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Ecological civilization Politics and Governance in Hangzhou: New pathways to green urban development?

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Abstract

This study applies a governance perspective to examine how China's national ecological civilization framework is implemented at the city level. With Hangzhou, one of China's leading green cities, as a case, the study focuses on how the city's party-state authorities respond to various pressures from the central leadership and from society to improve environmental governance. Hangzhou's government applies a new public management approach with public sector performance contracts, performance reviews, and associated results management procedures that are integrated with a battery of social participation instruments. The city government aims to mitigate contradictory goals relating to the need for continued economic growth and for simultaneous environmental improvements based on plans for ecological civilization development and protection of 'red' ecological bottom lines. It is argued that Hangzhou's authorities are testing a novel approach that could contribute to narrowing the 'implementation gap' in China's local green politics by enhancing the local party-state's ability to handle new instruments of governance in environmental politics. Available, but rather fragmented data suggest that environmental improvements are occurring, but the link between the new governance framework and these improvements is difficult to establish.

Keywords: China; Hangzhou; ecological civilization; green governance; green development; new public management; performance reviews; social participation

A new framework for green development politics

As a consequence of China's environmental crisis, the Chinese leadership has recognized the need for a green turn in its development strategy, and it has made ecological recovery and security a national priority, charting a course that prioritizes ecological reconstruction, a cleaner environment, and increased use of renewable energy (Zhongguo Huanjing Bao 2014). Yet, it continues to call for high economic growth in the range of 6-7 percent annually.

The concepts underlying the green turn have been fueled by debates that combine well-known international developmental approaches, e.g. sustainable development, low carbon development, circular economy, green development, and green innovation, with homegrown ideas such as: harmonious society, scientific outlook on development, China Dream, Beautiful China, Beautiful Life, China's New Normal, ecological Marxism, and ecological civilization. In recent years, China's leaders have taken these ideas on board (Kuhn 2016; Z. Wang, He, and Fan 2014; Zhu 2014), and the speed of policy formulation has been striking.

During this process, 'ecological civilization' (*shengtai wenming jianshe* 生态文明建设, here: 'eco-civilization') became the leadership's

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preferred policy framework for green development. Eco-civilization was originally introduced as an eco-development concept anchored in Chinese civilizational tradition in the mid-1980s (Huan 2016), but it was not put forward officially as a national green development framework until 2007, when Hu Jintao, then General Secretary of the Communist Party of China (CPC), endorsed it in his report to the 17th Party Congress. Hu emphasized that China must "construct eco-civilization" and anchor perceptions about eco-civilization broadly in society (Hu 2007). In his report to the 18th Party Congress in 2012, Hu further pointed to the need for a practical "eco-civilization construction system" to guide and manage policy implementation (Hu 2012; Huan 2016).

Conceptually, there have been two predominant views on eco-civilization in China: "At the level of philosophy and ethics, eco-civilization is a weak eco-centrist (environmentally friendly) natural or ecological value and morality; at the level of political ideology, eco-civilization is an alternative economic and social formula differing from the dominating capitalist one", i.e. a concept rooted in Marxist ecology (Huan 2016). As a green development framework, it aims to integrate interventions involving climate change, environment, ecology, energy, green innovation, eco-culture, social well-being, and livability by mobilizing and engaging a broad range of state and non-state stakeholders (Huan 2016). As the analysis below shows, it has become an operational framework[1] that aims to address the efficiency gap in environmental policy implementation at the local level of government caused by a seemingly inescapable contradiction between a relentless pressure to achieve high economic growth rates and green development imperatives (Economy 2010; Kassiola and Guo 2010; Smil 2015; T. Yang et al. 2016; Eaton and Kostka 2014; A. L. Wang 2013).

This was made clear in 2015, when the central leadership issued an eco-civilization guideline proposing reform procedures and instruments to mitigate the obstacles to the implementation of environmental policies. While economic growth and development remained "hard" strategic priorities, the Chinese leadership now stated that future development must be sustainable and "green" and that it could no longer occur at the cost of the environment (Zhonggong Zhongyang 2015). This was translated into practice in 2016, when the National Development and Reform Commission (NDRC) published a policy guideline with a system of eco-civilization targets and "green" indicators on the basis of which the performance of governments at all levels should be guided, monitored, and controlled. The document stipulated that economic and environmental indicators must be part of the same system of key performance indicators used at all levels of government (Guojia Fagaiwei et al. 2016).

In addition to the eco-civilization framework, China's central leadership introduced an additional eco-development concept in 2013, called the "red line for ecological protection" (*shengtai wenming hongxian* 生态保护红线). It was not only an add-on to the eco-civilization framework. Rather, it was presented as an integral part of a more comprehensive economic reform package. It focused on the need to protect and control the use and management of natural resources and ecologically vulnerable areas, and to reject the exclusive priority given to economic growth, especially in areas with vulnerable ecological resources, in development zones, and in poor counties. The document stipulated that balance sheets should be made for the use and conservation of natural resources. This should in turn be used as a benchmark for assessing the performance of leaders in the public sector. The document introduced a new and more rigorous system of life-long responsibility by leading officials for environmental losses

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incurred under their leadership at any given post at any given time (Zhonggong Zhongyang 2013).

In 2017, the central leadership issued a policy opinion for red line ecological protection that mandated relevant authorities to set specific benchmarks and standards for preventing further degradation of eco-resources and to reinforce implementation of environmental policies (Zhonggong Zhongyang Bangongting 2017). The red line policies are important since they have now become foundational in China's efforts to secure the country's eco-balance, i.e. growth should not be the overriding development priority any more. Secondly, the need for balancing ecological consumption with ecological capacity has been accepted as a base-line principle in the general reform program. Finally, the stipulation regarding life-long responsibility for environmental harms was radical. It has never been tried elsewhere before. While it will be practically difficult to handle, it clearly sets the frame for making sustainability and ecological security a key concern for local officials across China.

