Dealing with the Invisible Grey of Blue Skies: local environmental governance from a multilevel governance perspective through the cases of air quality management in Nottingham City and Shanghai

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THESIS SUMMARY

This doctoral thesis investigates urban environmental governance from a multilevel agenda-setting perspective through the examples of air quality management in Nottingham City/UK and Shanghai/China. A theoretical framework combining multilevel governance, governance agenda-setting, and impression management helps to explore how local actors from different governance contexts responded to top-down policy mandates to address a similar environmental issue (air pollution) and potential relationships between their governance approaches with the landscape of environmental governance beyond their local jurisdictions. Employing a most-different international comparative design, the study uses qualitative techniques to comparatively explore the two cases. The fieldwork was conducted in England and China, with in-depth interviews and observations of public meetings/events as the main data collection methods. Accordingly, this thesis generates the following key contributions to knowledge:

- The multilevel governance concept can be used both as an analytical lens and as a governance model to revisit governance practices. In that way, it is applicable in researching the political-institutional system of China even though it is different from Western traditions from which the concept has been developed.
- The invisibility of environmental pollution opened opportunities for ambiguous governance through ambiguous communication of environmental quality and governance performance. This ambiguity was aided by the advent of digital technologies. They were found to diversify stakeholders' perceptions about environmental quality which influenced their engagement in governance and collective local capacity to respond to external influences.
- This thesis also revisits the concept of local autonomy in local environmental governance. Both the Nottingham City/UK and the Shanghai/China cases show certain levels of local autonomy, however, in incomplete forms and trapped in financial-evidence-based and performance-based policy-making approaches. Through the case studies, local autonomy and local governance capacity could be viewed as two different yet intertwined concepts. Local autonomy is also a relative concept. It is relative to external factors such as governance contexts and inter-relations with other actors, and relative to the autonomy-bearers' internal factors such as their engagement capacity and motivation. Additionally, governance

approaches of multiple governing levels and localities have inter-relations. Therefore, there are possible unequal outcomes among localities following the differences in their autonomous power and capacity to make and implement policy decisions.

- Overall, this study provides insights into the nuances of local environmental governance and the importance of considering multilevel governance and impression management in analysing local environmental governance. The findings suggest that policy-makers at any governing level should be aware of and consider risks of fragmented decentralisation and differentiated support for local actors to make policy decisions to minimise inequity in environmental governance and sustainable development opportunities across localities.

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LIST OF ABBREVIATIONS

AQI	Air Quality Index
CAZ	Clean Air Zone
CPC	The Communist Party of China
CSO	Civil Society Organisation
DCC	Derby City Council
DEFRA	Department for Environment, Food & Rural Affairs
DfT	Department for Transport
EPB	Environmental Protection Bureau
EU	European Union
FoE	Friends of the Earth
ICT	Information and Communication Technology
INGO	International non-governmental organisation
LEP	Local Enterprise Partnership
MLG	Multilevel governance
MP	Member of Parliament
NCC	Nottingham City Council
NGO	Non-governmental organisation
NO_2	Nitrogen dioxide
NPO	Non-profit organisation (or Not-for-profit organisation)
IPE	Institute of Public and Environmental Affairs

ONGO	Overseas Non-governmental Organisation
PCM	Pollutant Climate Model
PM	Particulate matter
PRC	People's Republic of China
SDG	Sustainable Development Goal
ULEV	Ultra low emission vehicle
WAQI	World Air Quality Index
WHO	World Health Organization

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CHAPTER I – INTRODUCTION

> 'ClientEarth has won its High Court case against the Government over its failure to tackle illegal air pollution across the UK.' (ClientEarth, 2016)
>
> (Article headline)
> '**Airpocalypse now: China pollution reaching record levels**
> In some areas level of harmful particles in the air were 56 times the levels considered safe by the World Health Organisation' (Phillips, 2015)

The first quote is the announcement of ClientEarth – an international non-governmental organisation working on environmental legal issues with the global headquarter based in London – about their win against the UK Government in a court case regarding air quality management in 2016. The second quote is the heading and sub-heading of a news story in The Guardian about severe air pollution reported from China.

Since 2015, the UK Government had been facing legal charges from both the European Union (EU) and ClientEarth for breaching the EU's legal requirements of air quality standards, especially nitrogen dioxide (NO_2), regulated in *The European Parliament and the Council of the European Union Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe* (hereafter the EU Directive on air quality) (Harvey, 2015). In 2016, ClientEarth announced its first winning round against the UK Government in the trial of the air pollution case. On 21 February 2018, the organisation announced its third win for that same case (ClientEarth, 2018).

To address the legal pressures, the UK Government mandated some local authorities to adopt the Government's Clean Air Zone policy to reduce NO_2 emissions by 2020 (DEFRA and DfT, 2017a). Most cities found the policy difficult to implement immediately as required. Some cities adopted it, while others rejected it in the first negotiation round between 2016-2019.

Meanwhile, in China[1], severe air pollution peaked in the 'airpocalypse' period[2], also known

[1] The full nation's name of the People's Republic of China is shortened as China throughout the rest of this thesis only for convenience without any other implication.
[2] A peaking event of dense smog that attracted international attentions and burst into nation-wide fights against air pollution in China in 2013 (Schwabe and Hassler, 2016).

as the '$PM_{2.5}$ crisis'[3] in 2013, and painted the country with a 'grey' image (Johnson and Fürst, 2020, p. 14). Such visible pollution triggered social concerns and calls for urgent policy actions to address air pollution, as well as environmental protection holistically, with efforts to turn the symbol of China's air quality from 'grey sky' to 'blue sky' (Hu, 2018; Wan *et al.*, 2019).

Subsequently, mandates to control air pollution locally have been set in the central policy agenda of the People's Republic of China (hereafter PRC or briefly China) for local implementation since 2013 (PRC State Council, 2013; PRC National People's Congress, 2015). Significant improvements in the reduction of fine particulate matter (hereafter PM) (i.e., PM_{10} and $PM_{2.5}$) in some major cities such as Beijing and Shanghai have been witnessed between 2013-2018 (Tilt, 2019; Wang, 2021). However, concentration levels of air pollutants in China were still higher than the safe guidelines of the World Health Organization (WHO), including threats from other pollutants that have not received much political attention such as ozone (Yin *et al.*, 2017; Lu *et al.*, 2020).

Both the UK and China Governments have been dealing with air pollution in a similar period and around the start of this doctoral study, which is situated in an interdisciplinary research programme 'Sustaining Urban Habitat' funded by the Leverhulme Research Grant at the University of Nottingham. The funding programme also sets its case studies in the UK (Nottingham City) and China (Shanghai and Chengdu), as well as Germany (Stuttgart). That context inspired the study to compare the air quality management stories in the UK and China.

Both countries' stories include the flows of policy mandates from the central Governments to local authorities. Nevertheless, the UK and China have two different political traditions and governance systems. The UK follows a democratic multi-party system, in which the Government is led by the political party that wins a general election (UK Parliament, 2020d, 2020e). Furthermore, local councils in England are also elected and operate independently from the central control regarding political and administrative arrangements (*Local Government Act 2000, C. 22*, 2000; *Localism Act 2011, C. 20*, 2011). Whereas the Communist Party of China leads both its political and administrative systems

[3] A period from January to February 2013 when many provinces and cities in China experienced severe haze with 'unprecedentedly high index of $PM_{2.5}$ concentration and extremely low visibility' (Jin, Andersson and Zhang, 2016, p. 13). $PM_{2.5}$ stands for particulate matter – fine inhalable particles whose diameters are 2.5 micrometres or smaller – that are usually invisible to human eyes and can get deep into lungs and bloodstream and hence pose great risks to health (United States Environmental Protection Agengy, 2020).

from the central to the local levels (The National People's Congress of the People's Republic of China, 2004). Hypothetically, local governments in China might need to follow central policy mandates more strictly than those in the UK.

Nonetheless, there have been criticisms of centralist governance in the UK regarding the power relationship between the UK Government and local authorities in England (Lowndes and Gardner, 2016; Stanton, 2018). In that relationship, the UK Government is viewed as holding the power of paramount decision-making on both national and local issues in many aspects from policy-making to fiscal management through either direct institutional settings or indirect control by policies (Department for Communities and Local Government, 2015; Hambleton, 2017a; Stanton, 2018).

Meanwhile, central mandates might not always be implemented at local levels in China despite centralist control because local politics in China is more complex than merely accepting top-down influence (Lo, 2015; Kostka and Nahm, 2017; Ran, 2017). On the one hand, China has a system of bureaucratic ranking according to political positions, in which local political leaders of major municipalities and provinces have the same bureaucratic rank as governmental ministers (Lawrence and Martin, 2013). It means that those local political leaders join ministers for policy discussions at the national level. On the other hand, China has a multi-layer administrative system, which has three to four sub-national levels, and a huge country scale regarding both population and geographical area. Therefore, it is challenging for the central Government to have thorough control of policy implementation on the ground throughout that bulky system (Kostka and Nahm, 2017; Ran, 2017; Kostka and Zhang, 2018; Yang *et al.*, 2021).

That contradiction within each case and between the cases regarding the relationship between the labelled governance systems (i.e., the democratic UK and authoritarian China) and their observed practice from the literature inspires a curiosity to re-consider presumptions about the practice of governance models, specifically in environmental governance, to start with a fresh question:

> How do cities in different governance systems (the UK and China) respond to central policy mandates to address a similar environmental issue (such as air pollution)?

By asking this question, this thesis aims to explore the stories surrounding the responses of actors in Nottingham City and Shanghai to the central policy requirements in air quality

management. The exploration will describe and explain their respective approaches. The observation time frame is set in the period from 2013 to 2019 to largely cover the most common timing of policy events in both cases regarding air quality management. Findings from that exploration will contribute empirical evidence to the literature on how a central government can inject their policy priorities into local governance agendas and what can influence local governance approaches, including whether local actors have the freedom to make decisions and what can influence the shaping and extent of their freedom.

Accordingly, this research question has two main components: (1) the government's approach to decentralising environmental governance responsibilities; and (2) the extent of freedom for local actors to act within that decentralisation context. To concretise the research ideas, this Chapter will firstly review the research landscape surrounding decentralisation and local environmental governance in the following sections.

I-1. DECENTRALISING ENVIRONMENTAL GOVERNANCE

I-1.1. From government to governance and decentralisation

In academic discussions surrounding public management, there has been a shift from traditional approaches of 'government' to 'governance' since the late 1980s following the introduction of the New Public Management paradigm (Rhodes, 1996; Peters and Pierre, 1998; Osborne, 2010). That transition responded to the concerns about the traditional 'government' paradigm which emphasises hierarchical power possession for the state in decision-making for public management (Ibid.). Whereas among the key attributes of the governance concept are multistakeholder engagement in public management and that decision-making powers and responsibilities are shared among state and non-state actors (Rhodes, 1997; Stoker, 1998; Kooiman, 1999; Osborne, 2010).

Following that transition from government to governance, the analysis of local governance should be viewed in connection with various factors and actors from different governing levels and sectors (Gibbs and Jonas, 2000; Bulkeley and Betsill, 2005). Neither top-down planning decisions with abundant resource allocation nor merely local communities' efforts can guarantee sustainable delivery of public services and solve all local problems (Ostrom, 2012). Instead, although solutions to local problems should be based on local knowledge and conditions, collaborations between public and private

groups at different scales and levels are needed to mobilise resources and seek effective ways to tackle local problems that require collective actions (Ibid.).

Along with the transition to governance are rising discussions of decentralisation. An general understanding of decentralisation in public governance relates to the transfer of the whole or part of decision-making powers or/and responsibilities from central governments to sub-national authorities and the private sector (Mohan and Stokke, 2000). It is connected to localism as part of the shift from government to governance, in which the focal role of central governments in policy-making is decreased to increase the role of local authorities and non-state actors in local policy-making and implementation (Stoker, 1998; Evans, Marsh and Stoker, 2013).

There have been studies to analyse the forms and extent of decentralisation. For example, decentralisation and centralisation could be viewed as two extreme poles on a spectrum of governance modes (Driessen *et al.*, 2012). Meanwhile, Smoke (2015) classified forms of decentralisation as deconcentration (having local governments as units of the central government), devolution (having elected local authorities with autonomous powers apart from the central government), and delegation (contracting public service provision from the central government to other state or non-state actors). Furthermore, decentralisation can operate in different dimensions, for example, fiscal, political and administrative decentralisation (Ivanyna and Shah, 2014; Smoke, 2015; Isufaj, 2017). However, those dimensions might not occur simultaneously. For instance, local authorities might receive fiscal decentralisation without additional administrative power being distributed and vice versa (Kithatu-Kiwekete, 2013; Smith and Spicer, 2018; Stanton, 2018).

According to those different approaches of conceptualising decentralisation, although decentralisation is expected to bring the government and governance powers closer to the people (Ivanyna and Shah, 2014) and hence enhance the efficiency and effectiveness of local governance (Smoke, 2015), different extents and forms of decentralisation may generate different situations for local governance. This implies that even in a decentralised model, centrally decided policy-making can still occur if local authorities are only granted with decentralised decision-making powers for options to implement the central government's policy mandates. Reflecting on the background contexts of the air quality management cases in the UK and China described at the beginning, the UK explicitly had a devolution strategy for England (Government, 2010; Cox, 2016; Torrance, 2019), while there are periods and signs of decentralisation in the evolution of China's governance

system (Donaldson, 2017; Westman, Castán Broto and Huang, 2019). However, both cases show a phenomenon of the central governments imposing governance mandates on local authorities.

Regarding the focus of this thesis on environmental governance, there are multiple specifications of the field that require specific considerations when discussing decentralisation. Accordingly, the following section will review some key concerns in decentralising environmental governance.

I-1.2. Decentralisation in environmental governance

Decentralising environmental governance includes distributing resources, authority and responsibilities from central governments to sub-national actors to manage environmental issues and/or to implement environmental and sustainability policy targets locally (Mohan and Stokke, 2000; Smoke, 2015). The call for decentralisation in environmental governance has been emphasised following the advocacy for local knowledge about local contexts and feasible scales for sustainable management of resources (Ostrom, 2012; Karlsson, 2017). However, it could be challenging to decentralise environmental governance responsibilities and targets when it comes to moderating the interests and policy priorities of local actors (Pearce and Cooper, 2013; Yang, Rounsevell and Haggett, 2015; Yang *et al.*, 2021).

It is especially challenging to promote local environmental governance as pro-environmental priorities are usually hindered by other socio-economic developmental priorities (Kostka and Nahm, 2017; Qiao, Kristoffersson and Randrup, 2018). Furthermore, decentralised environmental policies might also create conflicts with other policies currently implemented locally (Belinskij *et al.*, 2019). Conflicts between environmental policy preferences and other socio-economic preferences or conflicts among policies in general usually arise when local actors are required to deal with new governance mandates on top of their existing responsibilities while having limited resources and capacity (Brousseau *et al.*, 2012). Accordingly, the politics of actors' engagement (including the coordination of actors' interests and supporting resources) and the extent of power for local actors to perform meaningful actions are important concerns in decentralising environmental governance (Raymond, 2002; Bulkeley and Betsill, 2005; Brousseau *et al.*, 2012; North and Longhurst, 2013; Luova, 2020).

Besides, local communities and their issues have inter-relations with issues elsewhere following globalisation and hence cannot be addressed only locally (Brousseau *et al.*, 2012; Karlsson, 2017). A special characteristic to be considered in environmental governance is that environmental issues and their impacts can mobilise and can be mobilised, even for static pollution sources. There are environmental issues that are initiated and cause impacts locally before causing problems on a wider scale, for instance, the yellow dust from China to Korea (Altindag, Baek and Mocan, 2017) and Saharan dust travelling to South America (Formenti *et al.*, 2001). Indeed, transboundary pollution and diffusion of aftermaths from local environmental problems have been managed at regional and global scales through international treaties (e.g., The United Nations Framework Convention on Climate Change, The Geneva Convention on Long-range Transboundary Air Pollution of the United Nations Economic Commission for Europe, The Convention on the Law of the Non-Navigational Uses of International Watercourses, etc.).

Environmental issues can also be mobilised by policies, or in other words, policies can cause the relocation of pollution. A prevalent phenomenon of pollution relocation is the relocation of pollution-intensive industries (Cole and Elliott, 2005; Wang, Zhang, Zhao, Lu, Zhang, Zhu, C. Nielsen, *et al.*, 2017; Li and Wang, 2020; Wang *et al.*, 2021). Brousseau *et al.* (2012) argue that the consequences of environmental problems or environmental policies go beyond the jurisdictional boundaries of their host localities because stakeholders outside local jurisdictions where those problems or policies are initiated may also be affected.

In other words, local environmental governance cannot stand alone or be researched alone as it relates to stakeholders and issues at different governing levels (Bulkeley and Betsill, 2005; Hysing, 2009; Homsy, Liu and Warner, 2019). Therefore, researching phenomena of decentralised environmental governance requires the analysis of other actors and factors within and beyond local jurisdictions. In this context, an important question is whether local actors have the power or freedom to make decisions in response to top-down environmental governance pressures. This point leads to the concept of local autonomy.

Decentralisation is often discussed alongside the concept of local autonomy and multilevel governance to consider the extent to which decentralised powers and decentralisation influence the extent of autonomy for local actors to perform their roles in local governance (Bahl, 1999; Smoke, 2015; Stigt, Driessen and Spit, 2016; Smith and

Spicer, 2018; Stanton, 2018). However, Filippetti and Cerulli (2018) contend that the extent of decentralisation does not guarantee respective degrees of local autonomy or the effectiveness of local governance. They consider that the institutional structure, which regulates the fiscal structure, political responsibility, and administrative organisation, is what matters for the viability of local governance. Furthermore, local politics and the overall political situations are also found to be influential on the effectiveness of decentralisation to enhance local autonomy for local governance (Ahrens and Ferry, 2015).

However, the importance of local autonomy for environmental governance is controversial. While there is support for distributing more power to local actors to make decisions that suit local contexts (Ostrom, 2012), there are also concerns about adverse consequences from locally-based (especially fragmented) governance of environmental pollution that might have transboundary impacts (Brousseau *et al.*, 2012), inadequate local capacity to perform environmental governance (Reddy, 2016), and defence of the leading or guiding roles of higher governance levels to support the transitions of global pro-environmental measures to local implementation (Karlsson, 2017).

Reflecting on the air pollution stories of Nottingham City/UK (hereafter the Nottingham case) and Shanghai/China (hereafter the Shanghai case) mentioned above, both cases faced decentralised governance duties to control air pollution. However, they have different governance contexts, including different political-institutional settings and governance pressures. Therefore, it is interesting to investigate the following research questions through these two cases of Nottingham City and Shanghai:

(1) How do localities in different governance systems (Nottingham City/UK and Shanghai/China) respond to decentralised governance duties to address a similar environmental issue (air pollution)?

(2) What are the relationships between the environmental governance approaches of a locality and the landscape of environmental governance beyond its local jurisdiction, from a multilevel governance perspective?

I-2. THESIS OUTLINE

Following the foregoing review of local environmental governance and decentralisation,

this study analyses local environmental governance under the central policy pressures of localities in different governance systems and contexts to explore whether they have differences or share similarities. Furthermore, the analysis also includes exploring the relations between local environmental governance approaches and the landscape of environmental governance beyond local jurisdictions.

To address these research issues, the study proposes an innovative theoretical approach by combining elements of the multilevel governance perspective, agenda-setting, and impression management to create a multilevel governance agenda-setting analytical framework. Chapter II will present and explain this theoretical approach in detail, including a review of other theoretical approaches that have been used to research decentralisation and local environmental governance, especially in the contexts of the UK and China.

Comparing the cases of Nottingham City and Shanghai, locates this study as a 'most-different' comparative design. To seek in-depth explanations and find nuances in the comparison, the study adopts a qualitative approach to data collection and analysis. The fieldwork was conducted in the UK (mainly in Nottingham City) from the summer of 2018 to the end of 2019 and in China (Shanghai and Beijing) for five weeks between mid-October and early December of 2018. The main data collection method is semi-structured interviews supplemented by observations of public events. Details of the methodology are presented in Chapter III.

Chapter IV presents the environmental governance contexts of Nottingham City and Shanghai. This Chapter will review the status quo of institutional and political contexts surrounding environmental governance, with specific cases of air quality management in Nottingham City and Shanghai. The Chapter includes some data collected during the fieldwork to illustrate the discussion. Thus, Chapter IV is both a literature review to contextualise the cases and an illustrated discussion of the governance contexts.

Chapters V and VI present the empirical data collected during the fieldwork. The discussions in these Chapters are built upon an argument that individual perceptions and problem-framing approaches can influence stakeholders' decisions and approaches regarding engagement in local environmental governance. Accordingly, Chapter V analyses what could influence stakeholders' perceptions of the quality of an environmental condition and how that condition was framed as different governance

problems. Subsequently, Chapter VI presents the approaches of state and non-state actors to engaging in local environmental governance. Following Chapter V, the analysis in Chapter VI considers the influence of the actors' perceptions of environmental quality and the types of problems on their chosen engagement approaches.

The empirical findings analysed in Chapters V and VI will be connected and discussed in Chapter VII to address the research questions. Finally, Chapter VIII will conclude the study by highlighting its key contributions to knowledge.

CHAPTER II – A THEORETICAL FRAMEWORK TO INVESTIGATE LOCAL ENVIRONMENTAL GOVERNANCE AGAINST MULTILEVEL PRESSURES

II-1. INTRODUCTION

This chapter presents the theoretical basis for this study by reviewing and combining the theories and concepts that will allow me to answer the following research questions:

- How do localities in different governance systems (Nottingham City/UK and Shanghai/China) respond to decentralised governance duties to address a similar environmental issue (air pollution)?

- What are the relationships between the environmental governance approaches of a locality and the landscape of environmental governance beyond its local jurisdiction, from a multilevel governance perspective?

