



UvA-DARE (Digital Academic Repository)

Experts and the science-policy interface in China's climate policy

Chen, L.-Y.

Publication date
2022

[Link to publication](#)

Citation for published version (APA):

Chen, L.-Y. (2022). *Experts and the science-policy interface in China's climate policy*. [Thesis, fully internal, Universiteit van Amsterdam].

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

Chapter 9: Experts and the Science-policy Interfaces in Cross-level Dynamics of China's Climate Policy

9.1 Introduction

While the previous four chapters showed experts' engagement with China's climate policy at different administrative levels successively, Chapter 9 addresses the question: *How do experts exert influence on China's climate policy across different governance levels?* Section 9.2 presents the division of labour (cooperation) and the triangular interaction of expert institutes and policymakers. Section 9.3 explains the cross-level tensions not least resulting from the policymakers' varied concerns on policy but also their different capacity and demand for knowledge. To put the policy stages into consideration, Section 9.4 presents the SPI in multiple levels and cross-level dynamics of China's climate policy.

9.2 Multiple forms of scientific input for China's climate policy: division of labour and cross-level interactions between research institutes

This section explains the ways in which experts at various levels of governance facilitate knowledge travel to influence China's climate policy and with what effect. It reveals that the change in China's climate policy at a given governance level is usually not driven by experts at just one governance level. Instead, it is driven by the international-domestic linkages among foreign and Chinese scientific communities and the cross-level interactions between Chinese experts and policymakers.

9.2.1 International-domestic linkages as scientific input for China's climate policy

Presenting the SPI science-push model, international-domestic linkages of foreign scientific communities and Chinese domestic research institutes exert a certain degree of impact on the stage of agenda-setting and policy formulation in China's climate policy. International actors use capacity-building projects, training programmes, and funding support for basic scientific and policy-oriented research projects. Their training programmes have contributed to transferring ideas and knowledge for addressing climate change to Chinese officials and research institutes since the 1990s. Their international funding support allowed China to deploy projects on basic scientific research and policy-oriented research to tackle climate change. The funding and scientific support jointly drove China's policy direction to mitigate GHGs emissions since the 2000s (Interviews 34, 44, 48, and 57).

In relation to the international-domestic linkages of scientific communities, the

outside research institutes' first step was to build up triangular collaboration with the Chinese government and local research institutes. It was difficult for outside actors such as INGOs and foreign scientific institutes to launch a project for substantial work without the officials' permission in China's political context. Hence, international actors had to acquire consent from the officials responsible for the policy domains and then initiate a project that dealt with a topic they wanted to put on China's policy agenda. Once they found an interested government unit and research counterpart, international funding was transferred to the research institute to undertake the actual research work (Interviews 08, 09, 33, 34, and 48).

A key international actor was the UK (Hofem and Heilmann, 2013; Interviews 34, 46, 57, and 65). Since the early 2000s, the UK Foreign and Commonwealth Office's Strategic Prosperity Fund (SPF) has supported training programmes for centre and local Chinese officials, particularly the DRC officials who are in charge of macroeconomic and energy policy. Regarding the effect of the international scientific input, my results confirm the results from previous studies. The capacity-building and research projects funded by international organisations positively impacted on China's domestic climate policy development in the 2000s (Economy, 2010; Biedenkopf, van Eynde, and Walker, 2017; Gippner, 2017; Interviews 04, 18, 19, 23, and 27). As an interviewee who works at the United Nations Development Programme (UNDP) asserted, "Some considered the training programmes useless, and just a waste of money since the climate change issue has not yet to [sic] emerge on China's domestic policy agenda at the beginning of the 21st century. Yet I think such training is critical, especially when both centre and local Chinese officials lacked the basic knowledge and capacity for climate change mitigation and adaptation at that time" (Interview 44).

In addition to the capacity-building projects, international funding support helped China initiate basic scientific and policy-oriented research projects and directly impacted China's climate policy. For instance, the Global Environment Facility (GEF) and the UNDP have aided the Chinese government in commissioning expert institutes to compile its *Initial National Communication on Climate Change* in the early 2000s. Before China released its first-ever policy white paper on climate change—*China's National Climate Change Programme*, in 2007, expert institutes received funding support from the World Bank to spread the draft Programme to the localities and collected local feedback to modify the Programme (NDRC, 2007 (b)).

9.2.2 Centre-local interactions of research institutes as scientific input for China's climate policy

At the domestic level, research institutes' centre-local interactions are another driver for China's climate policy. From the top-down perspective, research institutes in Beijing play an essential role in mediating science and China's climate policy; they: (a) Lobby the officials to launch and experiment with pilot projects; (b) Provide methodological instructions and capacity-building training; and (c) Review the policy documents submitted by the localities. Meanwhile, the bottom-up knowledge travel, primarily local experiences of low-carbon related pilot projects (including the ETS), also influence centre policymaking.

The science-push model best describes the interactions between experts and policymakers in the promulgation of the low-carbon province and city pilot. In the beginning, the Beijing experts trained and lobbied both centre and local officials to take provinces and cities rather than sectors as the entry point for mitigating China's GHG emissions. In addition to persuading the NDRC officials to launch the LCCP project, the Beijing experts also approached and lobbied provincial and municipal officials to experiment with the pilot project (Hofem and Heilmann, 2013). To enhance idea dissemination and knowledge transfer, the experts also adopted a strategy to 'train the trainers'—to cooperate with the Academy of Governance and the Party School to train the teachers who provide courses for government administrators and party cadres (Interviews 03, 45, 34, and 54).