The processes leading to the formulation of the eco-civilization and red-line policy frameworks have not been entirely synchronous, but they are mutually reinforcing. The frameworks aim to restore order and balance to China's distressed environment and to convince and motivate China's party-state organizations and their leaders to seriously care for the ecological future of their territory and not only focus on economic growth. China's current leader, Xi Jinping, has emphasized that "green is gold" and that moving towards a new era of eco-civilization to build what he calls a "Beautiful China" (*Meilide Zhongguo*美丽的中国) are core elements of his "China Dream" (UNEP 2016).

While the viability of mitigating the seemingly contradictory environmental and economic objectives remains to be proven, China has already demonstrated that economic growth and the growth of energy use and of greenhouse gas emissions can be decoupled (Zhang and Da 2015). Still, future economic growth remains predicated on increased energy and resource consumption for some time to come, including both black (coal) and green (renewable) energies, and future research will have to determine whether the dedicated efforts across the Chinese economy will make it possible for China to combine economic growth with a clean, secure, and economically efficient energy system by 2050, making it possible to reduce energy consumption below present levels, as projected by one of China's leading energy think tanks in a recent authoritative study ("China Renewable Energy Outlook 2017" 2017, hereinafter: CREO 2017).

China has also succeeded in decoupling other critical environmental pressures from economic growth. Emissions of SO_2 and NOx peaked in 2006 and 2011 respectively, and some water pollutants such as ammonia nitrogen have been declining since the early 2000s. In fact, most of China's ecosystem services[2] have seen noteworthy improvements between 2000 and 2010. The only exception is habitat provision for biodiversity. Food production had the largest increase (38.5%), followed by carbon sequestration (23.4%), soil retention (12.9%), flood mitigation (12.7%), sandstorm prevention (6.1%), and water retention (3.6%), whereas habitat provision decreased slightly (–3.1%) (Sugden 2016).

A recent analysis by the Development Research Centre of the State Council (DRC) and OECD of China's environmental policy implementation efforts provided evidence that China's environmental policy has indeed become more stringent in recent years, and that environmental policy measures have increased the explicit or implicit cost of environmentally harmful behavior. The analysis is based on the OECD's Environmental Policy Stringency (EPS) proxy indicators and it shows that over the last

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15 years, Chinese environmental policy has converged with OECD standards much more rapidly than other emerging economies (DRC and OECD 2017, p. 21).

However, the DRC/OECD study also noted that given the high rates of GDP growth in China, even relative decoupling of pollutants will likely continue to intensify environmental pressures for many years to come (DRC and OECD 2017, p. 17). Indeed, the viability of relative decoupling as a long term approach to sustainable development is doubtful (Ward et al. 2016)

Still, the intensified national efforts to ensure policy compliance at the lower levels of government have put local governments under increasing pressure to mitigate environmental and economic growth objectives. In this study, I examine how the intended green developmental turn and the implicit contradictions between conflicting development agendas are handled through governance practices in Hangzhou, the capital of Zhejiang Province.

This study engages with an emerging, but scattered literature (J. Wu et al. 2017) on how urban governments in China are dealing with the need to leverage the conflict between the continued demand for economic growth and the need to protect the environment and restore ecological order and security. My focus is on how these developments are tackled through new governance approaches and policy instruments. I have chosen Hangzhou as a case since the city engaged with the need for a green transition early on (Delman, 2018). The city has been at the forefront of urban green development programs since the 1990es and it invariably ranks high on green and sustainability dimensions in comparative city rankings (UNDP China Office 2015, G. Wang 2014). The rankings reflect different aims and different methodologies and are often based on incomplete or incomparable data (J. Wu et al. 2017), yet Hangzhou's overall high score has been a good reason for focusing on the city's green politics at a time when the Chinese central state is desperate to implement substantial initiatives in response to the country's escalating environmental crisis.

Specifically, I ask how Hangzhou's local party-state addresses the need to restore ecological balance, save on resources, and diminish pollution through eco-civilization politics, and how the red line for ecological protection is brought into this framework. I further inquire whether the city's emerging green governance framework can leverage the potential conflict between green development goals and the city's economic growth target set at >7.5% annually for the 13the five-year plan period (2016-2020) (Hangzhou City Government 2016) to address the environmental policy implementation gap. I am particularly interested in probing the sustainability of the institutions, mechanisms, and instruments that are designed and developed to make implementation of green policies more effective. To do this, I combine results of my research on Hangzhou's climate change and green governance since 2012 with readings of recent local government documents and reports. I also examine developments on some of Hangzhou's key green indicators based on local statistics to determine the effects of Hangzhou's efforts to implement green policies. It is important to note, however, that there is no systematic reporting at the local level as yet on progress with regard to fulfilling the numerous targets set for green development. The data are fragmentary and still mostly reported at a high level of aggregation.

Eco-civilization as a green development framework in Hangzhou

Building on the governance (治理 *zhili* in Chinese) perspective of J.A. Rhodes (Rhodes

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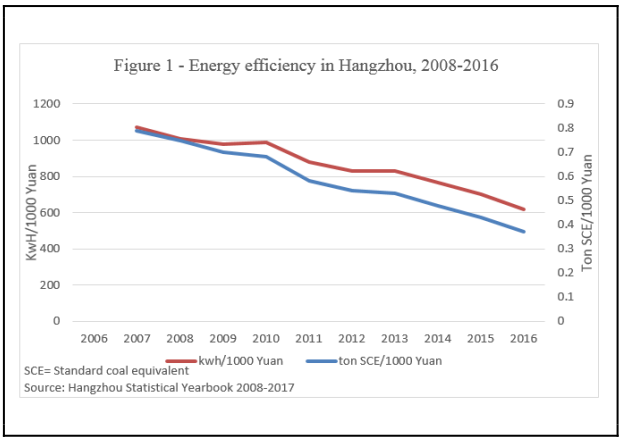
1996), the study examines the interplay of the authoritarian party-state and non-state actors in relation to the implementation of eco-civilization politics following Hangzhou's public sector reforms during the process of its economic transformation. Administrative reforms in Hangzhou include growing attention to professional management; adoption of learning from private sector styles of management practice; market based thinking in the public sector; emphasis on explicit standards and measures of performance; emphasis on enhancing government efficiency through a shift to greater competition in the public sector; stress on discipline of local organizations and their leaders; building governance networks with non-state stakeholders; and efficiency in resource use. This approach has drawn inspiration from new public management practices (NPM) developed in Western countries since the 1980es (cf. Rhodes 1996; Hood 1991), and the NPM approach has been used liberally within China's Party-state system since the 1990s (Burns and Zhou 2010; K. Yang 2007), including Hangzhou (B. Wu 2017, p. 1-18).