The first research question covers two sub-questions: (1) How do central governments inject their policy preferences into local governance agendas? and (2) How do local actors respond to that additional duty decentralisation given their own preferences and resources? Meanwhile, the second research question raises a concern that a locality's governance approaches might relate to developmental issues and sustainable development efforts beyond that local jurisdiction.

The first research question also relates to issues of higher-level actors influencing the setting of local governance approaches and the capacity of local actors to respond to such top-down influence. In other words, there is a phenomenon of the central governments trying to inject their policy requirements into local policy agendas. Those central policy requirements may or may not be already set in the central policy agendas. However, that phenomenon does not strictly fall into a central agenda-setting process in which different actors try to push their policy ideas as suitable solutions to certain governance problems

so that they can be considered for national governance decisions (Kingdon, 1984, 2014; Baumgartner and Jones, 2009). Instead, the phenomenon involves the relations of governance agendas at different governing levels.

Responding approaches of local actors to top-down influence relates to the extent of autonomy for local actors to shape and take actions (Osborne, 2010; Yang, Rounsevell and Haggett, 2015; Chigwata, Muchapondwa and Visser, 2017; Bulkeley *et al.*, 2018). However, the concept of local autonomy does not have a universal definition, and studies of local autonomy usually discuss different aspects of it. For example, there are studies looking at different dimensions of local autonomy, either separately or together, namely fiscal autonomy, political autonomy, and administrative autonomy (Chapman, 1999a; Kithatu-Kiwekete, 2013; Eckersley, 2017; Isufaj, 2017; Smith and Spicer, 2018; Jiao and Xu, 2020). Local autonomy is also viewed as having policy initiation powers and immunity from central influence (Clark, 1984). Some scholars argue that local autonomy has different forms and extents (Pratchett, 2004; Bulkeley *et al.*, 2018). While others discuss the interrelations between local autonomy and local governance capacity (Jacob *et al.*, 2008; Eckersley, 2017; Smith and Spicer, 2018). Given the diverse research landscape surrounding local autonomy, Section II-2 will be dedicated to reviewing the conceptualisation of local autonomy, especially relating to local environmental governance.

Furthermore, research has been undertaken into the relationships and interactions of actors who engage in local environmental governance. From the perspective of the polycentric theory, neither abundant external resources and top-down planning nor efforts of local communities alone can guarantee sustainable delivery of local public services and solutions to local problems that require collective action to reach a joint outcome (Ostrom, 2012). Instead, a self-organised system of multiple autonomous decision-making centres that take actions with consideration of others can help to solve collective-action problems at different scales (Ostrom, 2012). Nonetheless, Ostrom's theory is viewed as lacking considerations of power interdependence and cultural-political contexts (Saunders, 2014; Singleton, 2017). Thus, the polycentric theory might face challenges to its application in political systems where independent, or autonomous, decision-making powers for sub-national and non-state actors from central control are usually limited such as in China – a case study in this thesis.

In the specific case of China, its approach to environmental governance is usually

promoted through a Chinese-initiated concept: ecological civilisation. This concept derives from Marxism and has been strategically disseminated in China's education and political system (Wang, He and Fan, 2014; Zhou, 2021). Ecological civilisation, which underpins a philosophy that 'nature should be respected, adapted to, and protected', was even emphasised in the Resolution of the 19th National Congress of the Communist Party of China as a goal to be built by the whole of Chinese society under the leadership of the Communist Party of China (The 19th National Congress of the Communist Party of China, 2017). However, this concept remains an ideology to be achieved in China rather than a specific governance approach. Therefore, it is not a viable theoretical basis to explore the research questions in this study.

Another theory that has been widely used to analyse China's environmental governance practice is authoritarian environmentalism, or environmental authoritarianism interchangeably (Beeson, 2010; Gilley, 2012; Lo, 2015; Ahlers and Shen, 2018; Li *et al.*, 2019). The concept comprises authoritarianism and environmentalism. In a way, it could be understood as combatting environmental problems through authoritarian rules (Beeson, 2010; Ahlers and Shen, 2018). Authoritarian environmentalism theorises that a central government needs to take strictly controlling measures to force environmental policy implementation in places where the engagement of civil society is insufficient and ineffective to address environmental problems vis-à-vis other socio-economic and political interests which are prioritised over environmental protection (Beeson, 2010).

In authoritarian environmentalism, public participation is considered absent in policy selection and formulation, while it may still be possible in knowledge provision, problem definition, and monitoring policy implementation (Gilley, 2012). In China, authoritarian environmentalism has been viewed through the use of central rules and regulations to impose the implementation of pollution control measures on local authorities and the private sector (Ahlers and Shen, 2018; Li *et al.*, 2019). However, the theory itself does not provide a clear guideline or framework for the analysis. Most previous studies seem to focus on the very specific case of China's authoritarian approach. That includes the particular case of imposing reduction targets for environmental pollution as indicators to evaluate local officials, which affects their political career prospects (Wang, 2013; Ahlers and Shen, 2018). Therefore, it is difficult to apply authoritarian environmentalism to analyse a democratic system such as the UK where there is no equivalent vertical administrative and political control as in China, while the goal of this thesis is to

comparatively explore the management of environmental problems in those two different governance systems. Instead, this study will seek theories and concepts that have been applied in both cases.

As stated above, the two overarching research questions of this study require a theoretical framework that can help to investigate the following issues: (1) how central state actors managed to inject their policy preferences into local policy agendas; (2) how local actors responded to top-down policy influence given their existing conditions, including the extent of freedom for them to make responding decisions; and (3) the potential relations between local governance approaches and the landscape of environmental governance beyond local jurisdictions. In other words, the study looks at both directions: top-down influence-making and local autonomy extent to respond.

Following the search for a theoretical framework that can be applied to address those research questions in both the UK and China contexts, I decided to combine the multilevel governance (MLG) perspective with theoretical components of agenda-setting to guide the investigation and seek explanations for the studied phenomena. However, this study does not focus on the periodical or cyclical characteristics of agenda-setting processes as discussed by some authors (Downs, 1972; Howlett, 1997). Furthermore, to enhance explanatory values for the theoretical framework, impression management theories will also be employed as a supplement to explain the actors' tactics to frame environmental problems and influence public perceptions of environmental quality in the case studies.

Additionally, the applicability of the multilevel governance perspective in comparing the governance systems of the Nottingham and the Shanghai cases (hereafter Nottingham and Shanghai) is also a discussed topic in this study. The MLG concept has been developed in the Western literature and adopted to research the European Union's governing model as well as its member states including the UK (when it was still an EU member) (Hooghe and Marks, 2001; Bulkeley and Betsill, 2005; Betsill and Bulkeley, 2006; The Committee of the Regions, 2009; Yang, Rounsevell and Haggett, 2015). This concept theorises the relations and interactions of stakeholders in governance systems which have multiple governing layers or tiers in vertical and horizontal dimensions (Hooghe and Marks, 2001). The vertical dimension involves the power relations between governmental actors from supra-national to national to sub-national levels, whereas the horizontal dimension focuses on the interactions and inter-dependence of public and private actors

across sectorial spheres (Ibid.). Accordingly, in MLG, sub-national actors may have direct interactions with international actors without going through their national governments (Betsill and Bulkeley, 2006).

On that theoretical basis, the application of MLG in researching China's governing system could be questionable. On the one hand, China does have multiple governing levels/tiers within its system and the MLG concept itself has been explored in the Chinese context (Homsy, Liu and Warner, 2019; Yi *et al.*, 2019). On the other hand, the practice of China's governance system, which is still largely controlled vertically by the central Government, is considered insufficient to illustrate the MLG concept (Homsy, Liu and Warner, 2019) or that MLG is practised differently in China (Hensengerth, 2015).

Those arguments highlight an issue about the use of MLG: is it an analytical lens or a governance model? Previous studies discussing the applicability of MLG in China's context mostly focus on the aspect of practising MLG principles as a governance model. Meanwhile, this study contends that MLG can be used both as an analytical framework to guide the exploration of the case studies and as theoretical principles to be tested in those two governance contexts. Accordingly, this study will revisit this theoretical research question:

> Is it applicable to use the multilevel governance concept, which has mainly been established and developed in Western literature, to research an Asian governance system such as China?

Furthermore, the theoretical framework which combines MLG, agenda-setting, and impression management components presents an opportunity for this study to revisit the concept of local autonomy in environmental governance by exploring two different governance contexts. Accordingly, Section II-2 of this Chapter will discuss the current understanding of local autonomy. Section II-3 then explains the employment of the multilevel governance (MLG) perspective in this study. Section II-4 follows by discussing policy agenda-setting and impression management theories to research the shaping of local environmental governance agendas. Finally, Section II-5 will summarise the theoretical framework of this study.

II-2. LOCAL AUTONOMY

Local autonomy has become an important topic when discussing local governance in

general and specifically local environmental governance (Dear and Clark, 1981; Marvin and Guy, 1997; Gibbs and Jonas, 2000; Raymond, 2002; Orbach, 2011; Smedby and Quitzau, 2016; Bulkeley *et al.*, 2018). From earlier perspectives, local authorities were viewed as extended components of central governments to provide public services and implement central goals (Bristow, 1972; Hansen and Kjellberg, 1976; Dear and Clark, 1981). Dear and Clark (1981, p. 1280) define local governments as 'an apparatus of the central state' and contend that they are constrained by the central state through fiscal dependence. They thence raise an issue to be considered in local governance research: the degree of autonomy for local governments vis-à-vis the central state.

Indeed, concerns about local autonomy or decision-making powers for local governments had been raised even earlier. For instance, in England, it is asserted in the Redcliffe-Maud Report (1969) that: '[L]ocal self-government should be a crucial influence. It should represent the citizen and be the means whereby he [sic] brings his views to bear on those public problems that touch most nearly his personal and domestic life.' (cited in Bristow, 1972, p. 143). Or, English local authorities 'must be given real functions – with powers of decision and the ability to take action without being subjected to excessive regulation by central government through financial or other controls' (Government's White Paper, 1971 cited in Bristow, 1972, pp. 143-144). However, more than four decades later, it is the UK Government's devolution scheme, which promises to enhance local 'autonomy', that is criticised as decentralising austerity and operational responsibilities to local authorities rather than empowering them to perform meaningful autonomy (Lowndes and Gardner, 2016).

Nonetheless, local autonomy is a too general notion itself, raising questions of what local autonomy comprises or whether there are different aspects of autonomy. Hansen and Kjellberg (1976) suggest two dimensions of local discretion that decide the degree of local autonomy: (1) the relative independence from the national government in framing policy goals; and (2) the distributed control over the means for fulfilling locally framed goals. The aspect of 'local' goal framing might still be questionable even when the framing does happen at sub-national levels. For instance, in the case of regionalism in Italy in the 1970s, Evans and Rizzi (1978) identified different degrees of local autonomy among sub-national government levels in the Italian model of a 'comprensorio' (an Italian term to refer to a model of an autonomously established regional management body). In that setting, even though a 'comprensorio' was established by neighbouring local authorities and

independent from the central state, major municipalities therein were still in a superior position in decision-making over their smaller peers (Ibid.).

Potential challenges with local policy goal-framing or regional power imbalance as discussed above are still applicable in current practices of MLG that have regional institutions. For example, the English devolution scheme with the establishment of regional mayors creates 'considerable doubt' about power balance arrangements between devolved regional mayors and the role of locally elected councillors (Lowndes and Gardner, 2016, p. 358). In that, locally elected mayors of combined authorities have clearer functions and power (though still limited and dependent on the central distribution) than other local councillors in those combined authorities, not to mention that most decision-making is made by agreements between mayors and the central government without public consultation (Richards and Smith, 2015; Lowndes and Gardner, 2016; Bailey and Wood, 2017).

Clark (1984), on the other hand, defines local autonomy as the possession of initiation and immunity powers for localities. Initiation is the power to initiate governing activities (e.g., policy-making) '[depending] upon the initial specification of the rights and privileges of local government vis-a-vis other tiers of the state' (Ibid., p. 198). Whereas immunity is the power of localities 'to act without fear of the oversight authority of higher tiers of the state', however, 'within the limits imposed by their initiative powers' (Ibid.). Although Clark's definition adds a more detailed explanation to earlier conceptualisations of local autonomy and suggests basic principles for localities to be autonomous, it remains vague about what enables or makes up initiation and immunity powers for localities.

Local autonomy can also be seen from either aggregated or individual perspectives and comprises (though not necessarily simultaneously) legal autonomy, fiscal autonomy, and land-use autonomy (Chapman, 1999b). Besides, the context overarching a locality can impose constraints on its autonomy including political, technical, and leadership limits for local governments (Ibid.). Reflecting upon Clark's definition of local autonomy as initiation and immunity powers, Chapman (1999) discusses that fiscal autonomy positively relates to both initiation and immunity powers, while immunity powers are influenced by the political and legal constraints imposed on the localities (Chapman, 1999b).

Pratchett (2004) then suggests a more explicit approach to analyse local autonomy than

Clark's definition (1984) which nevertheless has similar implications. He views local autonomy as '*freedom from* higher authorities', which is akin to immunity powers, and '*freedom to* achieve particular outcomes', which echoes initiation powers in Clark's definition. However, Pratchett (2004) adds another way of understanding local autonomy as a '*reflection of local identity*'. By that he means a bottom-up lens through which local autonomy is viewed as how localities reflect and develop their identities through local political and social interactions (Pratchett, 2004). Therefore, this perspective does not only focus on 'the discretion of elected local government' but also 'the wider social and political relations that occur within a community' (Ibid., p. 367). Some other studies also follow this line of argument by viewing local autonomy as both the power of local actors to perform decision-making against multilevel pressures (Pratchett, 2004; Orbach, 2011; Bulkeley *et al.*, 2018) and the advantages of understanding local contexts (Ostrom, 2012).

Evans, Marsh and Stoker (2013) then proposed a framework to understand localism. They identified three types of localism: managerial, representative, and community. In their conceptualisation, decision-making on local policies in managerial localism is held by central government but is led by the local community in community localism. Meanwhile, representative localism is the model in which decision-making power is transferred from the central government to an elected local authority. However, Evans, Marsh and Stoker (2013) also consider that those localism strategies are usually mixed in contemporary governance models.

Building upon precedent studies, Bulkeley *et al.* (2018) proposed four forms of autonomy to analyse urban politics: (1) distributed – purposeful sharing of political powers from the government to other actors; (2) networked – different actors collaborating and linking ideas to exercise their political power and social functions; (3) fragmented – chaotic presence and practice of political power among independent units with different objectives and in different processes; (4) coerced – top-down governmental power sharing under hierarchical management. These forms of local autonomy do not always happen separately but should be seen as different attributes to describe the autonomy status of a locality as local autonomy with different attributes can generate different effects and outcomes.

Among the four attributes, networked autonomy is the most autonomous degree in which different state and non-state actors are empowered to freely connect to perform their roles while achieving joint objectives. Distributed autonomy is then at a lower degree,

with the central state coordination, but still offers stakeholders spaces for engagement, though in a more hierarchical framework. However, those two forms of autonomy can only be performed to their fullest extent with the meaningful participation for all stakeholders (Bulkeley *et al.*, 2018), which is an ongoing puzzle to be solved in any governance system as conflicts usually occur among the actors with different interests and policy priorities (Béal, 2012; Bulkeley *et al.*, 2018).

In contrast, while fragmented or coerced local autonomy can form the basis to develop more enhanced autonomy by empowering local actors, the initial phase of fragmentation and coercion bears 'asymmetries of power and influence' (Bulkeley *et al.*, 2018, p. 716). Consequently, those forms of local autonomy, if maintained for long, may deepen social inequity through deliberate social exclusion (via a fragmented form) or hierarchical control held for localities or sub-national governing levels with higher capacity than the others (as in coerced autonomy). Brousseau *et al.* (2012, p. 357) also warn that if localities exercise their autonomous powers that 'do not benefit all on an equal basis', then 'localization becomes a problem to be solved'. For instance, in researching Europe's autonomous cities, Stasavage (2014, p. 338) provides a critical perspective on the political autonomy of cities as a cause for social exclusion through exclusive rights for limited citizens and entry barriers for others, e.g., in property rights.

Discussions surrounding the meanings of local autonomy for local governance remain diverse and sometimes controversial. On the positive side, increasing amounts of autonomy for sub-national authorities are supported as they have a better understanding of local contexts and needs, as well as having a more direct influence on local communities than the central government (Ostrom, 2012). Additionally, higher autonomous decision-making powers over local policies can also create more opportunities for local communities, including mobilising resources and supplies locally that can help reduce carbon footprints (Evans and Karvonen, 2014; Radzi, 2015; Fraser and Temocin, 2021; Phan *et al.*, 2021). However, the distribution of power from central governments to sub-national state and non-state actors may create fragmentation in governance decision-making that can partially disempower central governments and make governance reliant on power bargaining and resource exchange to negotiate common purposes (Stoker, 1998; Entwistle *et al.*, 2016). On the other hand, fragmented power distribution in new forms of governance can also strengthen the role of national governments as the controlling centre of decision-making over governing responsibility

distribution (Laffin, 2013).

Analysing the relations between local capacity and local autonomy is another research perspective amid the discussions surrounding the inconsistency between local autonomy and effective governance performance (Pratchett, 2004; Jacob *et al.*, 2008; Eckersley, 2017). Although Pratchett emphasises the decisive aspect of the capacity of a local government to make an influence on the central government or the capacity to 'define and express local identity', he did not specify what such capacity comprises. Subsequently, Jacob *et al.* (2008) examined the relationship between local autonomy and local capacity to understand the meaning of local autonomy for municipalities. They proposed four dimensions of local capacity: strategic planning (planning initiation or coping with existing situations); public participation and support; expertise; access to revenue (Jacob *et al.*, 2008). Accordingly, they used those dimensions to analyse the practice and extent of local autonomy. Jacob *et al.* (2008) emphasise that local autonomy does not suffice for a locality to exercise its governance powers if it does not have the capacity 'to take advantage of new powers' (Jacob *et al.*, 2008, p. 408).

Meanwhile, Eckersley (2017) distinguishes autonomy from capacity. The author views subnational autonomy as 'the de jure right to take political decisions without interference from central government', and capacity as 'the de facto ability to achieve political objectives' (Eckersley, 2017, p. 80). Following that distinction, Eckersley (2017) drew on examples from other studies for two main comments.

Firstly, if a local government is more independent – autonomous – from its central government, it might receive fewer resources and support from the central government. Accordingly, its governance capacity might be weakened if it cannot raise sufficient resources by itself. Thus, more vertical autonomy for a local government may lead to less capacity.

Secondly, following on from the first comment, as the capacity of a local government is weakened, it may need to seek help from non-state actors in horizontal interactions. Eckersley (2017) views that approach as sacrificing the local government's independence/autonomy from non-state actors to strengthen its governance capacity. Merging the first and the second views, Eckersley's argument implies that for a local government to have more vertical autonomy (from its central government), it needs to reduce its horizontal autonomy (by depending on collaborating with non-state actors) and

hence there is no absolute autonomy.

Given such diversity of perspectives surrounding the concept of local autonomy, when researching the autonomy of a locality and its meanings to local governance, it is necessary to consider the locality's political position and governance capacity within national and regional contexts to identify its power inter-relations with the others that shape the attributes and the influence of its autonomy. Similarly, Morris (2013) argues that local governance research should be contextualised rather than employing a universal definition or understanding. Accordingly, this study will revisit the concept of local autonomy in local environmental responses against top-down policy mandates regarding the following concerns: the form of freedom or power that the local authority and local non-state actors have against the influence of central government to engage in local environmental governance; what can influence such freedom or power. Accordingly, the thesis revisits the discussion regarding the relations between local autonomy and local governance capacity, and identifies implications for possible relations between local autonomy for a locality and the landscape of environmental governance beyond its local jurisdiction.

In this regard, a multilevel governance framework (MLG) can provide a useful analytical lens in terms of where (i.e., governing levels and spheres), what (i.e., institutions, political contexts, policy contents), and who (i.e., types of actors) when exploring different aspects surrounding the concept of local autonomy. The following section elaborates the rationale for choosing MLG to guide this study.

II-3. ANALYSING LOCAL ENVIRONMENTAL GOVERNANCE FROM A MULTILEVEL GOVERNANCE PERSPECTIVE

II-3.1. From government to governance and multilevel governance

The multilevel governance concept is derived from the governance concept which has a longstanding and extensive literature (Hooghe and Marks, 2001). For clarification, this study only refers to the concept of public governance and not corporate governance which relates to internal processes of organisations (Osborne, 2010).

In Stoker's (1998) view, governance differs from the government concept in at least five ways. First, governance refers to the complexity of institutions and actors involved in a

governing system and that the central government is not the only centre of power therein. Second, governance recognises the blurring of boundaries and responsibilities between state and non-state actors. Thirdly, it identifies the power dependence between actors involved in collective action. Fourthly, governance emphasises the autonomy of self-governing networks of actors. Finally, it views governments in a guiding role, using new tools and techniques rather than commands or authority to run a society. Rhodes (2007) echoes that conceptualisation of governance while adding that while interactions between the actors are dynamic for resource exchange and negotiating shared purposes, they are nevertheless based on agreed rules. Meanwhile, Peters and Pierre (1998) conceptualise governance with the following characteristics: the increasing importance of networks and inter-relations of actors; state actors shifting from control to influence; blending public and private resources; and the diversity of instruments.

Many other authors also provide a myriad of ways to define public governance with both overlaps and supplementation (Kooiman, 1999; Jordan, Wurzel and Zito, 2005). After exploring the diversity of defining 'governance' and distinguishing it from 'government', Kooiman (1999) points out three core building blocks of the governance concept: rules and qualities of systems; co-operation to enhance legitimacy and effectiveness; and new processes, arrangements and methods. Whereas Jordan, Wurzel and Zito (2005) argue that the change from government to governance is the change of instruments rather than governing goals. They also concluded that government-styled regulations were not entirely replaced by governance-styled instruments (i.e., having a more participatory and voluntary manner) in their empirical cases. However, one theme is common to all definitions of governance. That is the expansion of actor types engaging in governing processes, whether relating to engagement arrangements, methods, or shaping and operating policy instruments.