The Beijing experts' second policy work was developing methodological instructions, guidelines, and toolkits to deploy low-carbon related policy projects and train local officials and experts. Instead of directly assisting local governments with implementing the policy work, the Beijing experts primarily followed the wisdom of *Huainanzi* (淮南子), an ancient Chinese philosophical anthology—"Teach a person how to fish rather than give her a fish" (授人以魚，不如授人以漁 *Shou ren yi yu, buru shou ren yi yu*) (Interview 45). To take the first batch of the LCCP as an example, the ERI assisted the NDRC with organising seminars every two or three months for energy/low-carbon experts and officials from the thirteen pilot regions to discuss the planning and the implementation of the pilot project. Several pilot provinces and cities also invited low-carbon experts from Beijing for consultation and further instruction. After four seminars and several modifications, all the pilot regions submitted their implementation plans in 2011 and were approved by the NDRC in 2012 (Zhu, 2017: 280). With the assistance of the ERI, the plan-making process became scientific and followed the national goals (Zhao, Zhu, and Qi, 2016; Zhu, 2017: 280; Interviews 24, 26, 39, and 63). Additionally, the *Low-carbon Planning for Chinese Cities: A Manual for Policymakers* (Wang et al., 2014), a reading material edited by the RUC and WRI experts,

and the Low-carbon Development Planning Toolkits that were crafted by the Global Environmental Institute (GEI), are well-known examples of methodological instructions and toolkits that facilitate low-carbon development among the localities (Interviews 45 and 46).

Third, the Beijing experts assisted the centre officials by reviewing the policy documents submitted by local governments. As review committee members, the Beijing experts examined the application materials for pilot initiatives, selected pilot sites, reviewed the pilot regions' implementation plans, and verified the local EIs submitted by local governments (Interviews 04, 11, 27, and 29). Not only experts working at the semi-official think tanks (e.g., ERI and NCSC, CAS, and CASS) but also senior researchers employed at universities (e.g., Tsinghua University and the Renmin University of China) or civilian think tanks (e.g., the innovative Green Development Programme, iGDP) could be invited to compose the review committee. To prevent 'players acting as referees,' the NDRC officials tended to ask those experts who did not assist the provinces or cities with preparing policy materials as review committee members. Hence, although many Beijing experts have engaged in low-carbon planning at the local level, they will not review the materials to which they have contributed (Interviews 14, 20, 23, and 42).

Regarding the bottom-up knowledge travel that influences China's climate policy processes, local experiences of low-carbon related pilot programmes can also be scaled-up as part of the national policy framework or become models for other provinces and cities. At the initial stage of pilot programmes, local experts did not just learn the guidelines and methodological instructions when attending the training courses organised by the experts in Beijing. Instead, they could also express their considerations regarding implementing such guidelines and regulations at the local level (Interviews 50, 53, 60, and 63). During the implementation and evaluation stages, local officials request local research institutes to prepare the needed policy documents and data for the assessment team or investigation group (composed of officials and experts) sent from the upper-governmental levels (i.e., provincial or national level). In the review sessions and assessment seminars, local experts present not only data on the performance of pilot programmes but also their innovation of policy measures. Hence, the upper-level officials and experts learn from local experiences to forge the macro policy framework and collect good stories as model examples for other provinces and cities at a similar development stage (Interviews 04, 23, 34, and 36). For instance, the innovation of Guangdong's carbon offset mechanism, the Tan Pu Hui (碳普惠) Certified Emission Reduction (PHCER), has been praised by the central government and diffused to other provinces (MEE, 2019).

9.2.3 Provincial-municipal partnerships of expert institutes and horizontal knowledge travel as scientific input for China's climate policy

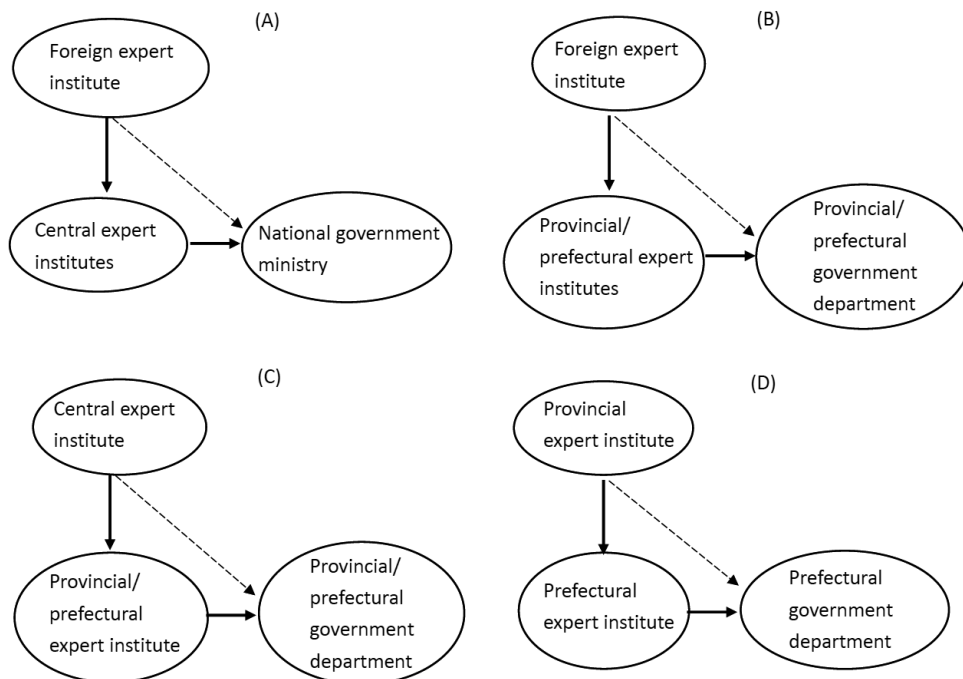
Concerning the cross-level interactions between the provincial and prefectural levels of China's climate policy, both vertical and horizontal knowledge travel occur. The vertical knowledge travel is primarily top-down. The experts at the higher governmental level, namely provincial or prefectural level, assist officials with hosting training courses and transmitting policy documents to the lower-level officials and stakeholders, e.g., county-level cities and townships. Further, compared to Beijing's expert institutes, provincial expert institutes are more likely to assist local governments with drafting policy documents directly. For instance, expert institutes in Guangzhou, the capital of Guangdong Province, have experience in supporting prefectural cities in Guangdong: the Guangdong Research Centre for Climate Change (GDRCCC) at the Sun Yat-sen University (SYSU) used to assist Zhongshan City's and Zhuhai City's low-carbon plans, and Shantou City's construction plan for the near-zero-emissions demonstration zone. Meanwhile, the CEPREI has helped Dongguan City compile its low-carbon plan (GDRCCC, 2017; Interviews 56, 59, and 62).