Hangzhou's government published its first eco-civilization plan (2010-2020) in 2011. It stipulated 35 specific targets (Hangzhou City Government 2011), divided into five broad categories, four of them with "ecological" as a prefix: Economy, environment, residential areas, and culture (Delman, 2018). In line with NPM principles, as elsewhere in the country (Gao 2009), these targets became key performance indicators (KPIs) written into the responsibility contracts[3] of local departments.[4]

It has been argued that China's responsibility contracts with their KPIs do not always enhance local government efficiency as intended (Burns and Zhou 2010; Zhu 2014). This has also been so with regard to environmental politics where there is evidence that points to an environmental policy efficiency gap (Eaton and Kostka 2014; Kostka et al. 2014; Zhu 2014). In response to this dilemma, Hangzhou's leadership has developed a package of governance instruments aimed to enforce implementation of environmental politics and delivery of environmental services (Delman 2018; Guan and Delman 2017). The best documented example of such green politics in Hangzhou is in relation to energy efficiency, which is a key national priority, where local targets and KPIs were gradually disaggregated and differentiated according to local conditions and then written into responsibility contracts between government agencies and between them and local enterprises (Delman 2018; Guan and Delman 2017). Figure 1 shows noteworthy improvements in Hangzhou's energy efficiency between 2006 and 2017 in terms of reduction of KwH of electricity consumed and energy consumption in terms of standard coal equivalents used per 1,000 Yuan RMB per GDP unit respectively. This relative decoupling of economic growth from use of energy has come about due to the use of a state-of-the-art package of governance instruments that combine command-and-control instruments (such as responsibility contracts), market based instruments, and a few co-governance instruments through public-private partnerships (Guan and Delman 2017).



However, relative decoupling of economic growth from use of energy does not prevent

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energy consumption from growing in Hangzhou. Thus, the city's energy consumption was 33% higher in 2015 as compared to 2010 (Hangzhou Government Office 2016). Still, the use of coal fell from 46.2 % of total energy consumption in 2010 to 28.9 % in 2015 (Table 1).

Type of energy	2010	2015
Coal	46.20	28.90
Oil products	18.60	17.30
Clean energy*	35.20	53.80
Total	100.00	100.00
** Clean energy comprises:*		
- Natural gas	5.30	9.40
- Non-fossil fuels	7.80	9.40
- External thermal power**	22.10	35.00
Note: The sources of external power are unknown ** Sources are unknown		
Source: 杭州市人民政府办公厅关于印发杭州市能源发展"十三五"规划的通知 (杭政办函[2016] 118 号)		

Table 1 Composition of energy consumption in Hangzhou 2010 and 2015, in %

Since the 2011 eco-civilization plan was published, Hangzhou's leadership has continued to reinforce its approach to green development. The local People's Congress passed a detailed implementation guideline for eco-civilization in late 2015. Eco-civilization interventions were now to be among the highest policy priorities. The guideline called for: a more comprehensive set of development indicators that could be turned into a system of KPIs (*zhibiao tixi* 指标体系) to be used in local public sector performance reviews; completion of detailed regulations aimed at clarifying the property rights to natural resources and the protection of state owned land for development; development of a system for spatial planning based on ecological considerations; new policy measures regarding systematic quantitative management and comprehensive savings of resources, compensation for use of resources, and eco-compensation; establishment of trading mechanisms for the rights to use of energy, to emit CO_2, to discharge pollutants, and water rights; establishment of a system for public monitoring of and early warning about pollution and elaboration of a plan for this; establishment of a system for decision making regarding eco-civilization construction, and the coordination, collaboration and incentivization to this end; and finalization of a target responsibility system for eco-civilization construction, performance review procedures, and rewards and sanctions. Finally, the entire government apparatus would have to take collective responsibility for attaining eco-civilization goals and targets in relation to the plans under their respective authority, for development of the associated indicator systems, for monitoring and coordination across sectoral and administrative divides at all administrative levels, and finally for affording access of non-government organizations and enterprises to necessary information and social participation (Hangzhou People's Congress 2016).

Furthermore, Hangzhou's authorities responded to Xi Jinping's "Beautiful China" framework through a "Beautiful Hangzhou" plan, which incorporated the eco-civilization framework and other relevant development concepts. The plan stipulated that the key policy priorities and interventions must be incorporated into the city's economic, political, cultural, and social development plans, while emphasizing the need to meet the green targets. This was the first time that environmental concerns and continued ambitious goals for economic growth were linked so clearly in a local policy document. Again, the plan provides for the use of relevant plan targets as KPIs in the city's performance review system (Beautiful Hangzhou (2013-2020) 2013).

Finally, Hangzhou's leaders incorporated the new ecological red line framework into the

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2015 eco-civilization guideline which stipulated that the city authorities must elaborate the various red lines for environmental protection and assess ecological resources and supply capacity. The responsibility for implementation and monitoring of these interventions are to be written into the job descriptions and responsibility contracts of the relevant organizations and leaders at all administrative levels. Specific resource mapping as well as utilization and protection plans for water and land resources were to be elaborated (Hangzhou People's Congress 2016). As an example, the red line framework was subsequently incorporated into the 2017 work plan of Hangzhou's Environmental Protection Bureau (EPB) as a "control mechanism" (*yueshujizhi* 约束机制), a fairly rigid instrument within eco-protection. It entailed elaboration of a bottom-line for environmental quality, upper limits for utilization of resources, and a negative list for environmental access respectively. The red lines would also have to be taken into consideration in environmental impact assessments (EIA), in the government's investment promotion work, in innovation in enterprises, in the development of strategic sectors in Hangzhou, and in the intersection between urban and rural development programs (Hangzhou Shi Huanbao Ju 2017).