As governing responsibilities and powers are found to be shared between state and non-state actors at different levels in different governance settings in modern societies, the multilevel governance (MLG) concept has emerged to become a useful theoretical lens to research modern governance approaches (Hooghe and Marks, 2001; Eckerberg and Joas, 2004; Bulkeley and Betsill, 2005; Hysing, 2009; Driessen *et al.*, 2012; Yang, Rounsevell and Haggett, 2015). The concept is also used to study local environmental governance, particularly for issues that involve and influence diverse stakeholders at various scales beyond local boundaries (Betsill and Bulkeley, 2006; Paavola, 2016; Homsy,

Liu and Warner, 2019; Yi *et al.*, 2019).

II-3.2. Theoretical considerations of multilevel governance

Hooghe and Marks (2001) identify two types of multilevel governance. Type I relates to the hierarchical non-overlapping dispersion of governing authority from supra-national or/and national levels to sub-national levels of governments. This type of MLG, therefore, depicts vertical decentralisation of authority powers, in that, lower governmental actors are assigned with limited authority mainly to implement the policies imposed by higher governing levels while not having much decision-making power to initiate policies. In cases where different nation-states are bound to an international institution such as the European Union, decentralising governing powers following type I can happen from a supra-national level. For instance, in the 'White Paper on Multilevel Governance', the European Union views multilevel governance as 'coordinated action […] based on partnership' and 'responsibility being shared between the different tiers of government concerned' with 'joint participation' (The Committee of the Regions, 2009, p. 5). In that system, national governments are responsible for translating the EU regulations and policies into national policy and legislation (Ibid.).

Regarding type I of MLG in a domestic system, governing powers are distributed from central governments to sub-national authorities. The vertical institution of environmental governance in China is an example of this MLG type as environmental regulations and policies are made at the central level, mainly coordinated by the environmental Ministry, and then mandated to environmental departments at provincial levels to implement (Liu, Zhang and Bi, 2012). However, in both cases, central governments hold a focal role in power distribution processes either as gate-keepers to adopt international policies into domestic systems or to distribute governing powers to sub-national levels (Hooghe and Marks, 2001).

Type II of MLG in the conceptualisation of Hooghe and Marks (2001) refers to horizontal interactions between state and non-state actors in overlapping governance spheres to perform their shared powers and functions within governance processes. They contend that type II of MLG has emerged from the recognition of complexity in governing jurisdictions, regarding both responsibilities and geographical territories, as well as along with the emergence of privatisation in public governance. For instance, some

environmental problems are transboundary and therefore belong to governing responsibilities of different governmental authorities (Eckerberg and Joas, 2004; Roux *et al.*, 2016). In other cases, complicated issues such as climate change response measures require the involvement of local actors from different fields (e.g., energy, transport, waste management, etc.) and sectors (e.g., public, private, civil society) for integrated performance (Leck and Simon, 2012) and to '[reduce] resistance from any one group that might otherwise occur if these programs were more top-down in nature' (Rice, 2014, p. 342). Another example of MLG type II is the privatisation of public services that require the involvement of both state and non-state actors in governance processes (Jing and Li, 2019).

By conceptualising two types of MLG, Hooghe and Marks (2001) consider the flexibility and diversity of jurisdictions both between governing levels and over overlapping sectors and geographical territories. However, subsequent studies show that these two types of MLG are not always straightforwardly institutionalised and are sometimes practised with different variations. For instance, while Type I emphasises the focal role of central governments as gate-keepers to translate international agreements into domestic policy-making, there are cases where local authorities adopt climate policies directly from international actors (e.g., a transnational network of municipal governments in this case) despite the absence of international commitments by their national government (Betsill and Bulkeley, 2006).

Meanwhile, the facilitating roles of central governments to coordinate horizontal interactions between state and non-state actors at sub-national levels as conceptualised in Type II of MLG are found to be diverse depending on specific governance modes in specific fields (Driessen *et al.*, 2012). For example, when comparing the relationships between public and private actors in forestry and transport governance in Sweden, Hysing (2009) finds different roles and interests of state actors. In forestry, Swedish state actors focus on environmental interests and only facilitate the interactions of private actors, but in transport governance, state agencies gain commercial interests as participants of transport policy networks together with producers, operators, users, and labour unions (Ibid.).

To supplement the discussions of MLG from a perspective of governance modes, Driessen *et al.* (2012) conceptualise five modes of environmental governance considering multiple actors and levels: centralised, decentralised, public-private, interactive, and self-

governance with decreasing degrees of initiating powers from central governments and increasing degrees of involvement positions for non-state actors respectively. However, approaches to categorise governance modes are also diverse with differences in choices of features for classification (Lange *et al.*, 2013). Moreover, Lange *et al.* (2013) contend that one governance mode at a time may share some features of the others and may be changeable over time. Therefore, they further elaborate dynamic interactions between actors in governance as 'multiple shifts' on a 'continuum of state intervention [i.e., the hierarchical pole] and societal autonomy [i.e., the non-hierarchical pole]'. The shifting is shaped by the interlinkages between three aspects namely *politics* (political processes), *polity* (institutional structures), and *policy* (policy contents), which are involved simultaneously in any governing mode and with possible overlaps between different modes (Ibid.). This proposed analytical approach aligns with the suggestions for a MLG analytical framework by Bulkeley and Betsill (2005, see also 2013).

In the institutional dimension, both Bulkeley and Betsill (2005) and Lange *et al.* (2013) suggest that institutional arrangements shape structures and rules for interactions to happen among actors at different governing levels and in different sectors. Institutional settings inform how governance responsibilities and resources are shared among stakeholders. Meanwhile, the political dimension concerns the underpinning logic that is promoted to drive certain governance issues (Bulkeley and Betsill, 2005) and the contextual conditions that shape the interaction processes of stakeholders (Lange *et al.*, 2013). Therefore, in local governance research, analysing institutional and political contexts beyond local jurisdictions can illuminate the extent of power and constraints for local actors to deal with top-down policy mandates. Analysing the policy dimension will then provide evidence for how political and institutional contexts can influence policy formulation and implementation (Lange *et al.*, 2013).

The features of the MLG lens discussed above will guide the analysis of three aspects of the research questions: (i) the actors and contexts influencing the setting of local agendas; (ii) the capacity of local actors to act, and (iii) the inter-connections of local environmental governance with issues and actors beyond local boundaries. Furthermore, viewing MLG as a governance concept originating from Western political traditions, presents an opportunity for this study to test if and, if so, how this concept is practised in a non-Western system. This is, therefore, a criterion for the case selection to have one case study from a Western political tradition and one from a non-Western tradition.

However, the MLG lens is augmented to construct this study's analytical framework. In this study, the central approaches to inject central policy preferences into local environmental policy-making are viewed from an agenda-setting perspective at different governing levels. Therefore, the following section will provide some theoretical discussions of agenda-setting to identify more concrete components to be analysed.

II-4. SETTING LOCAL ENVIRONMENTAL POLICY AGENDAS

An agenda is defined as a set of objects or problems that catch great attention of a certain group of people for certain purposes (e.g., policy agenda, public agenda, meeting agenda, etc.), and a governmental agenda is accordingly a set of problems for governmental decision-makers to consider in policy-making (Kingdon, 2014; Durant and Diehl, 1989). To avoid misunderstanding of governing levels regarding agenda-setting in public policy-making, this study uses the term public policy agenda-setting, or policy agenda-setting for short, instead of governmental agenda-setting. This is because this study does not only look at the setting of policy agendas at the central government level but also at sub-national levels. The setting of public policy agendas has been theorised and researched for a long time with influential contributions by Downs (1972), Kingdon (2014) (the first edition published in 1984), and Baumgartner and Jones (2009) (the first edition published in 1993) (Howlett, 1997; Howlett, 1998; Soroka, 1999; Holt and Barkemeyer, 2012). The following section briefly discusses these authors' theoretical arguments to identify a suitable guiding framework for my study.

II-4.1. Issue-attention cycle

Downs (1972) proposes a theory of the issue-attention cycle to analyse time patterns in which a particular issue becomes a salient concern for policy-making, mainly via media attention. According to this theory, an issue catches mass public attention, through the media, to be a concern for policy makers for a limited period before fading away, although its related problems may not have been resolved with significant adverse impacts on society.

Downs (1972) suggests a five-stage issue-attention cycle. Firstly, in the pre-problem stage, a 'highly undesirable' social condition exists, initially without much public attention. It then causes a series of events which are made 'dramatic' through news coverage and

consequently catch the public's attention followed by political attention, creating a sense of it being a problem that needs to be addressed. The next stage is a process of considering costs for tackling the issue, which Downs (1972) considers usually leads to the realisation of infeasibility due to excessively high costs and social trade-offs. Consequently, the issue comes into the fourth stage with a gradual decline of focused public interest. Finally, in the post-problem stage, the issue no longer holds public attention. However, at the end of the cycle, public perceptions of the issue have been shaped, and some measures have been introduced. As a consequence, there is now greater public awareness of the issue and its impacts.

I find Downs's issue-attention cycle theory not suitable for the aim of my study which focuses on questions of *how* and *why* regarding the pushing of air pollution control measures into policy agendas rather than *how long* that process takes. Furthermore, Baumgartner and Jones (2009) view Downs's issue-attention cycle as pessimistic about policy agenda-setting because not all policy issues rise and fall in cyclical patterns. Some issues may remain on an agenda for a long time such as environmental and climate change. They also argue that in a policy-making process, once institutional changes are made to address the problems defined with respect to an issue, that issue no longer resembles its previous characteristics in the pre-problem stage. Consequently, the newly conceived issue may lead to different problem-framing and agenda-setting processes. Thus, Baumgartner and Jones (2009) contend that Downs's proposed cyclical pattern 'is not the only possible outcome of the agenda-setting process' (Baumgartner and Jones, 2009, p. 87).

II-4.2. Punctuated equilibrium

Baumgartner and Jones (2009) contribute to agenda-setting theories with their punctuated equilibrium theory. Like Downs's issue-attention cycle, the punctuated equilibrium theory concerns the process of an issue rising onto and fading away from a policy agenda but departs from a cyclical perspective. Instead, Baumgartner and Jones (2009) conceptualise an agenda-setting process as involving the variation of a policy-making system around a balanced state of multiple factors in 'searching for equilibrium'. They theorise that the closer a policy-making system is to equilibrium, the more stable and predictable it is and would therefore require a significant force to make changes to that system. However, Baumgartner and Jones (2009) consider that it is not easy to identify a state of equilibrium

in policy-making, and equilibrium is not a single or static state. Instead, policy-making systems are dynamic, so when sudden changes are made through the introduction of shocks, the points of stability also vary along with those changes (Ibid., p. 18). Like Downs' issue-attention cycle theory, the punctuated equilibrium theory also focuses on the mobility of governance attention in agenda-setting although without a cyclical element. Although not all theoretical arguments of Baumgartner and Jones (2009) are relevant to this study as it does not focus on analysing specific policy cycles or the equilibrium in policy-making processes, some components in their agenda-setting theories provide a helpful guide to build up the theoretical basis for this study.

Firstly, Baumgartner and Jones (2009) argue that decision-makers are constrained by various kinds of limits from individual capacity and understanding to institutional and resource factors. Therefore, they tend to frame problems in certain fixed ways to match those limits. This theory emphasises the need to explore what challenges and opportunities local authorities were facing when responding to central policy mandates.

Secondly, Baumgartner and Jones (2009) discuss the concept of policy monopoly which relates to making a certain 'policy image' dominant in agenda-setting processes and creating a monopoly of access to policy-making discussions (see also Baka *et al.*, 2018). A policy image is 'how a policy is understood and discussed' (Baumgartner and Jones, 2009, p. 25). As a policy may have different impacts on different groups of people and be interpreted in different ways (Baumgartner and Jones, 2009), it is important to understand how a policy is communicated to stakeholders to gain support for implementation. According to Baumgartner and Jones (2009), shaping a policy image to create a monopoly for the making of that policy requires two characteristics: a defined institution of policy-making to limit access of 'outsiders'; and a powerful (but easy to be conveyed symbolically) supporting idea associated with that institution. For a policy idea to be 'powerful', among many factors, it needs to be largely uncontested by showing co-benefits that can outweigh potential side-effects in public perceptions. Therefore, while problem-framing is important to push policy ideas into consideration, managing policy communications to create a policy monopoly is then an essential bridge to prepare for bringing the policies into practice.

Creating policy monopolies through policy communications is a useful element to study environmental governance such as advocating air quality management options in this study. There can be different options for consideration; however, some would be saliently

presented as bringing multiple benefits (e.g., tackling air pollution and reducing greenhouse gas emissions simultaneously) to drive a dominant public perception and hence support. Thus, this study explores what air pollution control measures are dominant and how their benefits are communicated to different stakeholders. At this point, the communication of problems and measures relate to how impressions are created and presented. Accordingly, the impression management theory is relevant and will be discussed in Section 4.3.1 to support the investigation in more detail.

II-4.3. Three streams and a policy window

Another influential approach to research policy agenda-setting is through a three-stream (or multiple-stream) model proposed by Kingdon (2014) (first published in 1983). Kingdon theorises that the three streams of problems, policy, and politics exist independently, waiting for the opening of a policy window, to converge so that one or more policy alternatives can find a way onto a policy agenda. In the first stream, Kingdon (2014) argues that some issues initially exist without attracting much public attention. When remarkable events happen, they draw public attention to the indicators representing the conditions of those issues. Those issues then become problems when the public defines them as such by interpreting their representative indicators. In parallel, there are policy ideas to address those problems floating around in the policy stream, being advocated and modified – or 'softened' as in Kingdon's words – within policy communities (i.e., specialists in a given policy area (Kingdon, 2014)), and waiting for opportunities to be pushed into consideration for decision-making. Finally, the political stream involves issues shaping political contexts in which the problems are situated. The key analytical components here include the national mood (i.e., the most popular political opinions in a country at a specific time (Kingdon, 2014, p. 146)), organised political forces, and consensus building among political interest groups.

According to Kingdon, an opportunity for policy agenda-setting comes at the opening of a policy window. Policy windows symbolise 'the opportunities for action on given initiatives', and those opportunities can be seized when the three streams converge – when a predominantly defined problem (among different ways of problem-framing for a condition in the problem stream) meets a policy solution that suits both the problem and the salient political opinions (Kingdon, 2014). Specifically, there can be different solutions to, usually partially, address a problem, depending on how it is framed (Ibid.; Euchner,

2019). Policy entrepreneurs (those who advocate and circulate policy ideas in policy communities (Durant and Diehl, 1989)) will push forward their preferred solutions floating in the policy stream while salient political opinions are circulated in the political stream. Accordingly, when three streams join to go through a policy window, the alternatives that are chosen as the most suitable will be added to a policy agenda to be considered for decision-making.

Despite being a useful approach to research agenda-setting, Kingdon's three-stream model is not without challenges when considering practical applications, as well as opening opportunities for improvements. The following discusses the elements that can be further developed by this study.

II-4.3.1. Problem-framing: incorporating the impression management theory

In Kingdon's theory, how a problem is framed depends on how the indicators representing a condition are observed and interpreted by different actors in society to decide whether it is problematic or not, or what kind of problem it is. Accordingly, many studies have focused on the monitoring and dissemination of information surrounding indicators to gain mass public attention, which leads to the blooming of studies connecting the agenda-setting approach and mass media research (Walgrave and Van Aelst, 2006).

By the early 2000s, mass media was mostly referred to as news presented through newspapers and television channels, both offline and online (Walgrave and Van Aelst, 2006). However, the evolution of digital technologies has changed the landscape of access to 'news' and shaped public perceptions to drive problem-framing directions. For example, in environmental governance, advanced digital technologies nowadays provide more tools (e.g., open-sourced computing models, real-time maps, etc.) to improve the communication of environmental information (Linders, 2012; Mukhtarov, Dieperink and Driessen, 2018) so that more types of actors can engage in the governance process. Specifically, digital technology provides diverse channels for citizens to support the government to collect data for more efficient governance (i.e., citizen sourcing), for the government to inform citizens with higher levels of transparency (i.e., government as a platform), for citizens to perform the coproduction of knowledge through faster and

wider citizen-to-citizen information exchange (Linders, 2012), and for better facilitation of public-citizen collaboration in governance processes (Mukhtarov, Dieperink and Driessen, 2018).

Accordingly, with the help of digital technology, the public can access information on the same issue through diverse channels other than formal news outlets (e.g., checking environmental quality status through (state-owned or non-state-owned) real-time digital applications or data disclosures on social media rather than news outlets or governmental websites). Even with the information provided by the government, Mukhtarov, Dieperink and Driessen (2018) consider that when digital technology helps to improve the transparency of the government as in the concept of 'government as a platform' (Linders, 2012), it also helps to enhance public trust in the government. However, the usefulness of advanced digital technologies in diversifying the process of information production and dissemination also means that there are more opportunities to create and present different impressions of the same condition to the public. Thus, it would be helpful to incorporate theoretical considerations of ***impression management*** to improve the analysis of problem-framing in the context of advanced information and communication technology (hereafter ICT) applications.

From an individual perspective, '[i]mpression management consists of any behavior by a person that has the purpose of controlling or manipulating the attributions and impressions formed of that person by others' (Tedeschi and Reiss, 1981, p. 3). Goffman's (1959) frontstage-backstage theory considers that one's impressions presented to others might be different from their other behaviour and characteristics when out of those people's sight. Starting from that individual perspective, the impression management theory has been mostly applied in studies at individual and organisational levels (i.e., workplaces, businesses) (Tedeschi and Reiss, 1981; Spear and Roper, 2013; Wood and Hoeffler, 2013; Desai, 2014; Morales-Raya, Martín-Tapia and Ortiz-de-Mandojana, 2019). Some studies focus on corporations' pro-environmental behaviours and reporting to influence audiences' perceptions (Bansal and Kistruck, 2006; Cho *et al.*, 2018; Talbot and Boiral, 2018).

Regarding approaches to impression management, through researching firms and their tactics to manage pro-environmental impressions, Bansal and Kistruck (2006) contend that firms influence stakeholders' perceptions by 'controlling what is disclosed [about the firms' actions] and how'. Accordingly, they categorise firms' information disclosure

methods into *illustrative and demonstrative* approaches. Illustrative tactics focus on forms of presentation to convey information about a firm's actions 'simply, cleanly, and quickly' (Bansal and Kistruck, 2006, p. 175). Whereas demonstrative tactics give impressions of data transparency and thoroughness in explanations by presenting detailed information (Ibid.).

Other scholars discuss specific impression management techniques. For instance, Talbot and Boiral (2018) find two techniques that companies took to shape audiences' perceptions of unmeasured emissions in their greenhouse gas emission reports: (1) emphasising the importance of the measured emissions and the insignificance of the unmeasured ones; (2) asserting relevant responsibilities of other stakeholders so that their efforts alone cannot address the issue. Talbot and Boiral (2018) also find companies using strategic omission of information to conceal the negatives in their practices. Whereas, Cho *et al.* (2018) show that companies may disclose abundant data that are favourable when presenting sustainability information. That technique can help conceal the negatives and direct public attention away from the companies' non-environmentally-friendly practices (Ibid.).

These examples of impression management strategies in environmental governance inform this study to supplement the analysis of problem-framing. Specifically, different actors may have different motivations and interests surrounding air quality issues. Therefore, they may want to create different pictures of air quality statuses to drive public perceptions accordingly. Managing the impressions of problems and the proposed measures to address them also relate to tactics used to create policy monopolies as mentioned in Section II-4.2. Furthermore, Kingdon (2014) argues that problems can fade away from public attention when the public no longer views a condition as problematic, or when they feel that the problem is too costly to solve. Accordingly, shaping impressions of air quality and air pollution control measures can influence both processes of problem-framing and problem-fading. Therefore, the analysis of problem-framing and perceptions of air quality in Chapter V will refer to theoretical considerations of impression management at relevant points.

II-4.3.2. The policy stream: issues with policy entrepreneurs and an incremental manner of alternatives specification

II-4.3.2.1. Policy entrepreneurs

Kingdon (2014) calls the key actors influencing policy advocacy processes in the policy stream, 'policy entrepreneurs'. He considers that policy entrepreneurs can be anyone, either state or non-state actors, elected politicians or members of interest groups, or even researchers and so forth, who are willing to invest their resources of various kinds in hope of a return from that policy advocacy process. Kingdon also suggested three possible incentives for policy entrepreneurs to try to promote their preferred policy ideas as suitable solutions for a problem in a policy advocacy process: personal interests (of any kind), aspiration to promote personal values, enjoyment of membership to and interactions with others in special groups. Kingdon's proposed concept of policy entrepreneurs has been widely exploited in studies of agenda-setting and policy change (Zahariadis, 2007; Pralle, 2009; Béland and Howlett, 2016; Reimer and Saerbeck, 2017; McFadgen, 2019; Tanner *et al.*, 2019; Petridou, Becker and Sparf, 2021) (e.g., Zahariadis, 2007; Pralle, 2009; Béland and Howlett, 2016; Reimer and Saerbeck, 2017; McFadgen, 2019; Tanner *et al.*, 2019; Petridou, Becker and Sparf, 2021).

However, Kingdon's definition offers too broad coverage of anyone willing to invest any kind of resources in the advocacy process in the hope of a desired outcome. Therefore, later studies have improved his initial conceptualisation of policy entrepreneurs with more concrete features to distinguish them from other policy advocates. For instance, entrepreneurship such as that in business is emphasised (Zahariadis, 2007; Tanner *et al.*, 2019). It means that policy entrepreneurs are not just any advocates willing to invest resources in policy advocacy processes. Instead, they are 'energetic actors' willing to go in and out of different political and policy communities to search for and seize opportunities for pushing their ideas at the right moment to gain outcomes that are favourable for them (Zahariadis, 2007; Mintrom, 2019).