In terms of horizontal knowledge travel and policy diffusion in China's local climate governance, experts at the provincial or municipal level occasionally assisted policymakers and technicians from neighbouring provinces or cities through training courses or workshops. For instance, the Guangdong expert institutes have helped at least four provinces (Guangxi, Jiangxi, Guizhou, and Hainan) with capacity-building training for low-carbon planning and carbon trading (GDRCCC, 2017; Interviews 56, 59, and 62). Besides, the National Carbon Market Capacity Building (Chengdu) Centre and the National Carbon Market Capacity Building (Qingdao) Centre co-established by Chengdu (Sichuan Province), Qingdao (Shandong Province) and the NCSC from Beijing, have assisted with more than twenty provinces and cities regarding the running of the ETS (Interviews 02 and 13).

9.2.4 Triangular interaction in cross-level dynamics of China's climate policy

I list four types of triangular interactions (Types A, B, C, and D) between three types of expert institutes and government units in China's multi-level climate governance. The triangle is formed by: (i) expert institutes at a higher governance level (i.e., the international, national, or provincial level), (ii) expert institutes at a lower government level, and (iii) government ministries/departments that have the authority to deploy a new policy (see *Figure 9.1*).

Figure 9.1 Two-level collaboration between research institutes and government units



* The arrow indicates knowledge transfer from the higher-level expert institutes to the lower-level expert institutes and government units. The solid arrow connections are stronger than the dashed arrow.

Source: Author’s fieldwork.

To influence policymaking, experts from the higher government levels cooperate with local expert institutes on policy-oriented research projects subject to government consent. With officials’ support, local expert institutes undertake substantial research and submit the results to the decision-makers. Hence, by initiating projects and participating in triangular collaboration between local expert institutes and government units, the ‘outside’ experts can indirectly influence the centre or local policymakers.

As an example of type A, the Environmental Defense Fund (EDF) from the US (foreign scientific organisation), Tsinghua University (centre expert institute), and the Ministry of Ecology and Environment (MEE) (national government unit) collaborated on carbon trading and pricing related projects (Interviews 26 and 27). As an example of type B, the Energy Foundation China (foreign scientific organisation), Zhongshan Xiaolan Town Government Low Carbon Development promotion Centre (local expert institute), and the Zhongshan Municipal Government (local government unit) co-undertook the research

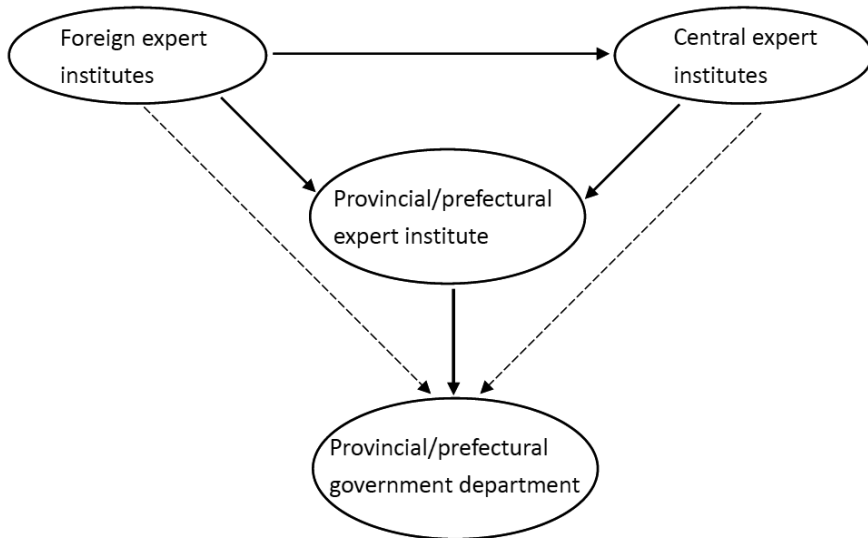
project for drafting the *Implementation Plan for Low-carbon Pilot Construction in Xiaolan Town, Zhongshan City* (Zhongshan City's Xiaolan Town Government, 2014; Interviews 58 and 59).

As an example of type C, the Renmin University of China (centre expert institute), Qingdao Engineering Consulting Institute, and the Qingdao Development and Reform Commission (local government unit) worked together on Qingdao's low-carbon planning (Interviews 02 and 39). As an of type D, the GDRCCC (provincial expert institute), the Oasis Low-carbon Service Centre, Chancheng District, Foshan City (local expert institute), and the Foshan Municipal Government (local government unit) jointly completed the *Low-Carbon Development Plan for Chancheng District, Foshan City (2013-2020)* (GDLCDPA, 2017; Interview 56).

Further, there is also collaboration between expert institutes and government units across three levels of governance. The collaboration is built by (i) foreign expert institutes; (ii) expert institutes in Beijing; (iii) local expert institutes; and (iv) local government departments (see *Figure 9.2*).