A key government official in Hangzhou pointed out that the work to define red lines for sensitive ecological areas in the city started in 2008 already, and that it was decided early on that red line indicators would become "veto" indicators[5], which - if trespassed - would have serious consequences for the responsible officials (cf. L. Wang 2013). When linked to the idea of life-long responsibility of individual leaders, this instrument could potentially have a significant impact on the future behavior of local authorities.

While Hangzhou's government has continuously refined its approach to implementation of the eco-civilization framework, the need for economic growth remains a top priority. As noted above, the current annual target for GDP growth is set at 7.5%, yet the 13th five-year plan covering the period 2015-2020 ranked improvement of the environment at the same level as economic growth and listed ten critical indicators related to eco-civilization interventions (Hangzhou City Government 2016). While there is thus a strong political intention to leverage the demands for growth and environmental protection, the policies are so new that future research will have to determine their impact and viability. Even more, there is no local public debate in Hangzhou about these policies or about the implications of the double squeeze of the local government between high growth and green turn imperatives.

Inter-government contracting

In principle, the targets set locally for Hangzhou's eco-civilization construction thus provide the basis for guiding, controlling, and assessing the performance of party and state organizations, their leaders, and their external partners, as well as for assessing the effectiveness of eco-civilization interventions (Hangzhou People's Congress 2016). But the green efforts of Hangzhou's government also hinge on its relationship to the next higher level in the Party-state system, Zhejiang Province, where eco-civilization politics are managed by leading groups for Developing a Beautiful Zhejiang and for Eco-civilization Construction respectively. The 2016 contract between the governments of Zhejiang Province and Hangzhou City regarding development of a Beautiful Zhejiang incorporated eco-civilization interventions in Hangzhou which aligned the priorities of Hangzhou with the environmental policies and programs laid out by the provincial government (Meili Zhejiang Ban 2016). The contract stipulated some hard constraints for Hangzhou's performance reviews eliciting

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criteria for excellence and some "veto" targets, specifically:

- The leadership in Hangzhou must be rated "excellent" in programs initiated by the central government. As an example, Hangzhou's authorities would get an "excellent" grade if they complied with national and provincial water management regulations. It would also receive top marks, if it received positive public satisfaction reviews for its efforts in complying with indicators for the environment and air pollution, and Hangzhou should be ranked within the first seven localities in the province in terms of citizen satisfaction with the environment. Furthermore, there should be demonstrable improvement over the previous year. Finally, there must be no major environmental protests with significant social impact.
- "Veto" targets were to be set for environment-related protests, which could again lead to major mass incidents. Sanctions would be meted out in case of inability to fulfill major targets within energy saving, pollution, and water management and pollution (Meili Zhejiang Ban 2016).

Surprisingly, there was no reference to the ecological red line, although it was already part of Hangzhou's green policies and its performance review system at the time. Given the efforts to develop viable green development indicators in Hangzhou, it is also noteworthy that the contract only included a fraction of the green targets already elaborated by Hangzhou's authorities. Those mentioned related to public accountability, but social participation was not mentioned as a way to enhance implementation, although this instrument has already become critical in the efforts of the Hangzhou leadership to ensure environmental policy compliance (Delman 2018, 2016), as we shall see below.

New public management and social participation in Hangzhou's eco-civilization politics

Traditionally, China's authorities have relied on a top-down and compliance-oriented policy design, implementation, and evaluation system (J. Wu et al. 2017), but compliance remains an enduring challenge as noted earlier. While Hangzhou's contract with Zhejiang Province could indicate an uncharacteristically loose top-down approach to environmental policy implementation, Hangzhou's authorities have shown significant commitment and progress in recent years in their use of governance instruments that respond to the pressure from Beijing for policy compliance in relation to eco-civilization politics.

The authorities have progressively come to rely on the NPM approach with responsibility contracts based on KPIs combined with performance reviews of local party and government leaders and their organizations (*jixiao kaohe*绩效考核) (Delman 2018). Furthermore in 2016, the city leadership merged two existing leadership groups for its Beautiful Hangzhou and its Eco-civilization Construction programs respectively into one commission (*weiyuanhui*委员会) that was made responsible for both programs. The Commission is headed by Hangzhou's Party Secretary, the city's *de facto leader*, not by the Mayor (Shengtaiban 2016). Responsibility contracts for 2016 were signed between the Commission and departments of the city's party-state and lower level governments and districts. These contracts were itemized and all items were allocated a maximum number of points that could be attained through full compliance. The red line for ecological protection was now introduced into the contracts (Shengtaiban 2016), although this had not been the case in Hangzhou's contract with the province see above), or in similar

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contracts within Hangzhou's government in 2015 (Delman 2018). The guidelines associated with the red ecological bottom-line in the 2016 contracts were rudimentary, though. They simply stated the need to conduct research to create a better basis for defining the future red lines. The EBP was made responsible for coordinating this work in collaboration with other departments (Meili Zhejiang Ban 2016).

The NPM approach also includes a results management procedure (*jixiao guanli*绩效管理) to enforce compliance. Issues that have been identified through the performance review process in one year are put on top of the government's agenda for the next year with specific targets which are then included as KPIs in the responsibility contracts. While these instruments respond well to top-down policies and pressures, Hangzhou's leadership has accentuated the need for active "social participation" (*shehui canyu*社会参与), primarily through a comprehensive and highly sophisticated "social assessment procedure" (*shehui pingjia*社会评价). This instrument involves a variety of assessments that solicit the satisfaction and opinions of the public, including various organizations, experts, and companies on the overall performance of the city government and the Party organizations (Delman 2018).

Social participation procedures cut across all types of interventions and instruments, and they have become increasingly important in local green politics. They contribute to accentuate the importance of green issues in the performance of local departments. In the social assessment component of the city government's overall performance review report for 2016, 17 top political priorities (*wenzheng*问政) that had been identified in social assessments in previous years and were then put into the results management procedures for 2016 were re-examined in a second, more detailed survey with a sample of population of 2.000 citizens as respondents. The survey examined citizens' satisfaction with how the city authorities had addressed these top challenges in their work. Four of these items were eco-civilization issues, i.e. items number 11-14 (Hangzhou Shi Kaoping Ban 2017) (Table 2).