Mintrom (2019) concludes that policy entrepreneurs need to possess special attributes of ambition, social acuity, credibility, and sociability (Mintrom, 2019). Accordingly, they need to be ambitious enough to have the willingness to invest in promoting their policy ideas throughout the whole process to gain favourable outcomes. Secondly, having social

acuity helps policy entrepreneurs to understand political contexts, perceptions and motivations of other actors to identify the right timing to seize opportunities (Tanner *et al.*, 2019; Mintrom, 2019). Whereas, credibility relates to how policy entrepreneurs present their expertise and political positions to gain trust and hence enhance collaboration with others to consolidate their advocacy (Petridou, Becker and Sparf, 2021). Finally, like credibility, the sociability attribute can also help policy entrepreneurs build up advocacy coalitions, through creating relatability with others while pursuing their purposes. Furthermore, policy entrepreneurs are not always individuals, but may build teams and may be an institute or organisation (Zahariadis, 2007; Petridou, Becker and Sparf, 2021).

Realistically, not all policy entrepreneurs possess or express all the features identified above, so it is not easy to label any actors as policy entrepreneurs. Indeed, analysing policy entrepreneurs requires thorough approaches dedicated to investigating actors' activities, including insights into their negotiation processes. While this thesis does not dive into such depth as the main aim is not to research policy entrepreneurs, they are still important actors in agenda-setting that are necessary to take note of in the analysis. Thus, within the scope of this study, the analysis of the empirical data will include investigating if any actors demonstrate some features of policy entrepreneurs and their overall approaches to making an influence.

II-4.3.2.2. Policy alternative specification: incremental softening processes and other possibilities

Kingdon theorises the forming of policy alternatives in the policy stream in an incremental manner with ideas going through a 'softening' process, being modified over time before reaching a version that is suitable for consideration, without any new alternative suddenly appearing to compete. Durant and Diehl (1989) disagree with that incremental characteristic and believe that sudden interventions of new alternatives do exist and have their own political dynamics. They argue that, for instance, when a new institutional approach is taken with new agencies introduced to the policy-making process, then new alternatives will appear on the agenda.

The incremental manner of policy alternatives specified in Kingdon's argument should also be revisited when analysing local governance from a multilevel perspective. Keskitalo, Westerhoff and Juhola (2012) argue that the analysis of agenda-setting processes, or

policy processes in general, should go beyond one set of actors at a level and hence it is helpful to incorporate a multilevel perspective. Keskitalo, Westerhoff and Juhola (2012) focus on a bottom-up direction, in that, local and regional actors might influence the setting of central agendas, which then come back to be implemented locally. However, I suggest another view that local governments also have their own policy agendas. Therefore, when a central government pushes policy mandates down to local levels, those mandates might become new alternatives competing with local alternatives to get into local agendas. Given that hypothesis, this study will revisit Kingdon's argument of the incremental manner of policy alternative by viewing local policy agenda-setting through a MLG lens.

II-4.3.3. Questioning the independence of the three streams

Another point that needs to be reconsidered in Kingdon's three-stream model is his view of the independent operation of three streams of problems, policy and politics. Even though he agrees that '[a]fter all, people often do in fact try to "solve problems," which means that the problems and policy streams are connected' (Kingdon, 2014, p. 227), he then argues that 'policy proposals are also developed for reasons other than to solve a given problem' (Ibid., p. 228). A similar argument goes for the independence between the policy and political streams. Kingdon contends that key actors in those streams are from different groups: usually specialists with detailed technical expertise in policy communities, and politicians in political communities. Consequently, those different people have different concerns and stances over how to address a problem and therefore advocate their preferences independently.

Nonetheless, viewed through a multilevel governance lens, decision-making over policy options is influenced by not only a myriad of actors from different levels and sectors but also by their interactions and political relations (Bulkeley and Betsill, 2005; Lange *et al.*, 2013). In other words, although technical experts and politicians may have different understanding of a problem and hold different stances over suitable solutions as Kingdon argues, their policy preferences are not shaped entirely independently from each other's influence. Additionally, even Kingdon himself considers that policy entrepreneurs sometimes might not advocate policy ideas to address the problem but, instead, look for problems where they can promote their ideas. In that case, policy advocates may try to frame a condition as certain types of problems that could be addressed by their policy

ideas. Accordingly, the problem stream and policy stream should be viewed as inter-related and shaped simultaneously in accordance with each other. Furthermore, from a multilevel governance perspective, the capacity of pushing top-down policy mandates to a local agenda also depends on the capacity of local actors to respond (Keskitalo, Westerhoff and Juhola, 2012), which relates to the concept of local autonomy. Such vertical interactions and power relations, on the other hand, are influenced by the institutional arrangements in a specific governance system. Thus, while being inspired by Kingdon's conceptualised three-stream model, this study will re-consider the inter-dependence between those streams through the case studies of two different governance systems.

II-5. SUMMARY OF THE THEORETICAL FRAMEWORK

To prepare for the empirical discussions later in this thesis, this chapter introduces the theories and concepts that guide the exploration of answers to the following overarching research questions: (1) How do two cities in two different governance contexts respond to top-down policy mandates for the same environmental issue?; (2) What are possible relations between the environmental governance approaches of a locality and the landscape of environmental governance beyond its local jurisdiction, from a multilevel governance perspective?; (3) Is it applicable to use the multilevel governance concept, which has mainly been established and developed in Western literature, to research an Asian governance system such as China?

The exploration of these questions is underpinned by the combination of multilevel governance (MLG), agenda-setting and impression management theories. Those theories complement each other to analyse the process of pushing and responding to policy ideas from central governments to cities. Such a theoretical combination is necessary because the studied phenomenon does not strictly fall into a central agenda-setting process but involves the development of governance agendas at different governing levels. Besides the main theoretical components of MLG and agenda-setting, this study also incorporates theoretical explanations from impression management perspectives to support the investigation of policy problem-framing and advocacy approaches of the involved actors. The figure below illustrates the theoretical framework of this study.

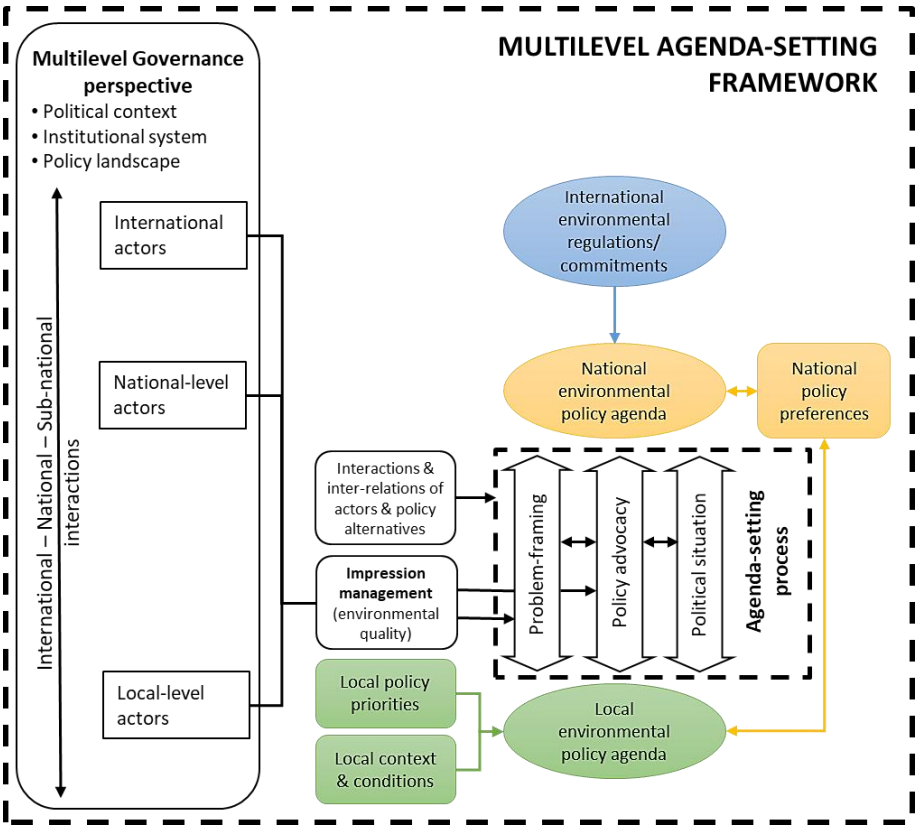


Figure 1. Illustration of the Multilevel Agenda-setting theoretical framework

Through the MLG lens, this study explores perspectives of state and non-state actors at different governing levels in ways to identify their considerations beyond local and sectorial boundaries. Furthermore, the MLG theory emphasises important connections of a subject to wider political, institutional, and policy contexts. Accordingly, institutional and political contexts comprise a key analytical component, which is presented in Chapter IV as a basis to explain how different actors engage in local environmental governance in the two case study cities. Additionally, the empirical discussions in Chapters V and VI will incorporate the literature and empirical data with relevant policy landscapes in the case studies to explore the politics behind policy problem-framing and advocacy.

Moreover, the MLG lens helps to gain insights for the second question regarding the potential influence of local environmental governance approaches on developmental issues outside that locality. As the analysis of that influence relationship goes beyond the boundary of setting a governance agenda of a specific governing level, it is relevant to supplement the agenda-setting analysis with a MLG perspective in this study. Additionally, I will also explore how MLG as a governance concept is practised within a non-Western

tradition.

Meanwhile, theoretical considerations of agenda-setting can help to explain the components within the stories of two central governments pushing their favoured policies to local implementation. That can also be seen as a process of setting local policy agendas, in which the central policy requirements are alternatives for local considerations. Overall, some findings can be explained through governance agenda-setting theories or help to revisit those theoretical discussions, especially the three-stream model (Kingdon, 1984, 2014; Baumgartner *et al.*, 2009).

Based on the governance agenda-setting theories inspired by Baumgartner and Jones (2009) and Kingdon (2014), this study will explore the cases of air quality management in Nottingham City/UK and Shanghai/China through the lens of three streams: how air pollution was framed as a governance problem; how policy preferences were advocated; and the political contexts that led to and influenced those air quality management stories. A MLG perspective forms the foundation for the investigation of these three streams. In that, the investigation will include analysing the interactions of actors from different levels and sectors, the inter-relations of the advocated policy alternatives with the broader policy landscapes, and the politics at different governing levels. In other words, this study does not only analyse the governance agenda-setting at a governing level as a static process but looking at its relations with agenda-setting processes at other levels.

Furthermore, to enhance the explanatory value for the analysis of problem-framing and policy advocacy approaches, impression management theories will be employed to elaborate the tactics taken in the approaches of different actors to communicate environmental quality and policies. It is particularly helpful in explaining the techniques used by different actors given their political power and engagement capacity for different purposes.

Based on the theoretical framework set out in this Chapter, the next Chapter will present the methodological choices taken to execute the study.

CHAPTER III – METHODOLOGY

III-1. INTRODUCTION AND UNDERPINNING PHILOSOPHY

Based on the theoretical approach set out in the previous chapter, a similar environmental issue and its quality can be perceived differently by different actors in different times and spaces. Furthermore, an environmental condition can be perceived as creating different types of problems that require different types of solutions. Accordingly, multiple stakeholders would engage in the problem-framing and solution advocacy processes with diverse motivations. In other words, this study considers the subjectivity in individual perceptions that may drive their actions when engaging in local environmental governance. Indeed, it aims at exploring critical understanding of the phenomenon and possible explanations regarding stakeholders' approaches to engaging in local environmental governance and the possible implications therein. Such a research approach hence requires the interpretive analysis of stakeholders' opinions, actions, policy contents and their inter-relations that altogether construct local environmental governance approaches.

On that theoretical basis, constructivism is a helpful epistemological approach for this study. This study uses constructivism as a variant of relativism, which views realities as relative to individual experience and opinions rather than a fixed objective reality applied to all individuals (Guba, 1990). Accordingly, a constructivist approach cherishes individual perceptions and accepts the existence of multiple realities for different subjective perceptions about the same issue/event at the same time and place (Guba, 1990; Jupp, 2006; Scotland, 2012; van der Walt, 2020). That approach is particularly relevant in this study which researches environmental issues that are sometimes invisible to human senses such as air pollution because the invisibility may encourage subjective opinions about environmental quality, problems, and hence the need to address pollution.

Additionally, constructivism concerns mutual relations and interactions among subjective opinions or/and between individuals with objects/events to construct one's realities (Guba, 1990; Jupp, 2006). In this study, based on the multilevel governance perspective, it is necessary to investigate mutual interactions of actors' advocacy at different governing

levels, together with relevant policy contexts existing during the studied period, as those interactions might influence the framing of problems and the advocacy of salient policy solutions. Accordingly, the study not only seeks interpretations of individual opinions but also critically explores their inter-relations in broader political and policy contexts.

Overall, given the two research questions set out in the Introduction Chapter, this study uses a constructivist approach to consider a methodology that can satisfy the following research needs:

(1) Researching two cities in two countries that have different institutional and political systems;

(2) Researching perceptions of stakeholders and their engagement in shaping local environmental governance;

(3) Researching inter-relations between actors' advocacy for local environmental policy agendas and broader political and policy contexts.

Accordingly, this study chooses a cross-national comparative case study methodology to conduct the inquiry. A detailed discussion of this choice will be presented in Section III-2, including the choice of case selection and a comparative design. Section III-3 then follows by describing the data collection process of this study, and Section III-4 discusses the data analysis approach.

III-2. CROSS-NATIONAL COMPARATIVE CASE STUDIES

A case study is an 'in-depth examination, often undertaken over time, of a single case – such as a policy, programme, intervention site, implementation process or participant' (Goodrick, 2014, p. 1). George and Bennet (2005) find case studies a strong methodology in revealing new ideas and hypotheses, as well as advantageous to address causal complexity. They classify both within-case analysis of single cases and comparisons of a small number of cases (i.e., comparative case studies) as the case study methodology. They emphasise that 'the strongest means of drawing inferences from case studies is the use of a combination of within-case analysis and cross-case comparisons within a single study or research program' (George and Bennet, 2005, p. 18).

The cross-national comparative case studies methodology is defined as 'an approach to knowing social reality through the examination for similarities and differences between

data gathered from more than one nation' (Elder, 1976, p. 210 cited in Kennett and Yeates, 2001, p. 41). This methodology can help to gain an understanding and explanation of how features within certain contexts can influence the policy initiatives being studied across two or more cases that share a common focus or goal (Goodrick, 2014, p. 1). It is a suitable methodology for this study because it aims to seek insights into the relations between the differences in governance contexts and local approaches to addressing the common issues of their environmental governance. Particularly, in this investigation, air pollution and its problems may be perceived and addressed differently by different actors, especially in different institutional and political contexts. Therefore, an in-depth analysis of case studies from different governance traditions could provide comparative findings which can supplement each other to lessen bias from a single case study and hence also improve the external validity of this study. Accordingly, the following sub-sections will explain the case selection and the choice of a 'most different systems' comparative design.

III-2.1. Case selection and contextualisation

In urban comparative studies, case selection is an important challenge to finding 'comparable' cities. This comparability viewpoint is influenced by the quantitative tradition which is popular in transnational comparative research using common indicators to generate trends, frequency, intensity, or density of transnational relations in the societies involved (Guarnizo and Smith, 1998, p. 28). For instance, Lee and Van De Meene (2013) sought to explain cross-sectional variations in per capita greenhouse gas emission in major Asian cities by analysing the relationship between CO_2 emissions per capita and tentative co-benefits of existing environmental indicators. They acknowledge that among the major challenges in their research is finding 'reliable and valid cross-sectional data' at an appropriate scale (Lee and Van De Meene, 2013, p. 18). Relying on quantitative data, their research could not cover the cases that they found important but lack available data and therefore are incomparable with the other cases (Ibid.).

The reliance on quantifiable indicators such as scales, sizes, scopes, growth rates, etc. makes it challenging for comparative urban studies following quantitative approaches to compare cities with different scales and sizes or inequivalent available indicators. Consequently, quantitative comparative urban case studies would seek cases with indicators and scales without significant discrepancies to compare. Furthermore, quantitative approaches also limit opportunities for researching places that face problems

with data availability or unreliable database. This issue should be considered as an inequity in addressing research needs and distribution between high-income countries and low-income countries (see Pasgaard and Strange (2013) for an argument over the imbalance in the world's climate change research distribution).

Guarnizo and Smith (1998, p. 28) believe that 'quantitative measurement cannot replace qualitative investigation in social, economic, and political processes' which can help to interpret quantitative evidence using contextual insights that the quantitative approach cannot capture. Inspired by their suggestions of potential comparative studies of transnationalism, cross-national urban comparative studies can explore at least four perspectives of comparison.

The first perspective is to compare practices undertaken by similar actors to address the same issues in different localities. For instance, comparing how civil society groups in different countries conduct campaigns and position themselves in the relationship with state actors to address environmental issues. The second perspective is to compare how different actors in the same location undertake different forms of a similar governance concept, practice, or standard; and then compare their approaches with other locations. In this study, this way of comparison is applicable to compare actors' responses to air quality standards with references to international requirements (i.e., from the EU) and guidelines (such as the WHO Guidelines). The third perspective is to compare perceptions or practices of similar concepts in different geo-political contexts. This perspective could be relevant to compare the practice of multilevel governance in two countries with different governance traditions. Finally, if certain concepts have been adopted in the places being studied, it is meaningful to compare the applications or consequences of those practices in different places to explore 'new spaces of domination, accommodation, and resistance' (Guarnizo and Smith, 1998, p. 28). In other words, in urban qualitative comparative case studies exploring those perspectives, urban quantitative characteristics such as scales, sizes, or economic growth rates are not the direct comparative dimensions. Instead, they can be used to support the explanation of the differences or/and similarities between the cases in comparison.

As a component of the Leverhulme Research Project 'Sustaining Urban Habitats', this PhD study has opportunities to conduct the study of the cases within the Project's scope (i.e., Nottingham City in the UK, Stuttgart in Germany, Shanghai and Chengdu in China). In this study, as the concept of multilevel governance has been driven by Western-

originated perceptions, it is interesting to investigate how the concept is perceived and whether it can be operationalised in the Chinese context. Therefore, this study aims to compare one Western city and one Chinese city.

Nottingham City is chosen for its special situation as a struggling city in a developed economy and the convenience of such logistical factors as available resources and language. Between the two Chinese cases, Shanghai is an interesting case to compare for both its equivalent features and 'extreme' differences with Nottingham City.

III-2.1.1. Nottingham City and a sudden Clean Air Zone policy mandate

III-2.1.1.1. Background information

The City of Nottingham (or Nottingham City) is among the largest cities in the East Midlands region of England (Craddock, 2017) (Figure 2). According to the census in 2021 (Nottingham City Council, 2022), Nottingham City has an area of 74.6 square kilometres and a population of 323,627 people. The population density is 4,338 people per square kilometre (Ibid.). From a history of a coal-mining and industrial centre in the East Midlands, Nottingham City has been transformed into a service and innovation-based economy (Nottingham City Council, 2012; Richer and Hasiak, 2014; Craddock, 2017).



Figure 2. The location of the City of Nottingham in the UK
(Source: www.nottingham.ac.uk)

Nottingham City Council (NCC) is a unitary authority, which is one of the single-tier local governments in England (*The Nottinghamshire (City of Nottingham) (Structural Change) Order 1996*, 1996; *Nottingham City Council Act 2003 (c. 2)*, 2003). NCC is comprised of councillors representing the citizens from 20 wards as shown in Figure 3. As indicated in the map, NCC is dominated by the Labour Party, which has been the usual case since the creation of the City Council in 1998 (Cauvain, 2018).

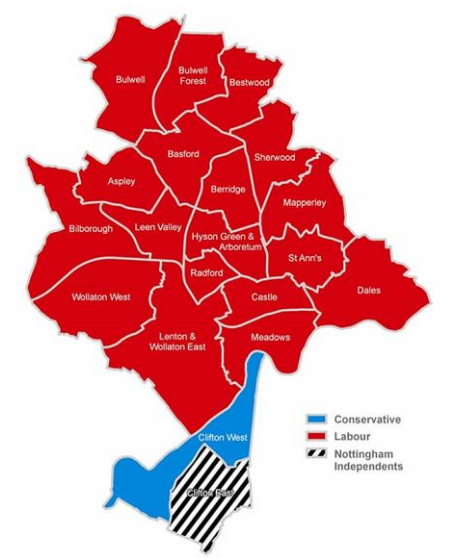


Figure 3. The Wards of Nottingham City Council
(Nottingham City Council, 2019b)

Nottingham City was ranked the 10th most uniformly deprived local authority in England in 2019 (ONS, 2019). However, the City is also a major urban area in the East Midlands region which has a consistent profile of moving towards cleaner energy and climate leadership (Preston, Mazhar and Bull, 2020). Specifically, Nottingham City Council is the UK's first local authority to own a public energy company and a bus company to tackle fuel poverty and moderate socially equitable access to public transport (Cauvain, 2018). The City has also achieved its 2020 target of carbon dioxide reduction in energy emissions four years earlier than planned and then set an ambitious commitment to become the UK's first carbon-neutral city by 2028 (Nottingham City Council, 2020b; Preston, Mazhar and Bull, 2020).

III-2.1.1.2. The austerity context

Local governance in Nottingham City during the period studied by this thesis was placed under the UK's austerity policy, which is the central Government's fiscal policy of imposing deep public spending cuts with slight tax increases since 2010 (Poinasamy, 2013; Lowndes and Gardner, 2016; Gray and Barford, 2018). Especially, the local government department received the largest cuts in departmental expenditure limits (more than 50%) compared to other governmental departments between 2010 and 2015 (Gray and Barford, 2018, p. 542). The UK's austerity policy aimed to reduce the deficit in public spending and improve the efficiency of public service delivery (Cameron, 2010). However, it was found to have generated little economic growth while increasing public debt and reducing local governance capacity (Poinasamy, 2013; Jones *et al.*, 2016; Lowndes and Gardner, 2016; Gray and Barford, 2018; Mell, 2020). By 2015, the cuts in central public funding were found to be deepest for the most deprived local authorities, in turn delivering the worst impacts to the poorest and the most disadvantaged (Poinasamy, 2013; Hastings *et al.*, 2015).