For instance, the Sustainable and Liveable Cities Project undertaken by the WRI (foreign institute), RUC (expert institute in Beijing), the Chengdu Academy of Transportation Development (local expert institute), and the Chengdu Municipal Government (local government unit) presents the collaboration between expert institutes across three governance levels. Another example is the collaborative relationship between the Centre for Climate Strategies from the US (foreign expert institute), the Institute of Policy and Management at the Chinese Academy of Sciences (CAS-IPM) and GEI (both expert institutes in Beijing), the Guangdong Academy of Social Sciences (local expert institute), and the Guangdong DRC (local government unit). While the Centre for Climate Strategies provided the Policy Package of China (PAC) model for expert institutes in Guangdong Province as one of the planning toolkits, the GEI experts provided training courses regarding applying the model and the toolkits. Meanwhile, CAS-IPM partnered with the GEI to conduct research on China's Current Low-carbon Policy Assessment and 13th Five-Year Plan Adjustment and Formulation, taking Guangdong Province as one of the case study regions (Interviews 11 and 45).

Figure 9.2 Three-level collaboration between expert institutes and government units



* *The arrow indicates knowledge transfer from the higher-level expert institutes to the lower-level expert institutes and the government units. The solid arrow connections are stronger than the dashed arrow.*

Source: Author.

When communicating with local officials, the outside expert team from an upper level of governance would have a higher degree of policy impact if they could meet the higher-level political authorities, e.g., Party Secretary, City-Mayor, or least the Director of the DRC (Interviews 07, 16, 17, 25, 39, and 41). Baoding, Guiyang, Guangyuan, and Qingdao are examples of successful project collaboration between experts across multiple levels due to the full support of top municipal policymakers (Interviews 16, 25, and 39).

Worth noting is that a triangular collaboration between a research institute and a government unit does not imply the experts' monopolisation in researching a specific policy issue, nor the government's policy preferences for a specific policy solution. First, even though the centre and local Chinese officials agree with one research institute's proposal to establish a research project, they can always commission similar projects to other institutes to study the same topic from different angles (Interviews 01, 24, 28, 32, 33, 42, 52, 54, 56, and 61). Thus, Chinese policymakers make decisions based on listening to multiple scientific voices instead of only one voice. For example, regarding the carbon peak issue in Guangdong Province, more than three local expert institutes (GIEC, GDRCCC and Jinan University) and one research institute in Beijing (CAS-IPM) have researched the

timetable or trajectory for Guangdong to peak its carbon emissions (Interviews 21, 52, 53, and 56). While every expert institute presents its research results, it is the political leaders that make the final decision.

9.3 Tensions between the cross-level intersection the processes of science and politics in China's climate policy

While there is a division of labour and cooperation among experts at different levels of China's climate governance, experts have varied mindsets and thus play different roles when engaging in the same policy process. The differences between experts at multiple levels have resulted in tensions among them. The tensions not only mirror the conventional centre-local relations in China's authoritarian political system but also the varied knowledge capacity and demands of policymakers at different governmental levels (see *Table 9.1*). I now discuss the varied core concerns of both centre and local Chinese policymakers and experts.

Table 9.1 Comparison of the core concerns between centre and local perspective

	Centre perspective	Local perspective
Foci of policy planning	Focus on 'Low-carbon' when discussing the concept of low-carbon development/economy	Focus on 'development/economy' when discussing the concept of low-carbon development/economy
Executive process of a policy project	Focus on building a meticulous policy framework	Focus on a practical strategy to complete the work: grasp the large and release the small (see explanation below)
Target distribution	Setting a mechanism to force local actors to be proactive	Staying around the national average rather than step too far

Source: Author.

9.3.1 Foci of policy planning: 'low-carbon' development/economy vs. low-carbon 'development/economy'

The first example to present the tensions between experts at different levels is the low-carbon city pilot (LCCP) and the discourse of low-carbon development (LCD) and low-carbon economy (LCE). Regarding the same concept, centre and local actors have varied interpretations. While the centre officials disseminate the term 'low-carbon development' and 'low-carbon economy' to the localities, they emphasise 'low-carbon' to achieve the

GHG emissions target China released to the international society and set in the Five-Year Plan. The primary goal of launching the LCCP is to innovate measures for mitigating GHG emissions and explore modes of energy conservation and emissions reduction, which are replicable for regions and cities at a similar development stage (Interviews 23, 24, 26, 27, and 42).

Yet, as the recipient of ideas of LCD and LCE, local policy officials focus more on 'economy' and 'development' rather than achieving true 'low-carbon' status in terms of CO₂ per unit of GDP and CO₂ per capita (Wang et al., 2015; Interviews 15, 29, 30, 46, 47, 48, and 52). When applying and implementing the LCCP project, local officials' primary concern is still city branding and acquiring any central government's support to develop the local economy. In practice, what attracts local stakeholders is that apart from reaching the goal of 'low-carbon,' is how the city can benefit from carrying out the LCCP project (Interviews 15, 29, 30, 46, 47, 48, and 52).

Due to the varied concerns of policymakers at different levels, tensions occur in the cross-level dynamics of expert institutes in the LCCP project. Local experts complained that both the central government's guidance and funding support are insufficient (21st Century Economic Daily, 2010; Zhao, Zhu, and Qi, 2016; Interviews 16, 38, 39, and 64). However, the centre experts considered the localities as laboratories and incubators of low-carbon policy alternatives and programmes (CnDG, 2016; Interviews 08, 14, 27, and 39). Instead of providing detailed guidance on low-carbon policies, they claimed that the central government's duty is to encourage localities to accumulate experiences through trial and error and thus develop suitable policy measures for low-carbon development (Interviews 26, 27, and 42). Further, they asserted that since local governments applied and implemented the LCCP voluntarily, it is the local government's duty to innovate measures and mechanisms rather than just counting on the central government (First Financial Daily, 2013; Interviews 24 and 26). Also, the centre experts were often disappointed with the few successes (亮点 *liang dian*) in local practices of the LCCP, because many local regions were simply copying policy from the national level rather than really innovating (Li and Song, 2016; Hsu et al., 2017; Cao et al., 2018; Interviews 23, 36, and 39).