Item	Special issue	1 Satisfaction in the general survey (in %) (n=17445)	2 Satisfaction in the special survey (face-to-face) (in %) (n=2000)	3 Average* satisfaction rate (in %)	4 Rank According to average satisfaction rate
11	To enhance implementation of the handling of the last stages of garbage sorting	74.68	38.05	52.7	17
12	Improved handling of dust from construction sites and roads	69.71	65.14	66.79	15
13	Maintain the enduring effects of renovation of the waterways and rivers	84.81	82.24	83.27	9
14	Strengthen the monitoring of the safety of food and drugs	84.6	67.83	74.55	14

Source: (Hangzhou Shi Kaoping Ban, 2017)
* Algorithm not explained

Table 2 - Satisfaction with implementation of eco-civilization related measures among Hangzhou government's 17 top priorities (2016)

When items 11-14 are ranked according to the average rate of satisfaction (Table 2, column 4), waterway management comes in highest amongst the four, whereas garbage sorting is at the bottom of all with least satisfaction. The 2.000 respondents were most satisfied with the city government's efforts to set up one-stop administrative shops to handle citizen queries and tasks and with improvements in quality of telecommunications infrastructure and services (Hangzhou Shi Kaoping Ban 2017).

In Table 2 there is a discrepancy on two counts between the citizens' perceptions of eco-civilization related issues in the general survey compared to a special face-to-face survey, most notably in relation to garbage handling, in which only half as many respondents were satisfied compared to the general survey (Hangzhou Shi Kaoping Ban 2017). During a number of urban community visits and from my

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own experience living in Hangzhou, I found out that many citizens are happy with the goals of the garbage sorting program, a top priority on the local government agenda, but that they are unhappy with the way it was managed. In the 2016 social assessment report, it was noted that the garbage sorting program did not engage the households and that the garbage bags and containers used were inappropriate for sorting. The report quoted critical citizens for saying that: "Garbage sorting stops at the mouth, there has been a lot of propaganda, but it does not really reach out"; and: "We have done this for years, community citizens are already used to use special bags for kitchen garbage, but there are not enough green garbage containers" (Hangzhou Shi Kaoping Ban 2017).

Taking Hangzhou's EPB as a pointer of the city government's ability to deal with eco-civilization issues, there were some improvements in its performance from 2015 to 2016 in the eyes of the survey respondents. In 2015, The EBP ranked second with regard to the number of issues raised in the survey, *viz.* 717, which amounted to 6.73% of all opinions flagged. In 2016, the EPB was no. 10 with 420 complaints, i.e. 2.57% of all opinions (Hangzhou Shi Kaoping Ban 2017).

Table 3 shows the number of participants in each surveyed cohort within the 2016 social assessment exercise and the distribution of opinions across the cohorts.

Type of respondent	Number of participants in each group	% of total survey population	Total number of opinions	Opinions in % of total	Average no. of opinions per cohort participant
1. *Ordinary citizens surveyed on the net*	3,824	21.92	14.315	80.98	3.74
2. Sample survey:		77.07		17.80	
- Citizen representatives	7746	44.40	1,749	9.80	0.23
- Officials in lower level governments (District, City, County)	992	5.69	78	0,44	0.08
- Leaders in lower level governments (District, City, County)	311	1.78	35	0.20	0.11
- Representatives of social monitors	432	2.48	297	1.68	0.69
- Representatives from social organizations	1337	7.66	205	1.16	0.15
- City Party representatives	290	1.66	73	0.41	0.25
- Representatives from City People's Congress	264	1.51	28	0.16	0.11
- Representatives from City People's Political Consultative Conference (CPPCC)	267	1.53	97	0.36	0.36
- Representatives from enterprises	1805	10.35	584	3.3	0.32
3. Citizens interviewed at administrative hall of government	177	1.01	216	1.22	1.22
Total	17.445	100.00	17.677	100.00	1.01

Source: "2016 综合考评社会评价报告," 2017, Table 2

Table 3 – Composition of sample population and their views of the government of Hangzhou's environmental services (2016)

17.445 people participated in the survey and the number of opinions raised across all service sectors (criticisms, praise and suggestions) was 17.677, i.e. 1.01 per participant. 21.92 % of the surveyed citizens participated through an on-line survey. The rest were interviewed. Ordinary citizens surveyed on-line were the most active in offering opinions (80.98% of the total), i.e. 3.74 opinions per participant, whereas officials in lower level governments had the lowest number of opinions, i.e. 0.08 per participant. Paradoxically, those who would be expected to have political views on the concerns of citizens and needs for service improvements, i.e. leaders and so-called "people's representatives" of various kinds, had very few opinions and suggestions.

Representatives from businesses were rather inarticulate as well (0.32 opinions per participant) (Table 3). Still, the largest share of opinions and concrete suggestions raised by citizen and business representatives had to do with the environment, i.e. 8.98% and 10.62% respectively (Table 4). Of course, they could

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well be contradictory, because many businesses are primarily concerned about the cost of enforcing ever stricter environmental standards.[6]

Sectors	Cohorts: Ordinary citizens surveyed on the net	Citizen reps (survey)	Officials in lower level governments (District, City, County)	Leaders in lower level governments (District, City, County)	Representatives of social monitors	Reps from social organizations	City Party reps.	Reps from City People's Congress	City CPPCC** reps	Reps from enterprises	Citizens surveyed face-to-face
1 Monopoly sectors (finance, communication, postal service)	30.70	6.17	6.41	2.66	1.66	3.41	0.00	10.71	1.03	3.25	4.63
2 Public utility services (water, gas, transport, electricity, metrology)	22.13	6.56	5.13	5.71	4.71	2.93	1.37	7.14	4.12	4.26	9.26
3 Difficult to find parking space	6.54	9.66	7.69	8.57	12.46	9.76	16.44	7.14	11.34	9.76	10.65
4 Difficult to manage tasks with the government	4.34	6.29	5.13	0.00	8.75	5.85	1.37	10.71	8.25	15.92	21.30
5 Environmental protection	2.17	8.98	3.85	2.86	5.05	6.83	6.85	0.00	4.12	10.62	3.70
6. Availability of cultural and sports facilities	1.63	2.69	2.56	0.00	4.71	7.80	6.85	3.57	2.06	2.23	2.78
7 Food safety	1.57	5.15	2.56	2.86	2.02	1.46	4.11	0.00	2.06	5.82	4.17