In environmental governance, the Department of Environment, Food and Rural Affairs

was among the Departments that received the deepest funding cuts (at least 30%) between 2010-2011 and 2015-2016 (Gray and Barford, 2018). When facing budget cuts, local authorities in England needed to save their resource allocations for statutory responsibilities. Consequently, under the austerity pressures, English local authorities usually tried to avoid taking optional responsibilities or to cut the resources spent on environmental protection measures that are not legally required (Den Uyl and Russel, 2018; Mell, 2020).

Nottingham City Council (NCC) was among the most impacted local authorities by austerity policies as their local capacity to deliver public services used to rely largely on central grants following their decline in industrial production on top of continuous poverty (Craddock, 2017; Gray and Barford, 2018). Between 2010 and 2015, NCC had a £150 million reduction in its budget and faced the challenge to find an additional £73 million to address the needs of local public service delivery set out in their Council Plan 2015-2019 (Nottingham City Council, 2015b). Along with the austerity challenges, Nottingham City also had a consistent tradition of promoting decarbonisation, particularly in the energy and transport sectors (Richer and Hasiak, 2014; Cauvain, 2018; Preston, Mazhar and Bull, 2020; Rodrigues *et al.*, 2020). Nonetheless, not all decarbonisation policy ideas are statutorily obligatory responsibilities for local authorities in England. Therefore, NCC has been struggling between delivering the statutorily required public services and maintaining their reputation of leading decarbonisation in the energy and public transport sectors (Cauvain, 2018; Winter and Le, 2019).

Since around 2015, despite leading in decarbonisation efforts, Nottingham City has been listed as one of the English cities that had the highest nitrogen dioxide (NO_2) emission levels which exceeded the European and the UK's air quality standards (DEFRA and DfT, 2017b). Within the context of austerity, the City faced a situation of receiving additional policy mandates for air quality management from the UK Government on top of their existing burden to deliver public services locally.

III-2.1.1.3. Overview of EU-UK air quality management institution and the history of the case

In the UK, air quality is considered as 'a devolved policy area' with Scotland, Northern Ireland and Wales making their air quality policy within their territories, while air quality

in England is directly within the responsibility of the Department for Environment, Food & Rural Affairs (hereafter DEFRA) (DEFRA, 2019, p. 86). At a supranational level before the exiting of the UK from the European Union (hereafter EU) (known as Brexit) in January 2020, the UK was an EU member and therefore legally bound to implement EU regulations and directives (European Commission, 2019). Directives set out objectives that have to be achieved and deadlines leaving member countries to draw up legislation to achieve those objectives (European Commission, 2020b). Accordingly, while still an EU member, the UK was bound to transpose the EU legal air pollution limits and compliance targets set in *The European Parliament and the Council of the European Union Directive 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe* (hereafter EU Directive 2008/50/EC) into the UK national air quality standards.

EU members that miss transposition deadlines or have incorrect transposition of EU directives may be subject to an infringement procedure (European Commission, 2020b). A formal infringement procedure has five steps. It starts with a letter of formal notice from the EU Commission to the country concerned, followed by a formal request of compliance and responses of that country, two rounds of referring to the Court of Justice of the EU and finally a court judgement, including financial penalties for non-compliance (European Commission, 2020a). In that EU legal system, the EU brought the UK Government through an infringement procedure and finally to the EU's highest court 'for [the UK's] failure to respect limit values for nitrogen dioxide (NO_2), and for failing to take appropriate measures to keep exceedance periods as short as possible' (European Commission, 2018, para. 10). In this case, the UK Government faced the possibility of being fined if unable to take sufficient actions (Carrington, 2018). Although most cases should be settled before being referred to the Court (European Commission, 2020a), the practice of that procedure may take a very long time in some cases, hence affecting its effectiveness to address problems. For example, the infringement procedure against the UK Government for breaching the EU objectives on air quality lasted for eight years from 2011 to 2019 and could not be settled before the UK finally left the EU in January 2020.

In parallel with the European trial, ClientEarth[4] has also spent years on a legal battle with the UK Government regarding its continuous failure in meeting the EU Directive's air

[4] A non-profit international environmental law organisation whose headquarter is based in London and having a representative office in Beijing, China.

quality standards. In April 2015, the UK Supreme Court ordered the UK Government to urgently develop a plan for an 'immediate action' to tackle air pollution (ClientEarth, 2015). This ruling means that the UK Government 'is now legally bound to take urgent action on this public health crisis' (ClientEarth, 2015). Consequently, air pollution became a domestic legal problem for the UK Government.

Responding to that legal case, the UK Government proposed and revised various plans to address NO_2 emissions in some local authorities, including Nottingham City, with a strong request for those authorities to consider Clean Air Zones (CAZs) in polluting locations shown in DEFRA's air quality model. However, NCC refused to establish a CAZ and argued that they could meet the compliance targets by 2020 without the CAZ policy in place (Nottingham City Council, 2018b). This incident raises an interesting case of the interactions between the UK Government and NCC, in which the former wanted to inject their policy preferences into the latter, while the latter managed to defend their proposed measures given the context of political and financial constraints for local authorities to make autonomous decisions.

III-2.1.2. Shanghai Municipality from grey skies to blue skies

III-2.1.2.1. Background information

In China, there are four formal administration tiers (or three tiers in some areas) under the central government. At the highest local level – the provincial tier, there are 23 provinces, 5 autonomous regions, 4 province-level municipalities, and 2 special administrative regions of Hong Kong and Macau (PRC State Council, 2014). This level of local authorities do not report to any higher sub-national level. Shanghai is one of the province-level municipalities. China's central government grants four municipal governments a high level of decision-making power in both administrative and financial aspects under its overarching control (Lawrence and Martin, 2013). This means that Shanghai municipal government is allowed to pass its own policies and manage part of its revenue, within the framework of national laws and regulations (Ibid.).



Figure 4. The location of Shanghai in China

(Source: https://www.worldmap1.com/map/china/shanghai-map.asp)

Shanghai Municipality is located in the Yangtze River Delta region on the Eastern coast of China (Figure 4). The area of each of the seven central districts of Shanghai ranges from 20.46 to 60.73 square kilometres (Shanghai Municipal People's Government, 2020). It means that the size of Nottingham City is only equivalent to a central district of Shanghai Municipality in terms of geographical area. Meanwhile, Pudong New Area is the biggest and most populous district in Shanghai with 5,567,000 people and 1,210.41 square kilometres in area (Ibid.).

Shanghai has an important position in China's society for its long-standing history as the country's economic-political flagship and its richness in culture. As a port city, Shanghai has drawn international interest and reputation since its 'golden age' in the 1920s and became the gateway of China to the world and vice versa (Yusuf and Wu, 2001). Since the 1980s, Shanghai has been a key driver of the growth of the Yangtze River Delta region to China to the global economy (Lai, 2012). Afterwards, since 1992 there has been an agenda to build up Shanghai into an international financial centre by 2020 (Xiao, 2015).

Although Shanghai is situated in a Communist one-party state which is considered to have an authoritarian form of government system in which decision-making power lies with the Central Government (Lu and Shi, 2015), the settings of China's political system make its political leaders (i.e., the secretaries of Shanghai Communist Party) among the most powerful political players in the whole country as they are also members of the national Communist Party's Politburo and hence have the same bureaucratic rank as governmental ministers (Lawrence and Martin, 2013). Besides, authoritarianism in China has been gradually transformed with increasing pluralisation in the Chinese policy-making processes by involving non-state actors (Mertha, 2009; Lawrence and Martin, 2013). Therefore, it is interesting to analyse China's current governance approach via the specific case of Shanghai through the lens of multilevel governance and compare that with

Nottingham City and the UK.

III-2.1.2.2. Environmental protection in China's developmental visions

China's supreme policy directions in each five-year period are presented in the Five-Year Plans for Economic and Social Development of the People's Republic of China (National Development and Reform Commission, 2016). In the 12th Five-year Plan (2011-2015), China emphasised its vision of promoting 'ecological civilization' in its agenda to build 'a well-off society in all aspects' (China's National People's Congress, 2011, chap. 2). Although there is no specific definition of ecological civilisation in the 12th Five-Year Plan, it is depicted by some key phrases in the Resolution of the 19th National Congress of the Communist Party of China: 'nature should be respected, adapted to, and protected'; 'fully understand that [natural resources and landscapes] are invaluable assets'; 'prioritizing resource conservation and environmental protection and letting nature restore itself'; and especially promoting 'a positive path to development that ensures increased production, higher living standards, and healthy ecosystems' (The 19th National Congress of the Communist Party of China, 2017).

Subsequently, in the 13th Five-year Plan for Economic and Social Development of the People's Republic of China approved in March 2016, resource conservation and environmental protection in the pursuit of sustainable development are embedded in China's development philosophy (National Development and Reform Commission, 2016). China has strengthened its focus on improving the quality of life and the quality of the environment and ecosystems simultaneously. Accordingly, China's Government has been pushing environmental protection requirements on local governments and supervising the implementation with strict regulations and sanctions (Kostka and Zhang, 2018).

Furthermore, China's Government directs the incorporation of implementing the 2030 Agenda for sustainable development into mid- and long-term development strategies (The People's Republic of China, 2016) with the establishment of China's National Plan on Implementation of the 2030 Agenda for Sustainable Development (National Plan for Sustainable Development hereinafter) in September 2016. Accordingly, China aims to shift its stance in the international arena from a poor country to the second biggest economy in the world and thence shifting its position from a North-South aid recipient

to a South-South aid provider (Li and Zhou, 2016). Noticeably, since 2011, China has emphasised the crucial basis of science and promoted advanced technology-based governance and development pathway throughout major directions of the Communist Party and Government's policies.

III-2.1.2.2. Air quality management in China and Shanghai in the airpocalypse era

The peaking period of air pollution in China, or the so-called 'airpocalypse' era, happened in the same period of China's focus on environmental protection and natural conservation mentioned above. Especially, public attention was drawn to air pollution in 2013 after the Embassy of the United States based in Beijing published a series of $PM_{2.5}$ readings from its own monitoring station (Kay, Zhao and Sui, 2015; Schwabe and Hassler, 2016). Consequently, the 'grey sky' image of China was engraved even more deeply and widely in both domestic and international media, followed by a mass public demand of turning China's 'grey sky' into 'blue sky' (Hu, 2018; Wan *et al.*, 2019; Johnson and Fürst, 2020).

In that context, China's Government has promulgated strict regulations to control air pollution since 2013 (PRC State Council, 2013; PRC National People's Congress, 2015). Especially, the Air pollution prevention and control action plan 2013 (PRC State Council, 2013) marks the first time that $PM_{2.5}$ was officially monitored and reported in China's air quality management system. Furthermore, air pollution reduction requirements imposed different levels of targets for different regions and localities, and Shanghai was among the cities that faced the strictest mandates (PRC State Council, 2013). Subsequently, significant reductions of air pollution were achieved across the biggest cities in China between 2013-2017 (Tilt, 2019; Wang, 2021). Among them, Shanghai achieved rapid progress by reducing 40% of its annually average $PM_{2.5}$ levels in five years (Shanghai Municipal Bureau of Ecology and Environment, 2019).

III-2.2. The 'most different systems' research design

The 'most different systems' approach seeks similarities between the cases that are different in most aspects to strengthen the argument over the existence of a causal link (Hopkin, 2010). In this study, although both Nottingham City and Shanghai are under the central control and directions, their situations are different due to their different roles

within the systems. In qualitative research, the 'most different systems' design is conducted with small-N study to gain insights into the details of the contexts. Therefore, the small-N strategy is used to understand the linkages between the differences in various urban contexts with their approaches to environmental governance within their development agendas.

Furthermore, dramatic differences between Nottingham City and Shanghai also make it an *extreme* comparison, considering not only the investigated issues but also methodological aspects. The differences in political and networking cultures of two cases lead to differences in the data collection processes and raise different ethical issues, which will be discussed further in the subsequent parts of this Chapter. Collecting data in China is more difficult than in the UK for outsiders without any concrete in-situ support (Zhou and Nunes, 2013, p. 427). Therefore, this study was designed to incorporate a reflective process during the data collection and analysis stages.

Firstly, the fieldwork was conducted in Nottingham to test the interview guides and explore the sampling and initial themes. The fieldwork in China was then conducted to cover, in so far as possible, equivalent samples (i.e., seeking equivalent categories of participants and similar topics). After the China fieldwork was completed, the data collection continued in the UK, reflecting upon the data collected in China. Finally, equivalent data from the two cases were picked out for comparison. The next section will present details of the data collection methods and process.

III-3. DATA COLLECTION

This section explains the data collection process. The main data collection method of this study is qualitative semi-structured interviews. This method involves interviewing participants using general guides to topics or themes that are suitable for specific participant types (Jennings, 2005). The topic guides give more flexibility than structured questionnaires while being better at keeping the conversations on track with specific relevant topics than having unstructured conversations (Jennings, 2005; Joshi, 2018). Unstructured event observations were also conducted, however, mainly for networking to identify and gain access to important informants and for exploring further issues to be investigated (Gerson and Horowitz, 2002; Mulhall, 2003). Additionally, secondary data was collected from policy documents, reports, and relevant news articles.

This section starts by describing how I gained access to and the trust of informants and how I identified potential participants. It then discusses some important research ethics issues, especially the challenges of conducting fieldwork in China. Finally, it describes the data collection methods taken in this study.

III-3.1. Gaining access to informants and identifying potential participants

Through the multilevel governance lens, the methodological approach of this study aims to gain data from both governmental actors and non-governmental actors. By covering a wide range of participants, the study investigates how the actors interacted with each other and participated in different stages of policy processes.

Among crucial issues in qualitative research are access to informants and building trust so they are comfortable to share their knowledge and/or stories (Mulhall, 2003; Eide and Allen, 2005; Turner, 2010). In this regard, researcher positionality is also a relevant matter. In qualitative research, it is necessary that the researcher is aware of their position in the study – their stance, experience, relations to the studied topics, environments, and/or subjects – as it can influence how the researcher accesses data, participant recruitment, as well as interprets the collected data (Berger, 2013; Denzin and Lincoln, 2018). In this study, my position as the researcher was an outsider regarding the social-political environments and the languages of the case studies (UK and China). That position was a challenge for participant recruitment, especially in the Shanghai case in which there was no direct pre-established connection.

Overall, the sampling process was conducted through two steps. The first step was from the review of literature, policy documents, and relevant media materials to identify key stakeholders in the studied topics. Through this step, potential key informants were recruited to start the explorations. The second step was using snowball sampling (Tenzek, 2018) conducted in the field when initial key informants recommended other relevant stakeholders to be recruited. Indeed, during the first few interviews in both cities, this study encountered a similar experience as Eide and Allen (2005) had when some participants asked 'Have you talked to 'X'?' (p. 46). Such a question automatically initiated a snowball sampling process when those participants made recruitment recommendations by themselves. In some cases, they provided contacts or even directly recruited other research participants in their close networks. In other cases, initial key informants just

made suggestions of who were relevant to this study's focus.

However, the differences in the political systems and contexts between Nottingham City and Shanghai, as well as the language barrier to access Chinese published documents, affected the approaches to gain access to key informants, identifying and recruiting participants. It was easier in the UK than in China to identify relevant policy documents and approach potential participants. Furthermore, arranging the fieldwork in Shanghai was more time-consuming than in Nottingham.

Considering those foreseen challenges with the fieldwork in China, the Nottingham fieldwork was conducted first, and served as the reference for the sampling strategy for the Shanghai case study. The following two sub-sections describe the details in the sampling and recruitment process of each case study.

III-3.1.1. Nottingham fieldwork

The main governmental actors in the Nottingham case are elected councillors and administrative officials of Nottingham City Council (NCC). Moreover, there are governmental actors at the central level and Derby City Council included to reflect the multilevel governance perspective of this study. Derby City Council was included in this study as Derby City and Derbyshire County had a close connection with Nottingham City and Nottinghamshire for regional planning and development. For instance, they formed a Local Enterprise Partnership (LEP) and jointly developed or collaborated in planning activities (Nottingham City Council, 2011). Both Nottingham City and Derby City were also included in the Clean Air Zone (CAZ) policy story and had close connections in transport routes.

Relevant councillors and officials of NCC were identified through two main channels: (1) NCC's publications; (2) the Council's website which publishes such helpful resources as Council meeting minutes and decisions. The reviewed NCC's publications include policy documents and reports. Those materials helped to identify relevant departments and contacts within the Council and their business partners. One of the key documents to start with was the City of Nottingham Sustainable Community Strategy 2020 (with the vision for 2030) (hereinafter SCS 2020). The SCS 2020 was published in 2009 followed by a wide range of sectorial plans in different areas including transport and energy planning. The second source was the Council's website. Relevant actors in each area (e.g.,

transport planning, energy planning) and networks (e.g., Green Partnership, Local Access Forum), together with their focal contact points were found in the meeting minutes and lists of meeting attendees published on the Council's website.

After initially identifying certain main contacts, I started the fieldwork by attending a meeting of the Nottingham Citizens' Air Pollution Working Group in April 2018. It was an open meeting of people from different backgrounds and sectors to share concerns about the air quality in Nottingham City. Through this meeting, I identified some actors involved or interested in the Clean Air Zone policy discussion, i.e., relevant Councillors and Council departments, and the Friends of the Earth (FoE). Afterwards, I recruited FoE and Nottingham City Councillors and officials for interviews. The snowball recruitment strategy was developed based on that foundation to broaden the identification of other relevant actors in air quality and sustainability initiatives in Nottingham City, including opportunities to observe some public projects and events. The events were used for networking, identifying potential participants, exploring new issues being discussed and accessing secondary data.

The recruitment process in the Nottingham case was fairly straightforward for several advantageous reasons. Firstly, there were established initial contact points in Nottingham due to the history of partnership between the University of Nottingham and NCC. Secondly, plenty of officially published data and materials were accessible through different channels. Thirdly, participants were willing to recommend further contacts. Fourthly, public meetings (including City Council meetings) and events generally welcomed the public and researchers. Finally, most participants were familiar with the interview protocols as they had participated in other qualitative research studies previously. There was not much correspondence needed prior to the interviews. All participants gave the consent before starting the interviews. Therefore, although some people declined to be interviewed or re-directed me to other contacts, the response was very positive.

In total, 17 interviews were conducted for the Nottingham case with a mixture of participants from different groups as illustrated in the figure below. In addition, I attended 22 events of different kinds as summarised in the Annex 1.

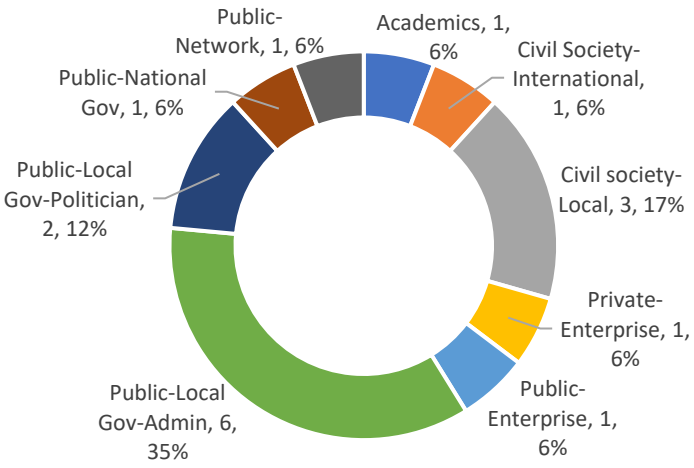


Figure 5. The composition of participants by sector in the Nottingham case

Of the participants in the Nottingham City case, 65% were from the public sector (including 50% from local authorities). The others were from civil society groups, the academia, and the private sector.

III-3.1.2. Shanghai fieldwork

The fieldwork in Shanghai was more challenging than that in the Nottingham case. Unlike in Nottingham, the Leverhulme Project team had limited partnerships with Shanghai and hence had very few contacts there to support the recruitment process. The lack of collaborative connections in China relates to the second challenge of differences between the Chinese political and networking culture with that in the UK. Although personal referral is usually helpful for access to participants, it is even more crucial to have personal connections, especially from high-level persons, to seek recruitment opportunities in the Chinese political culture (Wang, Wijen and Heugens, 2018). The third challenge was the lack of available published data and materials, coupled with the language barrier as I do not know any Chinese written or spoken languages. Furthermore, my search for Chinese contents on the internet sometimes encountered the blocking of access from outside China, or some websites required registering with Chinese mobile phone numbers to access.

Those linguistic, cultural and political challenging factors are commonly identified by researchers trying to conduct qualitative research in China (Yang and Le, 2008; Zhou and Nunes, 2013; Chen, 2016). Those challenges made it difficult to identify suitable actors,

and even when they had been identified, communication was not straightforward where it lacked intermediaries. Therefore, the sampling and recruitment process in the Shanghai case was conducted through multiple layers of gatekeepers and referrals.

To deal with the first challenge of lack of contacts and local support in Shanghai, the recruitment process started by exploring different channels of existing connections. The Project team[5] firstly contacted the researchers at the Ningbo Campus (China) of the University of Nottingham who had experience in researching Shanghai. The team decided to make an initial short trip of two weeks to China to conduct on-site networking, exploring potential participants and recruitment simultaneously. The first stop of the trip was Ningbo where the research team met those colleagues at the Ningbo campus for advice and to gain initial contact recommendations.

