to play catch up to meet standards externally imposed.

[74] *See* Li Zhiqing (李志青), *Shanghai Cuoshi Lüse Jinrong Gaige Chuangxin Shiyan Qu: Qifa Yu Zhanwang* (上海错失"绿色金融改革创新试验区"：启发与展望) [*Shanghai missed the GFPZ Opportunity: Implications and Prospect*], GFC (Jul. 3, 2017), http://www.greenfinance.org.cn/displaynews.php?id=1168 (last visited Apr. 23, 2021).

[75] *See* GFC, *Guowuyuan Channgwu Huiyi Jüeding Zai 5 Sheng (Qu) Jianshe Lüse Jinrong Gaige Chuangxin Shiyan Qu* (国务院常务会议决定在5省(区)建设绿色金融改革创新试验区) [*The Executive Meeting of the State Council Decided to Build a GFPZ in 5 Provinces*], Jun. 15, 2017, http://www.greenfinance.org.cn/displaynews.php?id=1113 (last visited Apr. 23, 2021).

[76] *See id.*

[77] *See* Environmental Protection Department of Xinjiang Government & Xinjiang Branch of CIRC, Guanyu Tuijin Xinjiang Huanjing Wuran Zeren Baoxian Shidian Gongzuo De Tongzhi (关于推进新疆环境污染责任保险试点工作的通知) [Notice on Promoting the Xinjiang Pilot of Compulsory Environmental Pollution Insurance] (Jun. 8, 2013), http://124.117.235.205:8099/eportal/ui?pageId=793&articleKey=75635&columnId=3052 (last accessed Aug. 27, 2021).

Putting the GFPZs into the broader context of local governments' indebtedness,[78] dedicated fiscal support from their respective provinces or even the central government is more important for prefectural or county level governments than ever before. Consequently, GFPZ status is a "one stone for several birds" solution for these prefectures/counties: implementing ecological civilization and promoting local green development, gaining fiscal support to relieve local indebtedness and support local green industries, winning an honorable title to solidify one's reputation with investors (as well as adding to the score of the local governors' performance evaluation) and finding the policy freedom that can be tailored to local conditions and generalized as replicable and spreadable experiences (again, additional marks for performance evaluation).

B. GFPZ As Pixels for Green Finance Information

For central-level regulators, the implementation of GFPZs also creates sources of experiential learning to support large-scale decision-making. All GFPZs are part of two initiatives coordinated by the PBC - one is environmental information disclosure, and the other is building green project databases.[79] PBC's Green Credit Performance Evaluation Programme[80] led by the PBC in 2018 was also based on GFPZ experiences.[81] The GFPZs are testing sites, sites that will eventually lead to national standards of environmental information disclosure and for maintaining a green project database. The pressure driving mechanism is a strong signaling mechanism managed by the Centre. However, the Centre has to leave room for inventive risk, the risk that comes from trying something that has not been done before. A system that crushed inventive risk could not use, in any meaningful way, experimental governance because centrally commanded rote learning would drive out the possibility of learning from bottom-up innovation.

The GFPZs are places where inventive risk is encouraged. For instance, one of the prominent problems for green finance is setting green finance standards. This is anything but a neutral technocratic drafting exercise. Gaining insights into how to handle, from a regulatory perspective, what constitutes "green" is crucial to the integrity of any green financial system. For example, Huzhou, as

[78] *See* Fenghua Pan et al., *Developing by Borrowing? Inter-Jurisdictional Competition, Land Finance and Local Debt Accumulation in China*, 54 URBAN STUD. 897 (2017).

[79] *See* Jiang Nan (姜楠), *Lüse Jinrong Gaige Chuangxin Shiyan Qu Faqi Huanjing Xinxi Pilu He Lüse Xiangmu Shujüku Jianshe Changyi* (绿色金融改革创新试验区发起环境信息披露和绿色项目数据库建设倡议) [*GFPZs Launched Initiatives for Environmental Information Disclosure and Green Project Database Construction*], GFC (Jun. 17, 2018), http://www.greenfinance.org.cn/displaynews.php?id=2195 (last visited Apr. 23, 2021).

[80] *See* PBC, Zhongguo Renmin Yinhang Guanyu Kaizhan Yinhangye Cunkuan Lei Jinrong Jigou Lüse Xindai Yeji Pingjia De Tongzhi (中国人民银行关于开展银行业存款类金融机构绿色信贷业绩评价的通知) [Notice on Developing Green Credit Performance Evaluation for Banks and Deposit-taking Financial Institutions] (2018), http://upload.xinhua08.com/2018/0727/1532705801523.pdf (last accessed Aug. 27, 2021).