Source: "2016 综合考评社会评价报告," 2017, Table 8
*For numbers of cohorts, cf. Table 3
** CPPCC – Chinese People's Political Conference

Table 4 – Comparative statistics drawing on different cohorts* of participants and their concerns (% of total cohort that has raised the specific concern)

Local government representatives and leaders accounted for 3.85% and 2.86% respectively, and Party representatives and representatives from social organizations for about 6.8% each. Representatives from people's congresses did not offer a single opinion (Table 4), and thus seemed to be out of synch in relation to the perception of the importance of environmental issues with what is supposed to be their constituencies, i.e. citizens and businesses.

A similar social assessment report from 2014 showed that city leaders amongst the respondents did not concern themselves with environmental issues at all. They were more concerned with traditional focus areas such as good government, management of party and state cadres, and the party's campaign against corruption (Delman 2018). This situation had changed a bit in 2016 where they expressed a modicum of views on the environment (Table 4).

The level of satisfaction with government services was very high in general, and the respondents in the social assessment did not seem disproportionately dissatisfied with the environmental situation in Hangzhou, nor did they express disproportionate criticism. Yet, the report's summary accorded environmental issues a continuing top priority and emphasized that more efforts are needed to incentivize local leaders to implement green policies. The main issues identified were air and water quality and environmental monitoring (Hangzhou Shi Kaoping Ban 2017).

The social assessment report also emphasized that Hangzhou leaders must continue to improve their policy instruments to attain better results. As an example, they have done that in relation to energy efficiency already where the city leadership did not only rely on command-and-control instruments. It introduced additional market-based and, and to a lesser extent, co-governance, instruments, which demonstrably improved energy efficiency in Hangzhou's enterprises (cf. Fig. 1; Guan and Delman 2017).

Co-governance (*gongtong zhili*共同治理) through cooperation or interactive/collaborative governance is frequently mediated by new types of intermediary agencies, so-called "third parties" (*disanfang*第三方). This approach involves overlapping and cross-cutting authorities and responsibilities since the parties involved must join hands to address a common purpose and invest their identities and autonomy in the process (Guan and Delman 2017). Potentially, such an approach could leverage the traditional information asymmetry between government departments and external stakeholders, including ordinary citizens. Indeed, public

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participation and outsourcing of public services accentuate the need for information sharing between the partners who engage in environmental improvement projects (Delman 2018) in areas such as energy efficiency programs (cf. Fig. 1; Guan and Delman 2017) or in green public procurement.[7]

Wang et al. argue that a multi-stakeholder approach to governance has become not only necessary, but also possible. First of all, it addresses the need for broad-based governance to address tendencies towards bureaucratic fragmentation due to decentralization and the influence of vested interests within the local party-state system. It has also become possible due to a strong contemporary focus on legal and regulatory procedures. In complex political fields like the environment, this has become even more important due to the need to find solutions through public engagement and collaboration with multiple stakeholders at multiple scales across administrative and regional borders (M. Wang, Cai, and Wang 2014).

The social participation procedures introduced in Hangzhou is an example of an increasingly open and inclusive approach to environmental governance. In official political jargon it is called "the common environmental governance system comprising government, enterprises and the public" [8] (Hangzhou Shi Huanbao Ju 2017). According to the local authorities, the "people orientation" (*gongmin daoxiang*公民导向) of this neo-liberally inspired NPM approach is an innovation that reflects an ambition to accentuate effectiveness, transparency, and public accountability in local governance (Delman 2018). It has become institutionalized and adds important new nuances to the traditional command-and-control approach in environmental governance.

The NPM system does however have its continuing challenges. It is not easy to meet the numerous and often overlapping, even contradictory targets still found in the various plans and in the performance contracts. It is also unclear to what extent the performance reviews affect individual careers. Furthermore, the nature of the policy agenda presupposes collaboration and coordination across departments to mitigate tendencies towards fragmentation and intra-bureaucratic competition. While this is being addressed through the establishment of coordinating leading groups and subsequently a commission with Hangzhou's Party Secretary in charge to enable cross-depatmental leadership and coordination, the performance review procedure may stimulate competition rather than collaboration among local leaders, which could lead to renewed bureaucratic fragmentation and less efficiency (Delman 2017). Finally, public accountability does not come without opposition. Resistance from some departments and local governments has been publicly acknowledged, and a couple of officials interviewed in Hangzhou indicated that differences of opinion could be found about the usefulness of such a complex system (Delman 2018).

The developments and results discussed here do not provide definite answers about the practical consequences of the new governance measures to mitigate the contradictions between green development and economic growth objectives. It will take time to assess how the performance review and results management procedures challenge local officials to comply with the pro-environmental priorities in local politics.

Does it all help?

Yet, it is important to attempt to determine if the approach to environmental governance in Hangzhou makes the city greener. To do this, we have to rely on limited publicly available data that is rather fragmentary. Some of the major indicators most relevant to this analysis