Apart from the recommended contacts, during the first fieldwork phase, the research team also attended some environmental awareness-raising events held by local civil society groups in Shanghai to identify relevant actors. From all the efforts taken in that starting phase, the snowball sampling strategy helped to expand the recruitment process to continue the fieldwork in phase two. Based on the multilevel perspective, the snowball recommendations also extended to recruiting participants in Beijing. They were state and non-state actors at the national and international levels but had relevant work on local environmental governance in China, both with Shanghai and other localities.

Given the second challenge with access to data, sampling for the Shanghai case was also based on the review of relevant research and policy documents of China and Shanghai regarding sustainable development and environmental governance. The literature review provided ideas about stakeholders who could be potential participants in the study. However, after identifying potential participants, it was challenging to make contact due to the lack of published contact information or no response where contact information was available. Thus, a key issue in the fieldwork preparation phase was how to get access to participants in China.

Regarding seeking contacts and building connections in China, it is noteworthy that business connections are usually built upon the Chinese special business networking style, which many researchers refer to by the folk term *'guanxi'* – meaning 'relationship' (e.g.,

[5] The Policy and Governance team of the Leverhulme Project within which my study is located, including one of my supervisors and I.

'guanxi networking' in Chua, Morris and Ingram, 2009; 'social-networking behaviours' in Taormina and Gao, 2010; 'trusting relationships' in Chung, Yang and Huang, 2015). Furthermore, Chua, Morris and Ingram (2009) conclude that due to the deeply rooted familial collectivism in Chinese societies, socio-emotional relationships and instrumental relationships are usually intertwined in Chinese business networking. In other words, Chinese networking culture is relatively closed with an extension of familial or equivalently close connections. That makes it difficult for outsiders, especially foreigners, to find the way into networks. Without being connected to the networks, outsiders find it difficult to gain 'trust'. In this study, this issue presented challenges in the recruitment process and afterwards the interviews (e.g., recording request, participants' unwillingness to share stories), especially in the Chinese authoritarian context.

The authoritarian context makes potential informants cautious when being approached, even if they want to support researchers. It also depends on the sensitivity of the research topics within the Chinese context; however, it is generally difficult to approach state actors, especially high-level officials (Reny, 2016). For example, some of my participants said that sensitive topics could be those relating to human rights, whereas the topic of this study is not. However, even though a participant found this study's topic not a 'sensitive' one and was comfortable with being recorded, he refused to introduce me to his governmental partners because 'it is risky for them' (C10, November 2018). This is among the greatest challenges for this study to approach government actors in China. Therefore, there need to be ways to go about facilitating access to participants, meeting arrangements, and even framing the research topics.

To address those potential challenges, the fieldwork in China went through multiple layers of referrals and gatekeepers, together with keeping correspondence throung both formal emails and WeChat – the most prevalently and preferrably used communication application in China – to gain trust of the informants. Reny (2016) proposes two conditions to facilitate access to potential participants: (1) making research more informal and (2) building ideological affinity with informants. The first one means to access the participants in informal settings such as a dinner instead of formal meetings. In Reny's experience, those informal meetings could be facilitated with the help of Chinese intermediate actors. However, that tactic is not possible in this study as I had no well-established collaborative relationships in China to facilitate such informal meeting occasions. Meanwhile, the ideological affinity could be understood as 'an adaptation,

sympathy, trend, or similarity of characters, likes, and preferences' (Vela-McConnell 1999 cited in Abrica-Jacinto, Kurmyshev and Juárez, 2017, para. 1.5) among people sharing similar or nonconflicting ideologies. Reny (2016) found that some marginalised groups in Chinese society, in some cases, can be more open to sharing with foreigners than those fully integrated within their political system.

Another potential challenge to gaining access to informants results from the hierarchical and collectivist ideology which has been deeply rooted in the Chinese society (Yang and Le, 2008). For instance, if the potential informant is not at a high position in her/his organisation, it is likely that she/he would require the researcher to gain permission from her/his superiors to participate in the study. However, the risk of that top-down approach is the reluctant attitude of that potential informant if she/he does not know the research and is forced to participate by the superior following the researcher's request. Such a reluctant attitude would limit the quality of the interview (Zhou and Nunes, 2013).

Although the fieldwork in China was more challenging than that in Nottingham, I successfully conducted 19 interviews and attended 5 meetings and 6 events in China. There was also 01 interview for the Shanghai case conducted in the UK as the participant worked for an INGO based in the UK. That makes up the total of 20 successful interviews out of 56 contacts I attempted to access for the Shanghai/China case. That is 36% of success rate, which is lower than the success rate of 55% (17 successful interviews out of 31 contact attempts) in the Nottingham case. The meetings and interviews for the Shanghai case study consist of the following groups of actors:

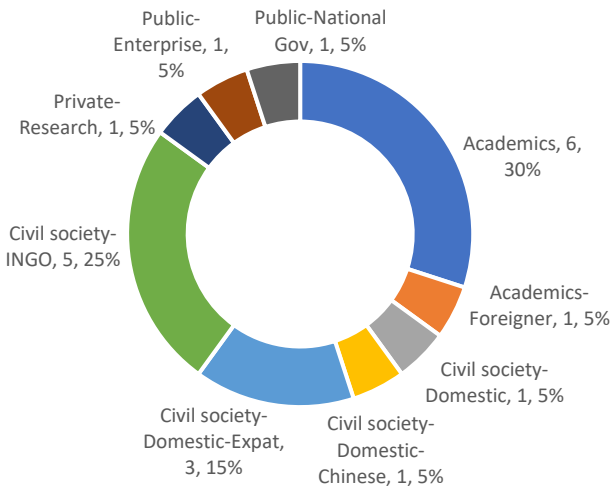


Figure 6. The composition of participants by sector in the Shanghai case

The composition of participants by sector in the Shanghai case is different to the Nottingham case, with the percentage of participants from the public sector in the Nottingham case much higher than that in the Shanghai case. Conversely, there is a higher percentage of participants from the civil society sector in the Shanghai case than in Nottingham.

This is explained by the lack of access to public administrators or politicians in governmental entities in China. Nonetheless, the data from other participants throw light on the roles of central and local governmental actors in the Chinese system according to the perceptions of non-state actors from their interactions with state actors. Additionally, some participants in China either worked under governmental assignments, or previously worked in government before their current jobs. For instance, there are academic participants whose institutes were under the management of the government. In another example, there are researchers whose main works were policy consultancy following governmental directions. Therefore, the roles of state actors in China were explored mainly through the perspectives of non-state participants, of those who had close working relations to governmental actors, and through supporting sources including academic literature and grey literature (i.e., governmental policies and reports). However, this asymmetry of access to data provides a focus to compare the two political systems of England and China.

In terms of the demographic aspect, the participants include both Chinese and non-Chinese who have spent at least 6 years living in Shanghai. One expatriate participant had been living in the same alley with the same neighbours in Shanghai for 17 years. Some academics and international non-governmental organisation (hereafter INGO) actors had worked as governmental actors before their current jobs or at the time of the interview were working collaboratively with the governmental sector on projects.

III-3.2. Research ethics

This doctoral study was granted ethical approval from the Research Ethics Committee (REC) within the School of Sociology and Social Policy at the University of Nottingham on 15 May 2018. All fieldwork activities were conducted in full compliance with the ethical requirements of the REC. Additionally, one interview was conducted in March 2018 together with one of my supervisors for the LUCAS project in which this PhD study

is situated. The ethical approval for that interview is included in the LUCAS project which covers my PhD. The following contents give more details of the main ethical issues in this study.

III-3.2.1. Anonymisation and informed consent

The information sheet of the study and the consent form was provided to every participant to consider their voluntary participation during the correspondence before the interview. While that procedure was conducted smoothly in Nottingham, the fieldwork in China posed several issues regarding informed consent and anonymisation.

In many cases, the participants in China accepted to participate; however, they hesitated when asked to sign the consent form before starting the interviews. Some participants preferred signing the consent form after the interviews, and some refused to keep a copy of the consent form, leaving no trace of their participation. Most participants required the level of anonymisation to be as strong as possible. They requested to be referred to as in general terms (e.g., an academic, a non-profit organisation, a company) rather than more specifically. Some requested not to directly quote their words. Those issues with the consent records and anonymisation reflect the political constraints that have been raised in some qualitative research in the Chinese authoritarian context (Reny, 2016). Therefore, the data collected in China should be handled and analysed with great consideration of the political sensitivity and participants' safety within the Chinese authoritarian system.

III-3.2.2. Handling information gained from post-interview conversations

In some cases, after the formal interviews, some participants offered follow-up conversations, which were informal and not recorded. Although those conversations may reveal interesting information, it would not be ethical to treat such information as primary data. Firstly, it was outside the consent record as the participants only gave consent to participate in specific interviews. Secondly, it could be considered as a breach of trust. Therefore, researchers should be fully aware of and accept the cost of not being able to use such informal information as 'data' when doing qualitative research.

However, once such information has been heard, it becomes part of the researchers' 'knowledge' and a helpful foundation for further investigation. Moreover, strengthening the trust and friendly relationships with key informants during informal conversations

helps to open other opportunities for recruitment or access to important sources of secondary data.

III-3.3. Data collection methods

III-3.3.1. Semi-structured interview

The semi-structured interview method is among the major techniques in qualitative research (Chatzifotiou, 2000) as it can help social researchers gain insights into participants' lived experiences and in-depth individual opinions through conversations guided by open-ended questions in a topic guide (Babbie, 2015). In this study, the participants are from different professional fields and sectors, making it difficult to have a common topic guide. However, for an overall idea of the most common interview contents, most participants were asked questions around the following topics, with modifications to suit specific cases:

- Participants' professional backgrounds
- Participants' roles in the current organisations and the relevant environment-related programmes/projects, especially those relating to air pollution control whenever applicable, that they are involved in
- Issues surrounding the relevant environmental programmes/projects:
    - Main issues of those programmes/projects
    - Key players (individuals and organisations) and their roles or influence in the programme/project
    - Participants' approaches to engaging in local environmental governance
    - Main challenges and opportunities for different actors
    - Responses to those challenges and opportunities
- Participants' opinions about the air quality management requirements or/and other environmental governance issues
- Participants' perspectives regarding interactions with the technical information and technologies regarding environmental/air quality management that they are exposed to

Based on this overall topic guide, specific questions were tailored to fit specific types of participants (i.e., state or non-state actors, areas of activities). Probing and additional questions were asked in response to participants' answers to elicit details or/and explore previously unknown relevant issues. This semi-structured interview design intentionally leaves space for exploration, both empirically and theoretically.

The interviews in the two case studies were conducted following a general protocol. Firstly, potential participants were contacted and provided with information about the study through the Participant Information Sheet and the consent form (Annex 2 and 3). Both documents had Mandarin Chinese translation to be convenient for Chinese participants. In some cases, there was further correspondence to explain their queries surrounding the research and interview protocol. Once they accepted to participate, the interviews were arranged at public venues.

At the beginning of each interview, I gave a brief introduction to the research and explained the consent process again (and requested re-confirmation that they were happy for the interview to be recorded). The participant had a chance to read the consent form and raise questions before starting the interview. All participants in the Nottingham case and most participants in China accepted to be recorded, while some in China declined to have audio recording and only permitted note-taking. The recorded interviews were transcribed for analysis.

Most of the interviews were conducted in English, lasting on average an hour. Two interviews used Chinese – English consecutive interpretation. Those two interviews were also transcribed for both the English and Chinese parts, and the Chinese transcripts were translated into English to cross-check with the in-situ interpretation.

Some interviews in China raised specific additional challenges. These included most participants in China's lack of familiarity with the tradition of qualitative research, specifically semi-structured interviews. They were not familiar with the consent requirement and tended to either ignore the consent form or prefer not to sign it even though they wanted to participate in the study. Therefore, the briefing at the beginning of the interviews was more time-consuming.

Some Chinese participants refused to be audio recorded. Although it was fortunate that only a few participants refused the recording, the consent process for recording was not

usually straightforward. Apart from some young academics, most Chinese participants hesitated to be recorded, so it took more time to carefully explain and discuss the benefits to the research of recording the interview. Where audio recording was declined, the interview was recorded through detailed note-taking, which was refined immediately after the interviews finished to recall as many details of the interview as possible.

In some cases, additional or substitute participants turned up unexpectedly to the interviews. During my fieldwork, it was necessary to be ready for any sudden change or to interview people newly invited without knowing any information about them.

In most of my interviews with Chinese participants, at the beginning people tended to give short responses. Reflecting on Reny's (2016) opinions regarding framing the research topics and building ideological affinity, in my experience the willingness of the participants to open up depended on how well they got to know me before the interviews. Therefore, it was helpful to exchange correspondence while arranging the interviews, clearly explaining the research purposes and interview protocols, sharing some background information about the researcher(s), and trying to establish a comfortable conversation.

Some participants also expected mutual knowledge and information exchange. They proactively raised questions for me instead of only responding to mine. In some cases, I was asked about my experience doing research in the UK, either before or during the interviews. That helped to create momentum to trigger their further sharing of their own perspectives. Some participants offered to have informal follow-up conversations which helped to explore new professional connections. However, that situation carries the risk of blurring the line between ethical and unethical data collection. In such situations, social researchers need to be constantly aware of the research ethics during the whole research process. Furthermore, people responded differently depending on how I framed my research topic and how the conversations were conducted. For instance, whenever existing problems with the governance system were stressed, the participants tended to suggest other topics.

The language barrier is another challenge for the interviews with some Chinese participants. Although all participants who were interviewed in English could communicate well in English, some of them had more difficulties with fluency, comprehensive listening and their linguistic confidence than others. To lessen the

linguistic problems, I needed to be aware of when the participants seemed not to get the meanings of the terms I used and tried not to use complicated vocabulary. Being a non-native English speaker myself is helpful in this situation as I have some sense of what can be difficult for non-native English-speaking people to understand.

III-3.3.2. Observation

In qualitative research, non-participant observation can be carried out in a structured or unstructured design (Gerson and Horowitz, 2002; Mulhall, 2003). The structured design requires a specifically arranged setting to record the behaviours of participants, and this design is a popular research method in psychological study (Mulhall, 2003). In contrast, the unstructured design offers opportunities to observe groups or organisations in natural and flexible settings, following the constructivist paradigm (Ibid.). This study adopted the unstructured observation method and only observed the events that were open for public participation.

In both Nottingham and Shanghai, the observed public events were meetings and conferences open to the public (e.g., Nottingham City Council's public meetings), and public events run by civil society groups (e.g., awareness-raising on the streets). Observing these events was helpful for this study in three ways. Firstly, public events could offer networking opportunities. The networking was helpful for both the recruitment process and access to sources of secondary data. For example, by keeping in touch with some civil society groups, I had access to the materials that they circulated, as well as gaining their referrals to key actors on relevant topics. Secondly, the discussions at those events may reveal other issues of interest for the study or help to link issues and actors. Thirdly, public events helped to identify the interactions between groups of actors and their priorities when getting involved in policy discussions.

In terms of research ethics, those events were open to the public, and the observation was not focused on specific individuals. Therefore, it was not necessary to obtain consent from participating individuals under the School's research ethics protocol.

III-3.3.3. Material review

Apart from the observation and semi-structured interview methods, another type of data for this study is available materials relating to the studied topics. The most important

materials are policy documents and reports surrounding the topics of urban planning, development strategies, and environmental protection policies. In the Nottingham case, most of those materials are accessible via the websites of governmental organisations. However, it took more effort to search for equivalent resources in the case of China. There are only English versions of some major large-scale strategies and plans. Consequently, in some cases, China's policies are referred to through secondary sources or policy summaries published on China's governmental online platforms.

Another source is public communications such as news reports and awareness-raising materials. Awareness-raising materials were collected through the observed public events during the fieldwork. Furthermore, as this PhD study was situated within an interdisciplinary project (the Leverhulme Project) within which data and results were shared for collaborative use and references, secondary data from the works of other members in the Leverhulme Project are referred to whenever appropriate.

III-4. APPROACH TO DATA ANALYSIS

This study aims to reveal the inter-relations of actors and issues surrounding environmental governance in Nottingham and Shanghai based on primary and secondary data sources. The main method for within-case data analysis in this study is interpretive content analysis which Hsieh and Shannon (2007, p. 62) define as 'a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns'. The first part of this section will describe the interpretive content analysis approach. The approach to comparing the two cases will be presented in the second part.

III-4.1. Interpretive content analysis

Among the three approaches to content analysis that Hsieh and Shannon (2007) refer to (conventional, directed, and summative), this thesis adopted the directed content analysis approach. Key features of the directed content analysis approach include starting with the theoretical framework, defining codes before and during data analysis, and exploring further codes derived from relevant research findings (Hsieh and Shannon, 2007, p. 73). Following that approach, this study begins with the theoretical discussions surrounding multilevel governance agenda-setting set out in Chapter II.

Primary data was collected through semi-structured interviews with open-ended questions in topics guides. The interviews explored the institutional and political contexts for local environmental governance in Nottingham City and Shanghai, specifically for air quality management; the shaping of environmental governance policies; policy communication instruments; actors' perceptions of environmental quality and protection measures against other developmental threats; actors' motivations and practices to engage in local environmental governance.

More detailed themes were derived from these main topics. However, that process carries a potential risk of bias because the analysis could be limited within the guiding theories and therefore tends to find supportive evidence for the theories. Another risk is the lack of the ability to recognise contextual aspects that can affect the phenomenon because the interviews provide subjective opinions and experiences of some actors.

To minimise those risks, relevant policy documents and news articles were coded and cross-checked with the interview data. Policy documents give information relating to the policy contents, political directions, and the formalisation and institutionalisation of environmental concerns in the development agendas of Nottingham/UK and Shanghai/China. News articles were analysed to explore how relevant policy issues were communicated.

III-4.2. Comparative analysis

A typical concern about comparing urban cases with significant differences such as Nottingham City and Shanghai is incomparable aspects, including scales and specific issues to be compared (Guarnizo and Smith, 1998). However, the collected data show that it is possible to compare the cases while exploring two contexts, and the comparisons will focus on available data of equivalent aspects.

As described above, the comparative analysis in this study was conducted in two stages. Firstly, initial reflection analysis was done following the first wave of data collection for the Nottingham case. This stage generated a set of issues in Nottingham City as a guide to explore equivalent topics in the China case, however, without limiting exploration in the China fieldwork. After the fieldwork in China was completed, there was an initial analytical reflection of the data collected for the Shanghai case to identify important themes with substantial data for analysis. Based on those themes, additional data

collection for the Nottingham case was conducted to explore as much comparable data with the Shanghai case as possible.

To sum up, this study conducted two data reflection rounds throughout the fieldwork so that the exploration to the cases was both diverse and consistent. Accordingly, the analysis benefited from the exploratory value of the qualitative research approach yet generated comparable themes from the two different contexts of Nottingham and Shanghai. Consequently, the analysis gained nuances in the comparison to show deeper discussions of differences in the similarities and vice versa.

III-4.3. Coding process

The coding for this study was conducted through multiple rounds alongside the data collection rounds. At the beginning, based on the theoretical framework, a coding frame was created prior to the data collection. This coding frame includes initial and broad topics to be explore, which aligns with the topics of the interview guides.

After the first data collection round conducted in Nottingham City, an initial reflection of the data was conducted to quickly identify outstanding issues to be considered as potential themes. Those themes were added to the coding frame, as well as to start a coding list under that coding frame. The same reflection processes were conducted after the fieldwork in China and the final data collection round in England. Accordingly, the coding frame and code list were expanded and revised throughout the whole data collection process. On that basis, the data analysis phase continued to refine and complete the coding with detailed investigation into the data.

That coding strategy was helpful for this study in two ways. Firstly, the initial coding frame helped to guide the data collection on the right track. However, it was left open to be flexible with the data collection and analysis results to reflect the exploratory value of the methodology. Secondly, the multiple coding steps helped to increase the efficiency and effectiveness of the coding and analysis process. Especially, as it requires continuous revisit of the data throughout the data collection, it helped to deepen the impressions and understandings of the data even before the data analysis phase started. This coding strategy would, therefore, ensures the familiarity with the collected data and hence support better (or even faster) data analysis.

The whole coding process using multiple reflection steps was made possible and convenient with the use of Nvivo. Otherwise, the re-categorisation of a hugely extensive code list would have been too complicated to be done manually.

The next Chapter will present the first comparative discussion of the governance contexts in Nottingham City and Shanghai.

CHAPTER IV – LOCAL GOVERNANCE CONTEXTS OF NOTTINGHAM CITY AND SHANGHAI: AN EMPIRICAL ILLUSTRATION AND COMPARISON

IV-1. INTRODUCTION

The governance systems of both the UK and China have been widely studied; however, the landscapes of research focus on Nottingham City and Shanghai are different. Shanghai is a hotspot for urban research on various scales from international and domestic comparisons (Orum and Chen, 2003; Wang and Tong, 2005; Tan-Mullins *et al.*, 2017; Han *et al.*, 2018) to single case study analysis (Yusuf and Wu, 2001; Yue *et al.*, 2014; Zhang, 2014; Arantes, Zou and Che, 2020; Cao, Zhou and Zhu, 2021). Meanwhile, Nottingham City receives much less research attention. Most studies on the environmental and urban governance of Nottingham City have been conducted by research projects in Nottingham, mostly led by research groups of the University of Nottingham and Nottingham Trent University such as the Research Programme 'Sustaining Urban Habitat' of the University of Nottingham. Furthermore, most projects focus on a singular in-depth case study (Cauvain, 2018; Preston, Mazhar and Bull, 2020; Rodrigues *et al.*, 2020) or comparison with cases from developed countries and/or the UK/European contexts (Heidrich *et al.*, 2013; Lima and Gupta, 2013; Richer and Hasiak, 2014; Haarstad and Wathne, 2019). Less focus is given to in-depth comparisons with international cases that have significantly different governance traditions and urban scales, not to mention comparing with such a huge urban economy as Shanghai.