[81] *See* Jiang, *supra* note 79.

a GFPZ, trialed this by issuing a series of local green standards.[82] Its green bank evaluation standards cover detailed evaluation methods, evaluation indexes, and evaluation processes for green banks.[83] These first-hand practical experiences can be further used for banks' self-evaluation, rating by regulators, and third-party evaluation, etc., ensuring that the standards have a wide range of practicability and applicability beyond Huzhou's borders.

C. Lateral Pressures and GFPZ Innovation

The GFPZ application process saw 18 local governments quickly draft green finance implementation plans.[84] Peer pressure is an important part of the pressure driving mechanism that helps to scale experimental governance. For local governments without implementation plans in place, the label of laggard looms. There is pressure on them to produce plans. Once a provincial government has a GFPZ within its borders there is a strong incentive for that government to do its utmost to support the GFPZ, especially since it knows that it, along with every other province, will now have to run a gauntlet of metrics and performance evaluation on green finance. Doing well in these high-stakes games of measurement provides a powerful incentive to leverage the advantage of having a GFPZ. The IIGF Local Index shows that provinces with a GFPZ generally outperform the regional peers to which they can reasonably be compared.[85] For provinces without a GFPZ, one possible response is to build their own *de facto* GFPZ. For example, Lanzhou in Gansu Province aimed to become a GFPZ in 2018 and made substantial efforts, including building a green project database, and implementing an exclusion policy when it came to the financing of high pollution, high energy intensity, and high environmental risk projects.[86] Eventually in 2019, Lanzhou was approved as the ninth GFPZ. Shenzhen is in the midst of preparation to apply for a GFPZ. One of its policy innovations is local regulation.[87] This will be the first local regulation in China

[82] These include Evaluation Standards for Projects Eligible for Green Financing (绿色融资项目评价规范), Evaluation Standards for Enterprises Eligible for Green Financing (绿色融资企业评价规范), Evaluation Standards for Green Banks (绿色银行评价规范), and Standards for Building Specialized Green Finance Institutions (绿色金融专营机构建设规范).

[83] See *Huzhou Zhiding Quanguo Shoupi Lüse Jinrong Difang Biaozhun* (湖州制定全国首批绿色金融地方标准) [*Huzhou Formulated the First Batch of Green Finance Local Standards in China*], GFC (Jul. 7, 2018), http://www.greenfinance.org.cn/displaynews.php?id=2236 (last visited Apr. 23, 2021).

[84] *See* GFC, *supra* note 75.

[85] *See* Wang & Pan, *supra* note 10.

[86] *See* Zhang Yu (张钰) et al., *Lanzhou Xinqu: Nuli Chuangjian Guojia Lüse Jinrong Gaige Chuangxin Shiyan Qu* (兰州新区：努力创建国家绿色金融改革创新试验区) [*Lanzhou New District: Efforts to create a national Green Finance Pilot Zone*], GFC (Sept. 21, 2018), http://www.greenfinance.org.cn/displaynews.php?id=2292 (last visited Apr. 23, 2021).

[87] *See* Shenzhen Jingji Tequ Lüse Jinrong Tiaoli (深圳经济特区绿色金融条例) [Shenzhen Special Economic Zone Regulations on Green Finance] (promulgated by Shenzhen Municipal People's Cong., Oct. 29, 2020, effective Mar. 1, 2021), http://jr.sz.gov.cn/sjrb/xxgk/zcfg/dfjrzc/jrfzzc/content/post_8279891.html (last accessed Oct. 18, 2021).

requiring mandatory disclosure of environmental information.[88] Although these efforts do not necessarily receive endorsement from the central government,[89] they are examples of how the pressure driving mechanism creates shifts in behavior along with the layers of China's local government. The first-mover voluntarism that we see in China's lower levels of government is underwritten by the rewards for voluntarism that flow from the higher level, as well as the temporary relief from the pressure that continues to target all those playing catch up.

IV. Conclusions

In this paper we set out to answer the question of how China might shift into green finance, a regulatory transformation that would be momentous for China and the world. Our evidence suggests that much more regulatory coordination has been stimulated in the layers of Chinese bureaucracy than the model of fragmented authoritarianism would imply. This coordination has been achieved through the pressure driving mechanism complemented by experimental governance. A serious start on the greening of China's financial system has been made, and a model of Chinese green finance regulation is taking shape. Since China aims to peak CO_2 emissions before 2030 and achieve carbon neutrality before 2060,[90] we can expect China to intensify its regulatory processes to achieve these goals. In Chinese green finance regulation, we see a unification of China's different levels of bureaucracy through the pressure driving mechanism, as well as risk management through experimental governance, and the use of diversified regulatory instruments.