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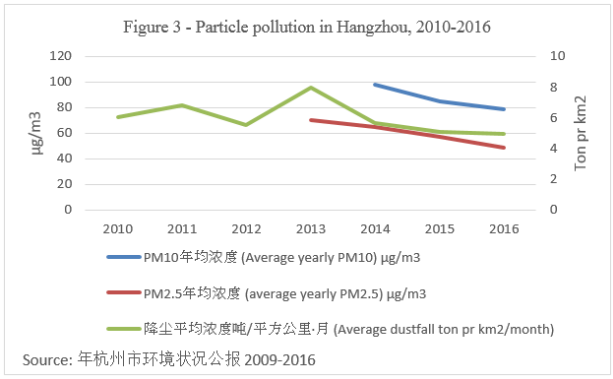
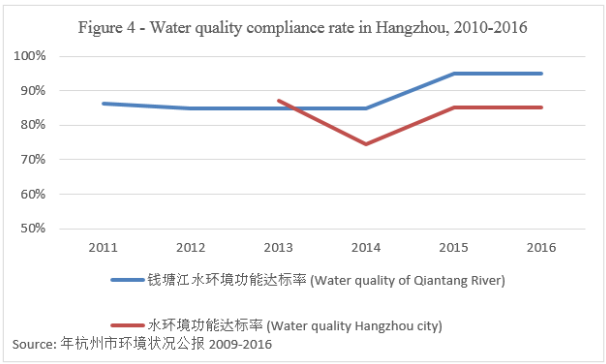
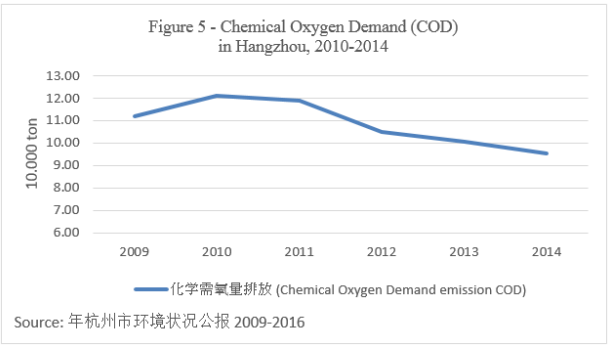
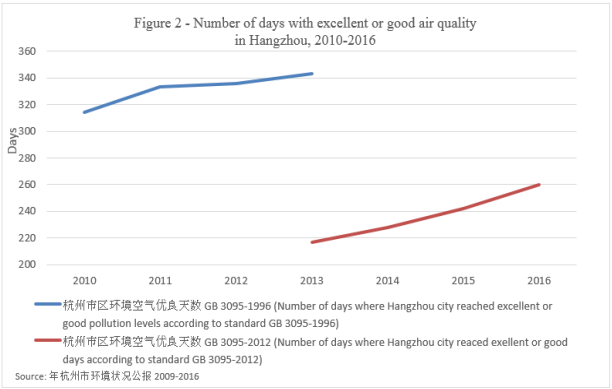
are: energy efficiency, air pollution (number of clear days and particle pollution), water quality, chemical oxygen demand (COD) (Figures 1-5), and green transport (Table 5).

Fig. 1 showed that energy efficiency has improved considerably between 2006 and 2017 in terms of relative decoupling of energy consumption from economic growth, but other data have shown that overall energy consumption is not yet going down (Table 1). Fig. 2 shows that the number of days with good air quality has been improving during the same period. A new, stricter national standard incorporating 2.5 ppm particles was introduced in 2012. For this reason, the number of clear days fell from 328 in 2009 to 217 in 2013, but the figure based on the new standard is on the rise again, with 306 clear days in 2016. Fig. 3 reflects that particle pollution and general dust fall have also gone down during the monitoring period. Most importantly average ppm 2.5 measured as *μg*/m3 air, has gone down from 70 in 2013 to 48.8 in 2016. Fig. 4 shows that the general quality compliance rate for surface water in Qiantang River, the major river in Hangzhou, is improving, while the general quality of surface water in Hangzhou is stable, but not improving more these years. Fig. 5 shows that the chemical oxygen demand (COD) measured in 10.000 tons, which reflects the level of water pollution, has also gone down.









In sum, the data here reveal improvements on some of the critical eco-civilization parameters. Although a causal link between Hangzhou's green governance approaches and the outcomes reflected in the figures cannot be conclusively established, I would speculate that such a relationship is plausible.

However, as we have noted above, future growth and increased environmental stress are still linked, despite the general decoupling of growth, energy use, and pollution. The

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transport sector is an important example of that. Like in any other city, transport volumes, and especially private car ownership is growing rapidly in Hangzhou. Therefore, green transport is seen as part of the solution to Hangzhou's climate change and other environmental challenges. With a bag of different policy instruments aimed at supporting the development of green transport, the city authorities will expand public transport on ground and underground, improve taxi services, expand Hangzhou's iconic public bike sharing system to cover all of the city's built up areas, and create better water transport on the city's rivers and canals. Together with an ambitious project to curtail old polluting vehicles and deploy new energy vehicles, both of which instruments are heavily subsidized by the local state, and by developing more electric public transport, these solutions should contribute to making Hangzhou a low-carbon city (Delman 2016). However, the projections in Table 5 about future transport and the associated carbon emissions in Hangzhou until 2020 demonstrate the difficult task the city authorities are up to. The CO_2 emissions from transport were estimated to be about 3.587 tons per day in 2009 and will increase to an estimated 5.724 tons per day in 2020. Even though the city's new extensive metro system will be in place by 2020 and take up a 16% share of daily transport as compared to 0% in 2009, the share of non-motorized transport and electric bicycles may decrease from 66.6% in 2009 to 45% in 2020 (Bannister and Liu 2013).

Table 5 – CO_2 emissions from passenger transport in Hangzhou (2009 and 2020)

Year	Travel mode	Mode share (%)	Number of trips	Average distance (km/trip)	CO_2 emissions per km (g/km)	Total CO_2 emissions (tonnes/day)	CO_2 emissions shares (%)
2009	Automobile	13.7	1,972,800	7	200	2762	77
	Public transport (by road)	19.7	2,836,800	8	30	681	19
	Metro	0.0	0	0	15	0	0
	Non-motorized transport and electric bicycles*	66.6	9,590,400	3	5	144	4
	Total	100.0	14,400,000			3587	100
2020	Automobile	15	2,610,000	10	150	3915	68
	Public transport (by road)	24	4,176,000	9	25	940	16
	Metro	16	2,784,000	18	15	752	13
	Non-motorized transport and electric bicycles	45	7,830,000	3	5	117	2
	Total	100	17,400,000			5724	100

* Non-motorized transport: walking and cycling. Electric bicycles are classified as motorized transport in this paper.