Therefore, to address the first question of this thesis regarding *how localities in different governance contexts respond to top-down policy mandates for the same environmental issue,* this Chapter will exploit the merit of qualitative comparison to explore the widely different governance contexts in which Nottingham City and Shanghai are situated. Taking the advantage of a qualitative exploratory methodology, the investigation into two cases' contexts used both literature review and fieldwork data to illustrate the documented contexts by empirical

data. Accordingly, this Chapter will first review official governmental materials and previous studies on the cases and then reflect them upon the data collected in the fieldwork.

With discrepancies in access to official governmental materials and participant recruitment between the two cases, the types of recruited participants and the collected data are different. That situation makes it complicated to compare two cases side by side thematically. Instead, the Chapter will approach each case's context separately but in overarching themes of political-administrative systems (Sections IV-2 and IV-3) and fiscal management arrangements (Section IV-4). Both Section IV-2 (about England and Nottingham City) and Section IV-3 (about China and Shanghai) will discuss national arrangements and local arrangements consecutively. These separate thematic analyses of both contexts will then be summarised comparatively in Section IV-5.

Most direct quotes will be noted only by participants' codes (i.e., E01, C01, etc.), with E for the participants of the Nottingham case and C for the participants of the Shanghai case, to maintain as much as possible their anonymity. However, wherever organisational or/and occupational information is necessary to support a discussion point, only organisational or/and occupational identities are used to avoid possible connections between a code and a specific person, which may reveal a participant's identity.

IV-2. THE UK'S PARLIAMENTARY AND FLEXIBLE LOCAL GOVERNMENTAL ARRANGEMENTS

IV-2.1. Central political and administrative arrangements

The UK Parliament is comprised of the House of Commons[6] and the House of Lords[7] (UK Parliament, 2020d). Together they are responsible for debating and passing law bills (i.e., law proposals) proposed by the central government to regulate and operate the UK (UK Parliament, 2020f). The UK is divided into 650 constituencies and UK citizens in

[6] The members in the House of Commons are elected representatives of the people (UK Parliament, 2020c).

[7] The members in the House of Lords are appointed by the Monarch on the advice of the Prime Minister, which is based on the recommendations of the House of Lords Appointment Commission. Prior to the appointment, they must satisfy a certain range of criteria including 'the ability to make an effective and significant contribution to the work of the House of Lords … with a record of significant achievement within their chosen way of life that demonstrates a range of experience, skills and competencies' (House of Lords Appointment Commission, 2000).

each constituency elect a Member of Parliament (hereafter MP) to represent them in the House of Commons (Johnston, 2017, p. 4). The election is conducted through a first-past-the-post voting system in which the candidate that has the highest number of votes compared to other candidates individually in a constituency is elected and gets a seat in the Parliament (UK Parliament, 2020e). However, it does not mean that an elected MP always wins the majority of votes in a constituency – i.e., does not always represent the majority of the citizens therein. For example, if a constituency has more than two candidates, the winner may get the highest number of votes compared to other individual candidates but fewer votes (or/and portion of votes) than the aggregated number of other candidates' votes.

Functioning as representing the 'interests and concerns' of citizens in their constituencies, MPs in the House of Commons are responsible for considering and proposing laws, debating, and scrutinising government policies by questioning ministers (UK Parliament, 2020b). With that arrangement, despite not being involved in governing local authorities, MPs act as a connecting channel between citizens and the central government as citizens can directly approach their local MPs should they wish that their concerns be brought into discussions at the national level. Indeed, 'contact your MPs', 'email your MPs', or 'lobby your MPs' is a popular mechanism that local environmental groups in Nottingham City advise citizens to do in their campaigns, e.g., the Friends of the Earth (hereafter FoE) Nottingham when campaigning on air pollution, anti-fracking, plastics etc.

However, that practice may be more meaningful for localities with a significantly dominant political party such as the Labour Party in Nottingham City Council. Whereas it might not be as effective as such in localities with a significantly divided political landscape. It is because, in the UK's first-past-the-post voting system, a local MP is elected when s/he gains more votes than any other candidate even without gaining more than half of all votes cast (Johnston, 2023). Therefore, if the popularity in a voting constituency is shared relatively equally to more than one candidate (i.e., more than one political party), the winning candidate may just need less than half of the votes cast to win. In that case, it means that the winning candidate does not represent the rest of the voters whose votes are collectively larger than the number of the winning votes. This situation then poses a question of the representative power of that winning MP.

The leader of the political party (or coalition of parties) with the highest number of seats in the House of Commons is the Prime Minister of the UK Government (UK Parliament,

2020a). The Prime Minister appoints a team of MPs to be ministers of government departments to manage the country and control the expenditure of taxes (Ibid.). With such a political and administrative system, viewpoints of the dominant political party in the House of Commons greatly influence the Government's administrative priorities and approaches in its ruling time. However, the leader of the opposition political party (i.e., the party with the second-largest representation) in the House of Commons leads a team of 'shadow ministers', who mirror the Government's ministers, to debate the Government's work regularly.

IV-2.2. Local arrangement

At sub-national levels, the UK comprises four nations namely England, Scotland, Northern Ireland, and Wales. The Scottish Parliament, Welsh Parliament, and Northern Ireland Assembly are granted some legislative and administrative powers excluding those reserved to the UK Government (see Torrance, 2019 for details of devolved powers). Meanwhile, England is still under the direct control of the UK Government with some limited powers granted to the Great London Authority and some combined authorities (Torrance, 2019, pp. 25-26). As the case study of this thesis is Nottingham City, it only focuses on relationships between the UK Government and local authorities in England, especially Nottingham City Council.

The local administrative division in England is organised by different scopes of public services delivery. Many English local authorities have a two-tier system with a county council and its subordinate district councils. County and district councils within a county divide the delivery of public services as agreed in the constitutions of the county council, however, aligning with their statutorily assigned functions (Sandford, 2020, p. 20). Meanwhile, the rest of the local authorities in England, including Nottingham City Council (hereafter NCC), have a single-tier system with only one level of local government, hence so-called unitary authorities. Those unitary authorities are responsible for delivering all statutory services within their administrative boundaries (Department for Communities and Local Government, 2016).

IV-2.2.1. Local political arrangement

IV-2.2.1.1. Local council – establishment and operation

In English unitary authorities, local councillors are elected by residents by ward in four-year terms to form a council (*Local Government Act 2000, C. 22*, 2000, section 85(2-4); e.g., Nottingham City Council, 2019a, p. 12). The political party that has the biggest number of elected councillors in a unitary council will rule it and thence select one councillor among them to be the council leader (*Local Government Act 2000, C. 22*, 2000, section 11(1-4)). The council leader will then form a cabinet by appointing executive councillors holding portfolios of areas of functions and services that the council performs during its term in power (Ibid.). Those executive councillors/portfolio holders scrutinise and direct their council's administrative officers to implement the policies and service delivery which are collectively decided by the full Council (Nottingham City Council, 2019, p. 3).

Within such a local election and institutional system, English political leaders at the highest level of localities neither hold positions at the national level nor are being evaluated by the central political and administrative institutions but are established by and responsible for local communities. Therefore, local councillors can be considered *independent* from central control regarding personnel management and political career prospects. That contrasts with the Chinese political system, which is discussed in Section IV-3.2.1. Chinese local governments in a highly pressured cadre management system

IV-2.2.1.2. Local politicians in connections with local communities

As English elected councillors are in direct political relationships with and thus constrained by voters, local political relationships become significant considerations for local authorities in England. For instance, an official of Nottingham City Council (NCC) pointed out why some other local councils were keen on their initiative of a Workplace Parking Levy but ended up not adopting it. As that initiative aims to charge businesses for their employees' car parking in certain areas of the city centre to generate revenues to fund public transport infrastructures, it relates directly to financial impacts on businesses and citizens. Due to a small geographical boundary, Nottingham City has an advantage of that policy which turns out to mostly charge people from outside of the city:

> 'It was quite a safe thing for us politically to do because obviously the people who were generally going to be paying it are travelling from outside of the city… you're not really annoying your voters. […] Whereas other cities it would probably be a more difficult thing to get through because politically you have got the potential of upsetting voters and politicians don't like to upset voters.' (E06, July 2018)

Furthermore, apart from statutory responsibilities, as being residents of their represented areas themselves, locally elected councillors in England also hold a personal affinity and motivation to serve their communities. Most of them have a long history of living in the communities that elect them. Having a deep local attachment is among the motivations for them to stand for their host communities as well as for the communities to elect them. The following quote is an example of a councillor's personal story:

> 'The reason I became a councillor was that I became a member of the Labour Party in my early twenties, and I moved to Nottingham in 1978, and I got involved with the local Labour Party then. In the first ten years I didn't really do too much, and then I got really involved and became sort of secretary and then I became agent to the Councillors; and then I was basically asked whether I wanted to stand. So I stood for council in 1991 at my ward, the ward I live in and I'm still the Councillor for it now.' (NCC Councillor, August 2018)

Living in the communities they represent for a long time provides councillors with a profound understanding of local contexts and needs, helping them know what would work or not in a specific community. In solid waste management in Nottingham City, for instance, a councillor explained why the City councillors insisted on providing free bulky waste collection unlike what most other local councils in England did, given that the major population of Nottingham City lived with low incomes:

> '[B]ecause we know that a person who is not very well off tends not to have a car, so they won't be able to put it on the top of the car and take it to a dump, so they'll just throw it, they'll just tip it onto the street somewhere, and we'll have to pick it up anyway.' (NCC Councillor, August 2018)

The political will of NCC Labour councillors was even against the opinion of their administrative officers. However, the Councillor explained that the suggestion of administrative officers to charge bulky waste collection in Nottingham City was influenced by their stronger focus on economic benefits for the council operation than demographic considerations because 'most of the senior officers live either in the nicer areas of Nottingham or outside of Nottingham'. His comment implies a strong emphasis on the necessity of not only a factual understanding of a locality but also a personal affinity

to that community to perform community-oriented governance.

Indeed, close political relationships between local council and residents in the English system is supported by easy access for the public to approach local councils and governments, e.g., through weekly surgeries when citizens in each voting constituency can have one-to-one meetings with their locally elected councillors to express their concerns about local governance issues. Accordingly, their concerns will be fed back to relevant portfolio holders or the full council for consideration and responses. I scheduled one interview through directly meeting a councillor at a weekly surgery. Consequently, through direct council-citizen communication, even though NCC do not always provide satisfactory responses, the public can still maintain a right to question the council and urge them for action.

IV-2.2.2. Political leadership stability – A long-standing Labour Council

A special feature of the NCC compared to most local councils in England is that it has been led by the Labour Party since its establishment with a small city boundary mostly hosting Labour supporters:

> 'We are sort of a Labour city now, because a lot of Tory, people who would've voted Tory probably left the city.' (NCC Councillor, August 2018)

The councillor continued that the reason for their leaving was mainly due to the division of social status and living conditions between Labour supporters and Conservative supporters:

> '[…] not left the city because of political reasons, they just leave the city because some of the nicer housing is not in the city, and the Conservatives tend to be better off people who can afford nicer housing. […] and certainly the Conservative membership would be richer.' (NCC Councillor, August 2018)

That councillor's comment depicts a general status of economic division between most Labour voters in Nottingham City and Conservative voters living in surrounding districts, which belong to Nottinghamshire County Council. That opinion corresponds with the status of deprivation in Nottingham City. Further details will be discussed in Section IV-4.1 regarding fiscal arrangements in the English system and the economic context of Nottingham City. Nonetheless, with stability in political leadership, NCC might be more

assertive to pursue their long-term policy agenda, whereas, for councils with unstable political leadership, it might be more difficult to decide on a major policy that exceeds their leadership term such as in the case of Derby City Council mentioned above. Those initial assumptions will be analysed in the case of air quality management in Nottingham in the next Chapter.

IV-2.2.3. Local administration and central-local unaligned administrative arrangements

As described above, local councils in England are led by locally elected councils with a board of executive councillors – portfolio holders, and major decisions are made through full council meetings. Furthermore, there are council officials, led by a Chief Executive and Corporate Directors, who conduct administrative and technical tasks to execute the council's political directions and deliver public services within the council's administrative boundary (Department for Communities and Local Government, 2016).

However, besides mandatory services, English local councils can freely decide their priorities upon agreements with their local partners and citizens (Local Government Association, 2018, p. 10). All public services which are agreed to be delivered and functions of a local council are updated in the council's constitution such as one of Nottingham City Council (Nottingham City Council, 2019a). Mandatory services are statutorily required in various regulations and policies to cover basic areas of 'education services; children's safeguarding and social care; adult social care; waste collection; planning and housing services; road maintenance; and library services' (Goddard, 2019, p. 1). Therefore, the administrative structures of each local council vary depending on the council's priorities in policy agenda and provision of public services in a specific political term, except for statutory positions (such as noted in red in Figure 7). Figure 7 is an example of NCC structure during the four-year term 2015-2019.

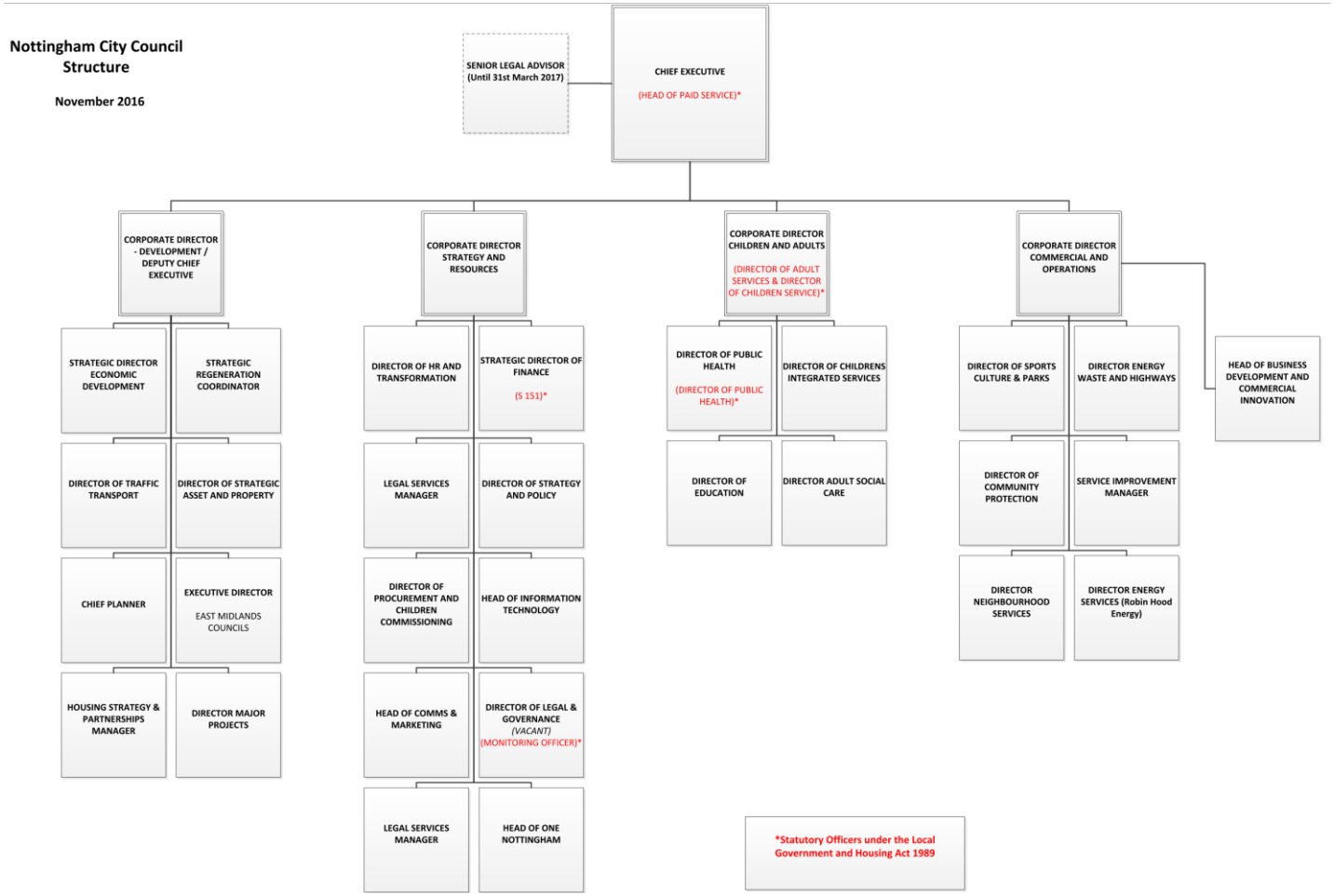


Figure 7. Nottingham City Council Structure in 2016
(Nottingham City Council, 2016)

In such a flexible administrative arrangement, there is no vertically unified system of departmental administration from the UK Government to local authorities. It means that a local council can tailor its administrative structure, and its departments in that structure only follow the Council's management without direct links to governmental departments in equivalent fields. Therefore, there is no direct flow of funding from a governmental department to a local council's department. Instead, central mandates or funds would go to a local council as the first contact point (E05, July 2018; E17, September 2019). With administrative flexibility and local independence from central control regarding political promotion and personnel management, local administrative leaders (i.e., chief executive and directors) and officials in England do not receive a direct leadership influence from the UK Government. Consequently, if a council is constantly dominated by a political party, officials of that council only follow the councillors' directions, as in the situation in NCC:

> 'If you've got a massive majority, the only battle is within the Party about which way you go, so […] the paid officials of the council, they will accept that they will do the work based on what the politicians tell them to do.' (NCC Councillor, August 2018)

Additionally, there might be inconsistency in institutional entities by management fields (i.e., transport, environmental protection, climate change, etc.) between the UK's governmental departments and local authorities in England. It is especially challenging to navigate governance responsibilities when it comes to interdisciplinary and cross-sectorial topics such as air pollution control or climate change.

Air quality management in England, for example, is directly within the responsibility of the Department for Environment, Food and Rural Affairs (hereafter DEFRA) (DEFRA, 2019, p. 86). Governmental departments for public health, transport, and energy are also involved when dealing with the impacts of air pollution and measures to tackle it. However, not all local authorities in England have the same respective departments, or they may focus on different aspects of air pollution to assign main responsible departments. Take Nottingham City and Derby City councils as examples. There have been years that they only conducted air pollution monitoring as a function of environmental health departments (E02, July 2018; E17, September 2019). When there was policy pressure from the UK Government to push local actions in tackling air pollution, the framing of air pollution as a remit of environmental departments was turned into a responsibility of the transport departments to take action (E06, July 2018;

E17, September 2019).

Such inconsistency in governance could be aggravated where there is inadequate or ineffective communication and collaboration among different departments in a local council. It is also a challenge for NCC in managing other environmental issues that are divided into separate responsibilities of different departments and sectors, as one executive councillor pointed out:

> '[NCC] is a difficult organisation to get your head around because one of the things that we try to do is remove silo working… but… actually… often someone like me (i.e., a portfolio holder) that goes 'oh somebody else was saying that the other day, in such a meeting and they're doing something'. People are not necessarily talking to each other.' (NCC councillor, August 2018)

However, administrative decentralisation in England is also paradoxical in ways that local administrative freedom is controlled within centralist prescriptions (Stanton, 2018). Centralist prescriptions are interwoven in various aspects of the UK legislation for local governance practice. Those include the central paramount authorities in approving/disapproving/supervising local plans (Department for Communities and Local Government, 2015), local budget allocation, controlling local tax increase, and setting mandatory delivery duties of public services and limits of power for local authorities (Hambleton, 2017b), to name a few.

Nonetheless, a NCC official said that the power balance between the UK Government and local authorities in England is dynamic and, in some cases, could be based on multistakeholder negotiations (E05, July 2018). An example was shown through his explanation of NCC acting as the intermediate body for a joint-bidding committee of the D2N2 Local Enterprise Partnership (joining with Nottinghamshire, Derbyshire, and Derby City). Explaining the operation of the committee, he started by acknowledging that the governmental Ministry which managed the funding allocation had 'overall decision-making power', but asserted that 'we've (NCC) been given a certain element of power over this fund, we also have power. […] So every decision has to be made in a sort of by both of us. So we have to agree on the decision-making.' (E05, July 2018).

From the literature and the opinion of a local official, it seems that the control of the UK Government over local decision-making is also relative and subjective to individual perceptions. For instance, from the stance of that NCC official, the power balance might

be adequately fair for NCC in that joint-bidding committee arrangement. However, from the viewpoint of an official of Derby City Council (DCC), 'quite often those bids are a Nottingham bid with Derby tagged on rather than it being a joint bid even though the headline probably says it is a joint bid' (Interview DCC, August 2019). He also gave some examples of Nottingham-Derby joint funding bidding cases that were usually led by Nottingham City Council to raise the chance of winning the bids. Furthermore, whenever NCC won the bids in those cases, NCC also led the distribution of funds between them.

These illustrative stories from both NCC and DCC show a dynamic landscape of power relationships between the UK Government and local authorities in England, as well as among the local authorities themselves. In that, local authorities do have freedom in administrative arrangements and opportunities to negotiate with other state actors in horizontal and vertical dimensions. However, the balance point seems to lean towards those who have a stronger position in terms of resource capacity.

IV-2.2.4. Civil society regulations

Besides local council-resident communication at an individual level, public engagement in local governance in England is also performed at a more collective level through civil society organisations (hereafter CSOs), specifically environmental civil society groups following the focus of this study in environmental governance. In the UK, environmental CSOs are non-governmental and non-profit organisations, which are established and operated for charitable purposes – i.e., 'for the public benefit' – to promote 'the advancement of environmental protection or improvement' and are regulated under the Charities Act 2011 (c. 25) (*Charities Act 2011 (c. 25)*, 2 and 3(i)). Environmental non-governmental and non-profit organisations can also be operated without charitable purposes, in which case they are neither regulated under the Charities Act 2011 (c. 25) nor get tax benefits as charitable organisations (Kelly, 2019, p. 15).