9.3.2 Compilation of emissions inventory: meticulous vs. grasping the large and releasing the small

The second example to present the tensions between experts at the national and local levels is the GHG emissions inventory (EI). From the centre perspective, EI has at least two policy implications: EI embodies China's compliance with the international climate agreement (UNFCCC); and is a tool to examine the localities' present situation and thus a foundation for developing GHG mitigation measures. In this regard, policymakers in Beijing

emphasise the rationale (理路 *li lu*) of the EI to establish a standardised theoretical model to connect to the international system and to prepare for running the ETS. Hence, the Beijing experts aim to generate guidelines for local actors to compile EI and codes and regulations for the third-party agencies to audit the data disclosed by local industries (Interview 43 and 63).

However, local actors think differently about EI and the guidelines released by the central government. Rather than seeing EI from a positive perspective as a foundation to deploy climate mitigation policies, local officials see EI as nothing but the centre's attempt to scrutinise local energy conservation and emissions reduction performance and, hence, exert more control over local governments (Interviews 59, 61, and 62). Additionally, for local industries, EI usually runs counter to the "long-standing traditions of non-disclosure by many sectors" (Li and Song, 2016: 1693). Hence, local officials are inclined to avoid disclosing the local emissions data in detail. Further, since most local officials and enterprises have limited competences regarding the relatively technical data,⁶⁹ the Beijing experts questioned the sources and credibility of the local GHG emissions data (NCSC, 2013; Interviews 11, 13, 23, 27, 36, and 63).

Given the contradictory attitude towards the EI among the centre and local officials, there are also cross-level tensions regarding methods of compiling an EI. First, while the Beijing experts claim that their guidelines and instructions are comprehensive and operational to compile an EI, local experts consider such guidelines and regulations to be too theoretical and somewhat problematic to apply (Interviews 51, 60, 61, and 65). "If the forms and questionnaires for the emissions inventory are too difficult to fill out, local enterprises with limited competencies are likely to view it as the government's attempt to make life hard for them, and are therefore inclined to resist the disclosure of requested data" (Interview 60). In fact, during the capacity-building courses organised by the NDRC, Beijing authorities and experts are regularly reminded that the overtly complicated procedures formulated at the centre level may impede work at the local level if such guidelines are too byzantine (Chen, 2017: 370). Complaining that the guideline for compiling the EI is relatively high-end to 'down to earth' (接地氣 *jie di qi*), local experts tend to explore the most feasible ways to compile the GHG emissions inventory through a process of trial and error (Chen, 2017: 369-370; Interview 60).

Second, when reviewing the EI submitted by local governments, the centre experts

⁶⁹ For instance, according to the Chinese central government mandate, all provinces have to compile the 'energy balance sheet' to demonstrate the relationship between energy use and GHG emissions. While most provincial governments can manage to complete the work, prefectural and lower-level officials encounter difficulties in compiling the energy balance sheet due to the lack of energy-related statistics data (Interviews 39, 47, and 63).

questioned that the ‘default value’ appeared quite often to replace the ‘measurement value’ in the section on ‘emission factors’ in EI (Hsu et al., 2017; Interviews 39 and 63). Yet, the localities present a different picture. For local expert institutes, measuring the emission factors in various sectors requires considerable work and time to collect data and communicate with local enterprises. Therefore, their strategy and local knowledge of compiling the EI is ‘grasping the large and releasing the small’ (抓大放小 *zhuada fangxiao*) (Interview 60) and ‘rough rather than meticulous’ (宜粗不宜細 *yi cu bu yi xi*) (21st Century Economic Daily, 2010). For instance, the value of desulphurisation efficiency is usually higher than 95% in Guangdong Province. Hence, local experts often directly recode the value as 100% instead of investing additional time in determining the exact value (Chen, 2017: 370; Interview 50 and 60).

9.3.3 Target decomposition of GHG mitigation: set a reversed mechanism to force localities to peak earlier vs. converge towards the middle of the procession

The third example to illuminate the varied thoughts and tensions between the centre and the local is GHG mitigation decomposition. Facing international pressure to curb GHG emissions and reach the carbon peak as early as possible, Chinese centre policymakers and experts expect the localities to set an ambitious timetable to achieve their carbon peak before the national target year. And, what the Chinese centre officials considered is to form a reversed mechanism (倒逼機制 *dao bi zi zhi*) that forces the low-carbon and green transformation at the Chinese localities (Hsu et al., 2017; Cao et al., 2018; Interviews 13, 36, and 39).

However, local officials have to take care of regional economic and industrial development while reaching the GHG emissions target. Hence, while some proactive provinces and cities⁷⁰ are motivated to demonstrate their ambition to reach the carbon peak earlier, their objective is “to be a leader that is not leading too much of the entire procession” (Chen, 2017: 376). Meanwhile, most local governments would rather converge to the middle of the procession, setting time around the national average (the year 2030) to peak carbon emissions (Hsu et al., 2017). One interviewee quoted the Chinese proverb: “Fame portends trouble for men just as fattening does for pigs” (人怕出名，豬怕肥 *ren pa chu ming, zhu pa fei*) (Interviews 57, 63, and 64). Apart from demonstrating their ambition, preventing the pressure from inter-regional competition is also local cadres’ consideration (NCSC, 2013; Interviews 57 and 63).

⁷⁰ For instance, the cities joined the Alliance of Pioneer Peaking (APPC) that aimed to peak their carbon emissions earlier than 2030, such as Beijing, Guangzhou, and Hangzhou.