Despite the challenges, Hangzhou's leadership is doing well on its green policies in a comparative national perspective. In late 2017 and early 2018, national and provincial authorities published a ranking of provinces and provincial cities and districts respectively based on their attainment of eco-civilization targets and green development indicators published officially in 2016 (Guojia Fagaiwei et al. 2016). Hangzhou ranked no. 1 in Zhejiang Province and Zhejiang was no. 3 in the national ranking. Hangzhou had a score of 80.57 points (Zhejiang sheng Tongjiju et al. 2018) and Zhejiang scored 82.61 points (Guojia Tongjiju 2017) out of a maximum of 100 points. This was the first such ranking ever, and the accompanying explanations indicated that the exercise would be repeated systematically in the future.

Eco-civilization: A green cure for Hangzhou?

From the central level, the eco-civilization and the ecological red line frameworks are conceived as critical top-down instruments. In Hangzhou, the programs have stimulated a more comprehensive and rigorous approach to green politics that increasingly aims at mitigating the traditional contradiction between economic growth and green development. New local policy approaches and instruments are continuously being put in place in the city, which has always positioned itself at the forefront of green development. The policies are lodged in a governance framework that relies heavily on the NPM paradigm, especially performance contracts with quantitative KPIs that are used as a guide for policy implementation and as a basis for performance reviews. These practices are

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combined with a results management procedure based on performance reviews with a strong focus on social assessments that are meant to motivate local departments and officials to address the environmental issues identified in social assessments.

There is no doubt that the battery of social assessment and participation instruments are opening up for more public accountability and transparency of government. In turn, this may well lead to more policy compliance, although there is still insufficient evidence to support this proposition. It could also be argued, as Oscar Almén does in a recent study of social participation in Hangzhou (Almén 2017), that the participatory reforms are primarily designed to improve the Party's capacity to govern and thereby strengthen its position as the party in power vis-à-vis the citizens. Yet, if the local Party wants to do so, it seems to have realized that it must also deliver on the green agenda, since there is a growing popular demand for green change.

Indeed, the data and analysis presented here suggest that the increased focus on environmental policy implementation has led to local environmental improvements. But we do not have data to determine the actual impact of pro-environment policies on the reduction of greenhouse gases in a situation with increasing electricity consumption, increased automobile use, use of coal and petroleum vs. renewables, and so forth. Still, data on energy use (Table 1) illustrate that an increasing share of Hangzhou's energy is coming from clean energy sources, even if energy consumption in increasing,

Until now, there is no system in place in Hangzhou to ensure independent data-collection, analysis, and validation and there is no way to conclusively determine whether the local party-state and its leaders take their responsibility contracts seriously, and which rewards and sanctions the government metes out based on the performance reviews. In their review of the literature on energy efficiency politics in China, Wu et al. noted that little attention has been paid to evaluation of implementation and that the effects of performance reviews are not discussed much in the literature either (J. Wu et al. 2017). However, this study documents that the environmental policy agenda is gaining in importance in Hangzhou and that local departments and officials are under heavy internal and external pressure to satisfy demands for better environmental services.

There are some obvious deficiencies in Hangzhou's policy implementation approach. Responsibility contracts are published late; data is published selectively; and generally far from all relevant information is made public. While the red line for ecological protection is gradually brought into the performance management system, it is done very guardedly. There is no evidence as yet that trespassing of the red lines will have consequences for individual leaders.

In sum, this study reveals a long term and increasingly focused official commitment to green change in Hangzhou through a combination of well-known and new policy instruments under an NPM inspired governance regime. It is noteworthy that the city authorities are actively encouraging external collaboration, scrutiny, and pressure through quasi-democratic mechanisms, such as social participation, in response to pressure from the central authorities, and that it helps inform the approach to green policy making. This could contribute to a stronger sense of public sector responsibility - or "responsiveness" (cf. Almén 2017) - towards the environment across all levels of government and in all sectors. Positive developments are already evident on a number of key eco-civilization indicators. While it is too early to conclude that the authorities in Hangzhou have found a green cure to mitigate

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the contradiction between economic growth and environmental priorities, the policy direction and the new governance instruments have demonstrated a willingness to try and a potential to stimulate environmental improvements. On the other hand, the cure is slow to work, and with continuing economic growth and increase in use of polluting resources, the prospects for a real green turn in local development will continue to be challenged.

A first version of this paper was presented under the title: "Luring the elephants back? Eco-civilization and the pressure for green urban development in Hangzhou" in the panel: "Green Development and Ecological Civilization (GDEC): Performance Assessment, Implementation Path and Decision-making", at the Shanghai Forum, 28 May 2017.

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Notes

[1] Zhen and Shuang 2014 argue along similar lines.

[2] Ecosystems services are the direct and indirect contributions of ecosystems to human well-being. They support directly or indirectly the survival and quality of human life. To improve ecosystems service, green politics must address issues such as: Climate regulation, water purification, pests and diseases**,** soil biodiversity, and associated **c**ultural services (See here, accessed 19.7.2018).

[3] 责任书（*zerenshu*). Same as a (performance contract).

[4] The Ministry of Environmental Protection started developing this approach in 2003 to create a base for quantitative evaluation of the performance of local governments on specific environmental parameters, to counter the one-sided focus at local levels of government on economic growth. Since then, sub-national governments have been required to adapt the targets to local conditions as they are transmitted downwards through the administrative layers of the Party-state system through performance or responsibility contracts (Zhu 2014).

[5] "Targets with veto power" (*yipiao foujue mubiao* 一 票否决目标) are critical in the performance review system: failure to meet these will automatically lead to serious sanctions (A. L. Wang 2013).

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[6] Stavrapolous et al. suggest that command-and-control instruments are still dominant in enforcement of environmental policies and standards vis-à-vis businesses in China. Such instruments may be effective in reducing pollutant emissions, but they do not reflect market demand and they are economically inefficient due to government failure (Stavropoulos, Wall, and Xu 2018). Unfortunately, the 2016 social assessment report does not allow us to delve into the nature of opinions raised by businesses.

[7] Hangzhou is actively developing its approach to green public procurement. The relevant announcements are published on a dedicated website, accessed 18.1.2018 (Delman 2018).

[8] 政府、企业、公众共治的环境治理体系.

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