The pressure driving mechanism explains how the targets/signals set by the central government are consolidated, disaggregated, transmitted, and implemented by the lower levels of government. The mechanism is a means to push these local levels into swift cooperation when it comes to implementing regulatory goals. There is more to this mechanism than is implied by notions of "command and control" or "top-down regulation." In the case of China, an exclusive focus on the top-down or command-based approach to regulation tends to obscure how the central government gathers the information it needs to answer the question of whether to stay on course or change direction. As our discussion of the pressure driving mechanism shows, there are more subtle learning processes at work in China's approach to regulation. The lateral pressures of the pressure driving mechanism encourage local regions to take on the

[88] The ESG disclosure obligation (in Chapter 5) will be imposed to listed companies in the financial industry, issuers of green financial bonds, and financial institutions that have already enjoyed preferential green financial policies.

[89] For instance, Wanzhou in Chongqing issued its local green finance pilot plan without endorsement by seven ministries.

[90] *See* Xi Jinping, *Speech at the General Debate of the 75th Session of the United Nations General Assembly*, CGTN (Sept. 23, 2020), https://news.cgtn.com/news/2020-09-23/Full-text-Xi-Jinping-s-speech-at-General-Debate-of-UNGA-U07X2dn8Ag/index.html (last visited Apr. 24, 2021).

risks of being first-mover innovators, knowing they can gain both rewards and relief from the pressure driving mechanism. Experimental governance, we saw, complements the pressure driving mechanism. The eight prefectures and counties that won GFPZ status were given the freedom and resources needed to take on the risks of experimental governance for green finance. By doing so they generated information flows for processes of learning and policy evaluation. What is distinctive here, we would argue, is that the pressure driving mechanism turns learning and policy evaluation into a whole-of-bureaucratic-level approach for all levels of bureaucracy because the mechanism pressures each player in every level to do well in the task-fulfilment games. Developing whole-of-government approaches to learning and policy evaluation is, of course, a major challenge for every government.[91] The pressure driving mechanism is China's answer to that challenge.

The broader context in which the pressure driving mechanism is situated matters. China is led by a communist party officially committed to Marxism-Leninism, meaning that China is not much constrained by the regulatory philosophies and approaches of liberal market economies in which capitalism's impact on the natural world is the subject of intense interest group politics that at best produce compromises around single-issue externalities or market failures such as water pollution, air pollution, fire hazard reduction or biodiversity loss.[92] Those compromises of environmental regulation can of course be undone in periods of neo-liberal deregulatory ascendancy such as the Reagan and Thatcher decades. The pressure driving mechanism does offer, as the case of green finance shows, the potential for more systematic and transformative regulation if it is harnessed to implement a holistic agenda. In the case of green finance, this holistic agenda arrived through China's prioritization of ecological civilization. As we showed, this concept has been clearly transmitted to all levels of government. Our analysis of performance evaluation, an important component of the mechanism, shows how it can be a systemic tool to drive coordination and performance, removing any hesitancy or slowness because everyone understands that the ultimate determinants of selection, appointment, assessment, and promotion of party members and cadres and other government officials are rooted in the context of political authoritarianism. But as the discussion of GFPZs demonstrated this political authoritarianism does not crush experimentation and in fact encourages it. China's financial regulation reveals a biodiversity of regulatory instruments well informed by regulatory experiments.

Building a system of green finance represents a monumental challenge, and not just for China. For the period 2016-2019 the four banks that lent the most to the fossil fuel industry were JPMorgan Chase, Wells Fargo, Citi, and Bank

[91] *See* OECD, *supra* note 39.
[92] *See* Parker & Haines, *supra* note 19.

of America.[93] Among the world's 135 central banks, only 12% explicitly have sustainability mandates.[94] Globally, green finance has a long way to go. The pressure driving mechanism is China's primary and practical tool for transforming its financial system, allowing it to overcome the dangers of fragmented decision-making, to generate rapid experimentation and unify its bureaucracy around a holistic ecological agenda. Admittedly, China's interlocking political and regulatory networks tied together and led as they are by the communist party form a unique institutional setting for the mechanism. That said, China's use of the pressure driving mechanism in green finance regulation does reveal the necessity for any state to find a means of achieving joined-up governance or a whole-of-government approach to the regulation of ecological problems, a mantra that has been repeated often enough in OECD countries.

93 *See* Rainforest Action Network, *Banking on Climate Change - Fossil Fuel Finance Report 2020*, 8 (2020), https://www.bankingonclimatechaos.org/bankingonclimatechange2020/.

94 *See* Simon Dikau & Ulrich Volz, *Central Bank Mandates, Sustainability Objectives and the Promotion of Green Finance*, 184 ECO. ECON. 107022 (2021).