9.4 Science-policy interface in multi-level governance and cross-level dynamics of China's climate policy

This section elucidates how the SPI elements vary at each governance level and in the cross-level dynamics of China's climate policy.

9.4.1 Models of the intersection process of SPI of China's climate policy

9.4.1.1 SPI models at each governance levels of China's climate policy

This sub-section discusses the interaction process between science (experts) and politics (policymakers) at multiple levels of China's climate policy (see *Table 9.2*). While the science-push model can be found in all the governance levels and particularly in China's national climate policy, the policy-pull and the co-production models occur more frequently at the international and local (provincial and prefectural) levels due to a variety of circumstances.

First, the co-production and policy-pull models highlight the interaction process of experts and policymakers in China's international climate policy. When participating in international climate talks, Chinese proposals and discourses are primarily co-constituted by Chinese experts and political decision-makers in advance. Also, considering that many experts play the role of Chinese representatives and negotiators engaging with international climate negotiations, the co-production model can best describe the formulation and implementation of China's international climate policy. However, considering that policymakers often request knowledge in a timely manner and demand the experts' support to enhance the capacity of the Chinese delegation team, the policy-pull model also portrays the basic SPI model of China's international climate policy.

Second, the co-production and policy-pull models can also portray the interaction between science and politics in China's provincial and prefectural climate policy. Since the low-carbon plans and climate change-related pilot projects have to consider local development needs, stakeholders' compliance, and other considerations such as city branding, experts have to work with local officials to complete the projects. Meanwhile, due to local officials' limited capacity to deal with the low-carbon and climate change-related policy projects, they demand that experts participate in the administrative procedures and communicate with local stakeholders.

Lastly, to put the policy stages into consideration, one can find the science-push model in almost all the five stages except policy implementation, since it is primarily the government officials who are responsible for policy implementation. If experts are found engaging in implementing policies, it can be interpreted as either the policy-pull or the co-production model.

Table 9.2 Models of the intersection process of the SPI of China's climate policy

	Experts' impact on the five stages of the policy process	China's foreign climate policy	China's national climate policy	China's provincial policy	China's prefectural climate policy
International experts	Problem definition	SP	SP	SP+PP	SP+PP
	Agenda-setting	SP	SP	SP	SP
	Policy formulation	SP	SP	SP	SP
	Policy implementation	N/A	N/A	N/A	N/A
	Policy evaluation	N/A	SP	SP	SP
Chinese experts at the national level	Problem definition	SP+PP	SP+PP	SP+PP	SP+PP
	Agenda-setting	SP+PP+CP	SP+PP	SP+PP	SP+PP
	Policy formulation	SP+PP+CP	SP+PP	SP+PP	SP+PP
	Policy implementation	PP+CP	N/A	N/A	N/A
	Policy evaluation	SP+PP	SP+PP	SP	SP
Chinese experts at the provincial level	Problem definition		SP	SP+PP	SP+PP
	Agenda-setting		SP	SP+PP+CP	PP+CP
	Policy formulation		SP	SP+PP+CP	PP+CP
	Policy implementation		N/A	PP+CP	N/A
	Policy evaluation		SP	SP+PP	SP+PP
Chinese experts at the prefectural level	Problem definition		SP	SP	SP+PP
	Agenda-setting		SP	SP	SP+PP+CP
	Policy formulation		SP	SP	SP+PP+CP
	Policy implementation		N/A	N/A	PP+CP
	Policy evaluation		SP	SP	SP+PP
<p>* SP = the science-push model; PP = the policy-pull model; CP = the co-production model. ** N/A = not applicable since the experts do not participate in the specific stage. *** 'International experts' refer to those INGOs (e.g., WWF) and foreign research institutes (e.g. WRI) that come to China to engage with researching and lobbying Chinese policy actors for addressing climate change.</p>					

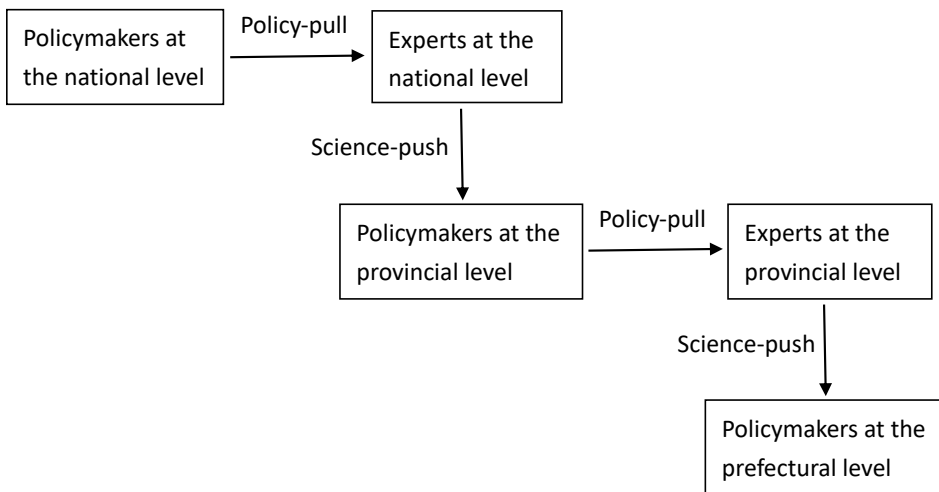
Source: Author's empirical study; see Chapters 5-8, 9.2 and 9.3.

9.4.1.2 Same effort of experts but different SPI models from the cross-level perspectives

I now highlight SPI's different faces from the cross-level perspectives. Once SPI is put into a cross-level framework, the same expert's engagement with China's climate policy can be interpreted as different SPI models.

I use the centre Chinese experts' engagement with the low-carbon city pilot and the emissions inventory as an example. First, one can interpret the Beijing experts' contribution to developing methodological instructions, guidelines, and toolkits for the policy projects as the policy-pull model, since the centre officials would not be able to release those documents without the experts' assistance. Yet, when the Beijing experts transmit the policy documents as administrative knowledge to the Chinese localities in the name of the central government, one can interpret such an effort as the science-push model (see *Figure 9.3*). Similarly, while one can adopt the science-push model to narrate 'experts at the provincial level speak to prefectural policymakers to facilitate the development of the low-carbon city pilot,' the same effort can be interpreted as the policy-pull model simultaneously from the provincial level perspective.

Figure 9.3 Same effort of experts but different SPI models from the cross-level perspectives



Source: Author.

Similarly, while the carbon budget proposal (CBP) presents the policy-pull and co-production models of interaction between science and politics domestically, it shows a science-push model when Chinese experts proposed the idea to the international community (Chapter 5).

9.4.2 Output of the SPI of China's climate policy

Based on a five-level cumulative scale (from 1 to 5; see Section 2.5 and *Table 2.6*), I evaluate the experts' impact on the five stages of China's climate policy process at various governance levels. I first explain the experts' influence on China's climate policy at each governance level (see *Table 9.3*).⁷¹ Bringing the cross-level dynamics of the SPI into consideration, I then discuss the cross-level effects of experts on varied stages of China's climate policy.

9.4.2.1 Measuring the experts' impact on China's climate policy at each governance level

Concerning the experts' impact on China's climate policy, I reveal that while experts at each level affect policy, it is more likely that the experts' scientific input directly transforms to policymaking and is put into practice at the local levels. This is primarily because policymaking at the national level often contains more complex factors, and policymakers are likely to apply political judgment on scientific advice before making a decision. To put policy stages into consideration, experts at the higher governance levels (i.e., international and national) are more influential at the early policy stages, namely problem definition and agenda-setting. Whether experts impact on policy formulation, for instance, the selection of policy measures, depends on the top political leaders' decisions. Meanwhile, experts at the lower governance levels (i.e., provincial and prefectural) are influential at virtually all the policy stages due to the lack of knowledge and capacity to deploy and implement climate change mitigation and adaptation policies.

Regarding the international experts' impact on China's international climate policy, foreign scientific organisations have successfully influenced the policy stages of problem definition, agenda-setting, and policy formulation. While the effect of international scientific input is between level 2 and 3 during problem definition and agenda-setting, which means a moderate impact, it becomes less (between level 1 and 2) in policy formulation.

⁷¹ See Appendix IV for the explanation of how I assign the numbers based on the five-level cumulative scale developed in *Table 2.6*.

Table 9.3 Experts' impact on different governance levels of China's climate policy

	Experts' impact on the five stages of the policy process	China's foreign climate policy	China's national climate policy	China's provincial policy	China's prefectural climate policy
International experts	Problem definition	2-3	2-3	4	4
	Agenda-setting	2-3	2-3	2-3	2-3
	Policy formulation	1-2	2-3	2-3	2-3
	Policy implementation	N/A	N/A	N/A	N/A
	Policy evaluation	N/A	1-2	1-2	1-2
Chinese experts at the national level	Problem definition	4-5	4	4	4
	Agenda-setting	4-5	3-4	3	3
	Policy formulation	4-5	3-4	3	3
	Policy implementation	4-5	N/A	N/A	N/A
	Policy evaluation	N/A	3-4	3-4	3-4
Chinese experts at the provincial level	Problem definition		1-2	4	4
	Agenda-setting		1-2	3-4	3-4
	Policy formulation		1-2	3-4	2-3
	Policy implementation		N/A	4-5	N/A
	Policy evaluation		1-2	3-4	3-4
Chinese experts at the prefectural level	Problem definition		1	1-2	4-5
	Agenda-setting		1	1-2	3-4
	Policy formulation		1	1-2	3-4
	Policy implementation		N/A	N/A	4-5
	Policy evaluation		1	1-2	N/A
<p>* 1 = policymakers are informed and have taken note of the input; 2 = policymakers put the suggested ideas on the policy agenda for debate; 3 = policymakers agree with the recognition of policy problems but are contesting regarding the solutions; 4 = policymakers accepted the experts' advice and made decisions based on political considerations; 5 = policymakers accepted all the experts' advice and directly put it into policy practice.</p> <p>** N/A means not applicable since the experts do not engage in the specific stage of China's climate policy.</p> <p>*** 'International experts' refer to those INGOs (e.g. WWF) and foreign research institutes (e.g. WRI) that come to China to engage with researching and lobbying Chinese policy actors for addressing climate change.</p>					

Source: Author's empirical analysis in Chapters 5-9; see Appendix IV for the explanation of how I assign the numbers based on the five-level cumulative scale developed in Table 2.6.

Concerning the output of the SPI at the national level, I show that the experts' impact on China's national climate policy is between level 3 and level 4, which means a significant impact. Since the centre Chinese policymakers focus on building a macro policy framework for climate change mitigation and adaptation, experts are influential at the initial stages of the climate policy process, namely problem definition and agenda-setting, in navigating the changes in policymakers' ideas. In other words, apart from finding solutions for a given problem, experts have a say in 'teaching' the policymakers and defining a policy problem (Interviews 07, 21, 24, 26, and 27). Yet, compared to the first two policy stages, experts have less impact on policy formulation. Due to the fragmented feature of China's decision-making structure, there is competition and bargaining among varied ministries regarding the targets and measures for climate change mitigation and adaptation. While each ministry listens to different research institutes and recommendations, negotiations occur between ministries and often cannot reach an agreement. As a result, scientific input leads to the top political leaders' decisions or non-decisions based on political judgement.

In terms of the SPI's output at the provincial and prefectural levels, my research shows that the experts' impact on China's local climate policy is between level 4 and level 5, which means a substantial impact. In virtually all the five policy stages, local officials rely heavily on experts' assistance due to the lack of knowledge and capacity to fulfil the climate change and low-carbon-related policy projects. Since the central government has defined the existing policy problems and goals regarding climate change mitigation and adaptation, there is no need for local experts to compete for defining a policy problem. Instead, experts spend most of the time finding measures addressing existing problems and reaching the policy goals, and thus have an effect on policy formulation. For instance, while there was a policy debate on whether to adopt carbon taxation or carbon trading as the primary policy instrument for GHG mitigation at the national level around 2009, local experts did not engage in such a debate. Rather, after the central government decided to adopt carbon trading, local experts turned to assist policymakers with designing and running the pilot ETS (Interviews 50, 51, 52, 54, and 57). Further, since local officials have limited capacity for implementing all the climate change mitigation and adaptation policies, they tend to adopt the 'government purchase service' approach to fulfil the policy work—to commission policy work to expert institutes through project-based tendering (Interviews 54, 55, 56, and 60). Hence, even at the implementation stage, local experts remain their policy impact as they have at agenda-setting and policy formulation stages.

9.4.2.2 Measuring the experts' impact on China's climate policy from the cross-level perspective

Regarding the experts' impact on China's climate policy from the cross-level perspective, *Table 9.3* shows fourteen grids of the experts' impact on the five policy stages at four governance levels. In general, experts at a given governance level exert more influence on the lower governance levels than on higher governance levels due to the asymmetry of knowledge and power relations between different governance levels. Meanwhile, although the impact is somewhat limited, experts can also affect upper-levels during the cross-level interaction between experts and policymakers. This is primarily because either the national or provincial policy framework or implementation plan have to include the locals' voices to ensure their compliance and enforcement.

First, I reveal that foreign research institutes have a certain degree of policy impact on virtually all the Chinese governance levels. However, it is more likely that international experts' scientific input transforms into policy at the local levels than at the national level. This is reasonable given that there is a lack of capacity at the local levels, and a legion of research institutes have engaged with China's national climate policy in Beijing. To put policy stages into consideration, the international scientific input has a particular effect (between levels 3 and 4) on the capacity building, agenda-setting, and policy formulation stages of China's climate policy. Since their study reports on the existing policy programmes are often co-developed with Chinese domestic institutes and will be sent to the officials, they also have a bit of influence on policy evaluation (between levels 1 and 2).

Second, I reveal that the centre Chinese experts' scientific input is more likely to transform into China's foreign and national climate policy than into local climate policy. While the centre Chinese experts directly contribute to China's climate policymaking at the international and national levels, they affect China's local climate policy indirectly. To put policy stages into consideration, centre Chinese experts play a critical role in China's participation in the dynamics of international climate negotiation and regime formation. At the national level, since it is the government ministries that are responsible for implementing climate change mitigation and adaptation policies, central Chinese experts are influential in all the policy stages except policy implementation. At the provincial and prefectural levels, centre Chinese experts are more significant in problem definition and capacity building. Yet, they become less influential in agenda-setting and policy formulation, given that it is primarily local research institutes that assist local officials during this stage. When it comes to policy evaluation, centre Chinese experts are again critical since they help the centre officials investigate local performances and review the materials submitted by local governments.

Third, provincial experts have more influence on provincial and prefectural climate

policies than on foreign and national policies. They play a critical role in virtually all the policy stages at the provincial level, including implementing climate change and low-carbon related policy projects. Additionally, they often come to the prefectural level to improve the local's capacity to deploy climate policies and evaluate the local performances. Lastly, during the vertical knowledge travel and centre-local interactions, centre policymakers and experts would listen to provincial Chinese experts' voices to formulate and evaluate China's national climate policy. Hence, provincial experts still have the opportunity to influence the upper-level policymaking.

Fourth, while prefectural Chinese experts significantly influence prefectural climate policies, they have a limited effect on provincial and national climate policies (between levels 1 and 2). Similar to the SPI at the provincial level, prefectural experts are influential at virtually all the policy stages at the prefectural level due to the officials' lack of capacity to deal with the complex change change-related policies.

9.5 Inferences

This chapter set out to answer the question of *how do experts exert influence on China's climate policy across different governance levels?* In answering this question, I reach the following conclusions. First, regarding the experts' engagement with China's multi-level climate governance, I reveal the triangular interaction among experts and policymakers at different levels. Through the division of labour in the international-domestic, centre-local, and provincial-prefectural linkages, experts at each governance level have an opportunity to influence the development of climate policy. Yet, I also found the tensions in the cross-level intersection process of science and politics. Although working on the same policy project, experts at different levels have varied mindsets and working modes. Such differences and tensions not only mirror the centre-local relations in China's political system but also the varied policymakers' capacity and demand of knowledge.

Second, concerning the interaction of science and politics, the science-push model can be found at all governance levels and virtually all policy stages except policy implementation. Meanwhile, the policy-pull and the co-production models occur more frequently at the international and local (provincial and prefectural) levels and virtually all policy stages.

Third, in comparing the experts' impact in the cross-level dynamics of China's climate policy, I reveal that experts at the lower levels are more influential than experts at the higher governance levels. To put the policy stages into consideration, international experts and centre Chinese experts are more influential at the early stages, namely problem definition and agenda-setting. Meanwhile, experts at the provincial and prefectural levels

are influential at virtually all policy stages due to local officials' lack of knowledge and capacity to deploy and implement climate policies. Further, experts at a given governance level exert more influence on the lower governance levels than on higher governance levels due to the asymmetry of knowledge and power relations between different governance levels. In general, centre Chinese experts hold more authoritative knowledge than provincial experts regarding climate policies, and provincial experts hold more knowledge than prefectural experts.