Among the basic requirements to establish a non-profit CSO in England is the requirement of liaison with entities/individuals who serve as trustees. Trustees can be anyone, even non-British people or those who live outside the UK if they are eligible (GOV.UK, 2014). International non-governmental organisations based in the UK are also mainly regulated by the Charities Act 2011 (c. 25) as domestic charitable organisations. Additionally, the Charities Act 2011 (c. 25) requires charity trustees to prepare annual

reports of their fund-raising and activities (*Charities Act 2011 (c. 25)*, 162 and 162A) which shall be open for public inspection (*Charities Act 2011 (c. 25)*, 170). With such flexible regulation for trustees and organisational identities or classifications, there are not many technical barriers for international CSOs to be active in the UK as long as they comply with common financial and security regulations.

Within the legislation for charities in England, environmental CSOs maintain their freedom to establish and operate independently of governmental influence. Furthermore, civil society groups are also welcome to meet councillors and/or administrative senior officials to discuss their concerns over specific issues. In the air quality case study, for example, local environmental activists in Nottingham City could question and discuss with the council's transport and environmental health teams either through in-person meetings (one of which I was invited to) or email conversations.

The main purpose and benefit of scrutinising the activities of CSOs (through annual reports made by trustees) in England is for the interests of those CSOs' beneficiaries and funders. Meanwhile, the UK Government considers itself as a regulator to facilitate and support the operation of the CSOs-beneficiaries/funders relationship. This partnership model is set out in the Civil Society Strategy 2018 that

> 'the government will work to support and to strengthen civil society, without compromising its independence' (Cabinet office, 2018, p. 18)

The keywords in the headings of five Chapters in that Strategy express the UK Government's governance approach towards the civil society sector as enabling, empowering, supporting, promoting, and collaborative (Cabinet Office, 2018). However, civil society in England, in practice, has been facing multiple challenges, some of which seem to contradict the Government's advocated approach. Harris (2017) contends that the key drivers for the rising challenges to civil society actors in the UK in the period from 2007 to 2018 are adverse impacts of the Government's austerity policy and the tendency of 'government encroachment' (which she views as being done 'actively and deliberately') in the UK civil society:

> '[T]he idea of a distinction between the state and business on the one hand and an independent civil society on the other –is reflected less and less in reality' (Harris, 2017, p. 363).

Further details of challenges the environmental civil society actors in England and

Nottingham face in their activism will be discussed in section 4.1. Meanwhile, the next section discusses the context of China's Communist political and administrative system that hosts the Shanghai case for a comparative view with the context where the Nottingham case is situated.

IV-3. CHINA'S TOP-DOWN STRUCTURED POLITICAL AND ADMINISTRATIVE SYSTEM

IV-3.1. The ultimate role of the Communist Party of China in cadre management and political orientation

Unlike the UK with multiple parties taking part in election and policy debates, the ultimate leadership of the Communist Party of China (CPC) is strongly emphasised in the preamble of the Constitution of the People's Republic of China as to 'exist and develop for a long time to come' despite a 'multi-party cooperation' system (The National People's Congress of the People's Republic of China, 2004, Preamble). That implicitly puts other parties in China in a 'cooperation' mode by default. A Chinese institutional setting equivalent to the House of Commons in the UK system is the National People's Congress, which gathers elected people's representatives at the central level and thus is 'the highest organ of state power' for legislation (The National People's Congress of the People's Republic of China, 2004, Chap. III, Sect. 1). Nevertheless, unlike the House of Commons which has members of different political parties debating the Government Party (re-elected by every four-year term), the National People's Congress of China is always led by members of the CPC.

The National People's Congress of China holds the power to elect the country's President and Vice-President, as well as decide the choice of members of the State Council (i.e., the central Government) including the Premier (equivalent to the UK Prime Minister) upon nomination by the President and other ministry-level members nominated by the Premier (The National People's Congress of the People's Republic of China, 2004, Chap. III, Sects. 2 and 3). However, members of the National People's Congress do not have relatively equal chances to be nominated for those important positions. Instead, it is widely researched that the Chinese governance system is operated based on a meritocratic cadre management system (e.g., Shih, Adolph and Liu, 2012; Kostka and Xiaofan, 2015; Chen, 2017) with the CPC holding the highest power (US-China Business Council, 2017; Yan

and Yuan, 2020) as the hierarchy illustrated in the figure below:

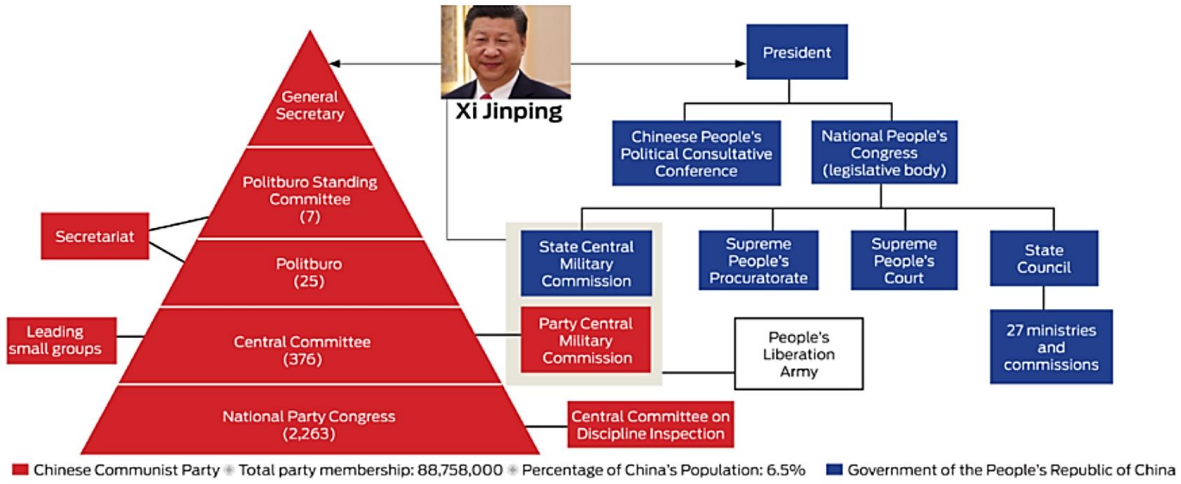


Figure 8. Leadership Organizations within the Communist Party of China in relation to the Government of the People's Republic of China since 2017

(US-China Business Council, 2017, p. 1)

The Chairperson of the Standing Committee of the National People's Congress is also a member of the Standing Committee of the Politburo. However, Figure 8 shows that even the Chairperson is at a lower political rank than the General Secretary of the Communist Party within the organisation of the Politburo. In practice, the Communist Party controls the organisation of the country's political and administrative leaders through the central Communist Party Organisation Department (Verma, 2022). The central Party Organisation Department has sub-national organisation departments at each sub-national level to make decisions on leading personnel management (including circulation/transfer, promotion or dismissal of sub-national political leaders) of the closest lower administrative levels (Chen, 2017, p. 625). Furthermore, Yan and Yuan (2020) provide findings to support an unwritten practice of the CPC Central Organisation Department: cadre cultivation (or planning). It means that, through closely monitoring young cadres using a combination of factors such as socio-political relationship, educational background, administrative performance, etc., the CPC Central Organisation Department identifies prospective cadres and 'cultivates' them to hold important positions at local levels (i.e., leaders of local Party organisations or leaders of local authorities) to gain experience and compete for promotion to the central level. More details of arrangements for sub-national political and administrative leaders will be presented in the next sub-

section.

Besides controlling the cadre management system, the CPC also sets paramount directions for China's development and policy-making agendas, which are presented in five-year plans for the Economic and Social Development of the People's Republic of China. Those five-year plans are formulated by the National Development and Reform Commission but 'on the basis of the Recommendations of the Central Committee of the Communist Party of China' (National Development and Reform Commission, 2016, p. 6). Accordingly, ministries and local authorities at all levels, even each department therein, will develop their specific plans to implement the directions set in each national five-year plan.

Regarding the coverage and reach of the CPC, there are CPC congresses organised from the national level to all sub-national levels corresponding to the administrative system and even beyond by reaching to 'grassroot organisations' (China Internet Information Center, 2003) and enterprises (Brødsgaard, 2018). With that institutional organisation, the CPC embeds its influential coverage deeply and widely into China's society. Therefore, the CPC is the core element of the Chinese governance model which relies on political stability to promote steady socio-economic development (Lai, 2016).

IV-3.2. Local arrangements – an interlaced Party-Government relationship within a close central-local nexus

In general, sub-national administration in China is divided into three main hierarchical levels[8]: (1) provincial level, (2) county level and (3) township level (PRC State Council, 2014). However, each main level has different categories, and some provinces have an additional prefectural level between the provincial level and the county level depending on the urbanisation scales of those provinces (Donaldson, 2017). Specifically, the provincial level includes twenty-three provinces, five autonomous regions, four municipalities and two special administrative regions (PRC State Council, 2014). The sub-provincial county level comprises autonomous prefectures, counties, autonomous counties, and cities (Ibid.). Finally, the township level refers to townships, national minority townships and towns within counties (Ibid.). Shanghai is one of four municipalities, which are special city regions with an equivalent administrative level to

[8] Some special localities with more urban complexity such as Shanghai may have four levels for specific management demands.

provinces. Shanghai also reports directly to the central Government despite being smaller than provinces in area and population.

IV-3.2.1. Chinese local governments in a highly pressured cadre management system

Each formal administrative level in China has formal administrative institutions aligning with responsibilities passed down from the central Government. In particular, the organisation of provincial authorities usually corresponds with the central Government (The National People's Congress of the People's Republic of China, 2004, Chap. III, Sect. 5; Liu, Zhang and Bi, 2012, pp. 17-18). For instance, as the government has a Ministry of Ecology and Environment, Shanghai – as a municipality – also has an Ecology and Environment Bureau. Such a uniform administrative arrangement is different from the flexible mechanism for local authorities in England. That system makes provincial/municipal departments in each field, e.g., environmental management, caught between their provincial/municipal governments (who control their personnel and financial arrangements) and their line ministries (for specialised governance and ad-hoc project-based funding sources) (Liu, Zhang and Bi, 2012).

While political leaders of the highest-tier local councils in England such as Nottingham City are elected locally and hence may represent a different party other than the government's leading party, political leaders and senior officials (i.e., Party secretaries and mayors) of municipalities and provinces in China are top-down appointed under the control of the Communist Party of China (CPC) through an achievement/performance-based official evaluation mechanism (Li and Wu, 2017, p. 4). Figure 9 illustrates the structure and hierarchy of cadre appointments in the Chinese governance system.

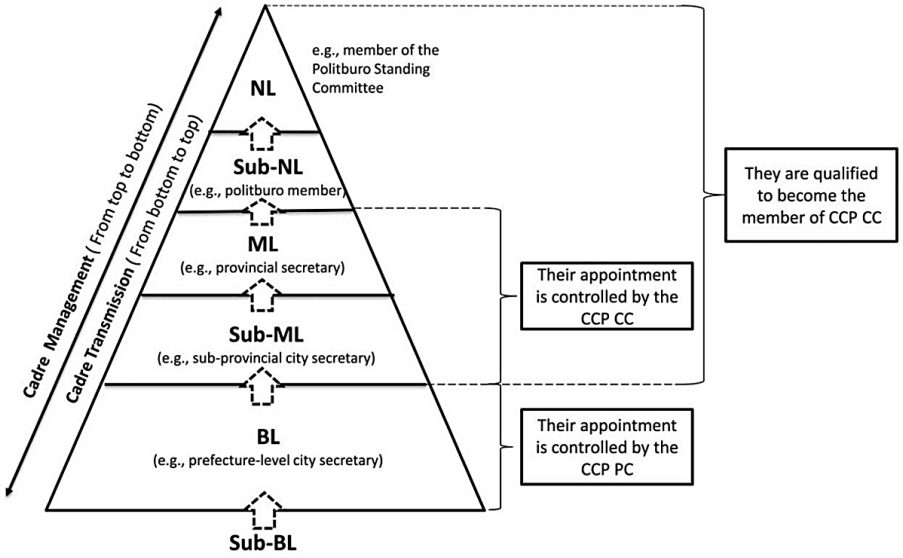


Figure 9. The promotion system of the Communist Party of China

Notes: BL = Bureau Level, ML = Ministerial Level, NL = National Level, CCP CC = Chinese Communist Party Central Committee, CCP PC = Chinese Communist Party Provincial Committee.

(Yan and Yuan, 2020, p. 270)

In China's cadre appointment system, the Communist Party Central Committee, which is led by the Politburo Standing Committee members, appoints leading cadres of the ministerial and sub-ministerial levels. To recall an earlier description of China's political system, provincial leaders and municipal mayors are at the same bureaucratic rank with ministers – i.e., the ministerial level. It means that the Politburo Standing Committee members holds the highest political power to manage leading cadres of the provincial and sub-provincial levels.

One of the possible effects of such a top-down cadre mobilisation is that the political will of municipal and provincial leaders may vary during power transition, depending on major political changes at the central level. As the career prospects of provincial politicians are largely influenced by the central decision-making, those provincial leaders tend to shift their attention and efforts on the issues that are high up in the coming central political agendas. That complication, consequently, may create political instability and hence inconsistency in the policy agendas of a locality.

Moreover, in the Chinese achievement-based cadre evaluation system, considerations of 'achievements' (or performance) of cadres are mainly based on economic growth

performance and some other parameters depending on the priorities set in political orientations of each political term (Li and Zhou, 2005, pp. 1745-1747; Fewsmith, 2013, p. 25). Such a 'high pressure' system (Fewsmith, 2013, p. 22) has created 'political tournaments' or 'GDP-based yardstick competition[s]' (Liu, Zhang and Bi, 2012, p. 107) amongst local authorities and senior officials in China and therefore triggered a governing attitude focusing on 'administrative-territory-based interests' (Li and Wu, 2017, p. 4). Consequently, although recent studies show that good economic performance in local leadership may not always ensure political promotions for senior municipal/provincial leaders in China (Kostka and Xiaofan, 2015; Yan and Yuan, 2020), given China's meritocratic governance approach, local leaders would still try to compete in political tournaments to maintain their ranks at the least, or to prove their capacity as part of the CPC's cadre cultivation/training scheme (Yan and Yuan, 2020).

Consequently, top-down political pressures can influence the motivations and responses of local governments in China towards policy mandates from their central Government. The main role of sub-national authorities, therefore, is policy implementation or piloting policy ideas of the central Government (Liu *et al.*, 2014; Miao and Lang, 2015; Jia, 2015; Schreurs, 2017). Such central control is fundamental for China's 'iron fists' to tackle environmental pollution since 2013 (Jin, Andersson and Zhang, 2016). In that context, responding to a question of how to engage local authorities in air quality campaigns despite local priorities on industry-based economic growth, a representative of a Beijing-based INGO simply replied:

> '[T]he central Government already set the mandate, […] cities have [air quality] targets to achieve.' (C19, December 2018)

This point is also echoed in other interviews as an automatic procedure for local authorities: finding ways to implement central policy directions without much space for negotiation. Therefore, China's environmental governance model is viewed as authoritarian environmentalism or environmental authoritarianism – i.e., strict suppression of non-environmentally friendly behaviours or/and improve environmental protection through centralised state control which may infringe certain rights that one can enjoy in a more democratic society (e.g., Gilley, 2012; Chen and Lees, 2018; Beeson, 2018). However, given that economic growth is still the top developmental priority in China's paramount political and policy directions, the analysis of empirical data in Chapters V and VI will further investigate how China's government manages to

decentralise environmental governance duties which may be conflicting with local economic preferences.

IV-3.2.2. Shanghai as a strategic local authority in China

Despite the apparent top-down control in the Chinese political and administrative system, Lo (2015, pp. 152-153) contends that more attention should also be paid to local politics and how it can blend local interests into the central agenda. That top-down mandate mechanism still does not form a simple one-way power dominance due to China's special arrangement of political ranking. Some municipal and provincial leaders (i.e., secretaries of municipal/provincial Communist Party Committees[9] and Mayors) can be powerful actors as they are also members of the national Communist Party's Politburo (i.e., a political bureau comprising of the top political leaders to set overarching political and policy directions for China) and have the same bureaucratic rank as governmental ministers (Lawrence and Martin, 2013, p. 8) to join the national political and policy discussions. Shanghai is one of four municipalities; therefore, its political and administrative leaders have powerful roles in the system.

The important role of Shanghai in contemporary China has been built up over a long history. The historical evolution of Shanghai is displayed in Shanghai Urban Planning Exhibition Centre – a place to communicate Shanghai's images, achievements, and urban development visions to the public (Fan, 2015). Below are some photos displayed in that exhibition centre to illustrate Shanghai's role in China and its development pathway throughout history.

[9] In provincial administration system in China, the provincial governments receive and implement the directions made by the provincial Communist Party. Therefore, the top leaders are the secretaries of provincial Communist Party. In most cases, the mayors (i.e., the top person in the provincial governments) are also deputy secretaries of provincial Communist Party.



Figure 10. Shanghai's role in China throughout the history
(Source: The author, 2018)

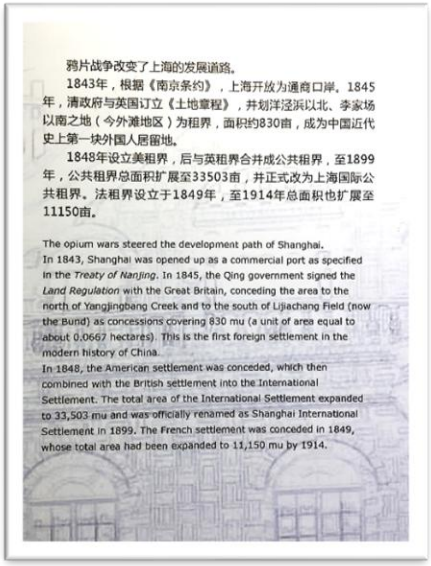


Figure 11. Shanghai's international interactions since the 19th century
(Source: The author, 2018)

Figure 10 and Figure 11 illustrate the history of Shanghai from a fishery village to a major port town in China since ancient times and then becoming China's international harbour city and financial centre since the 19th century. That history goes on to modern times when Shanghai preserves its position as 'an important economic center and shipping center of China' (Figure 12). On that historical basis, Shanghai is set to become 'an international metropolis of socialist modernization' to expand its domestic role to international importance (Figure 12). Accordingly, its development visions (Figure 13) also emphasise the duty to 'Face the world & serve the country'.

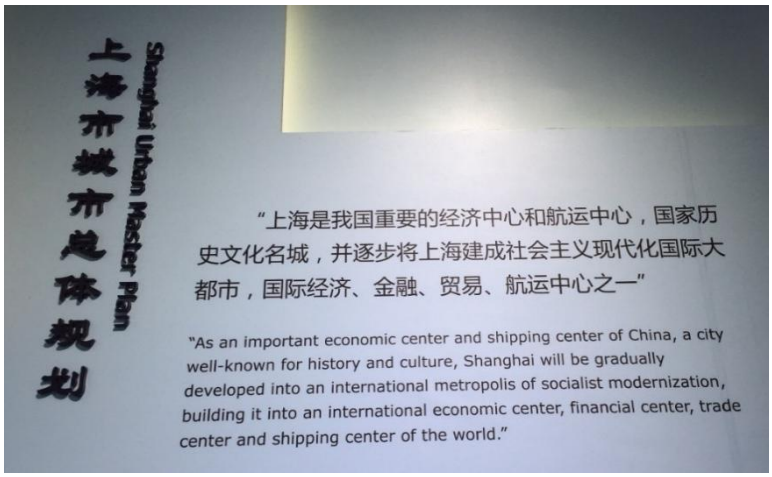


Figure 12. Shanghai as a strategic city in China
(Source: The author, 2018)



Figure 13. A vision for Shanghai's contemporary development
(Source: The author, 2018)

Along with Shanghai's growing role in China's developmental agenda, it has been appointed to lead most experiments of both policy ideas and technological innovations of China. For example, Shanghai is one of the experimental cases for major environmental and urban development policies such as greenhouse gas emissions trading system (Swartz, 2016), smart-eco cities (Tan-Mullins *et al.*, 2017), and low-carbon cities (The World Bank, 2019). Shanghai-Suzhou is also one of three regions (together with Beijing and Shenzhen-Dongguan regions) that have the most and largest firms in information and communications technology in China with investments from both state-funded and international sources (Lin *et al.*, 2011).

That development in the information and communications technology ecosystem of Shanghai is understandable given earlier state-led efforts to make it one of China's leading innovation centres. Those efforts date back from the 1990s to the early 2000s with institutional measures to promote research and development in Shanghai, e.g., the establishment of the state-funded Shanghai Technology Innovation Centre and its

subordinate hi-tech and scientific research entities (Wu, 2007). Those state-led long-term efforts have equipped contemporary Shanghai with a multi-facet capacity to make a major contribution to China's development.

Given Shanghai's crucial role in China's governance and development, its municipal leaders have the same bureaucratic rank as governmental ministers. This means that it might be difficult for ministers to give orders to Shanghai. In practice, an official of a governmental organisation stated that it was difficult for them, as an environmental centre at the national level, but a small one, to reach out to Shanghai for collaboration because their minister was equal to Shanghai Mayor in terms of political power, placing their centre director at a lower rank than Shanghai Mayor. Thus, Shanghai had a right to reject their offers as long as the rejections did not go against the national political will (Interview with a governmental official, October 2018). Consequently, even for governmental internal projects, low-level units of ministries still need to be connected with local authorities through ministry-level support (C05, October 2018).

Furthermore, Shanghai is a strategic base within China's senior cadre mobilisation system. It is not a coincidence that some Party secretaries and municipal mayors of Shanghai became members of the Politburo Standing Committee and even reached the top position in China's political system after their terms in Shanghai. The most noticeable case is Xi Jinping himself. Therefore, in a system with multi-dimensional pressures, even ministers may need to be cautious about whether they are dealing with a future State President or even a future General Secretary of the CPC when it comes to leaders of Shanghai Municipality. Indeed, an interview participant commented that Shanghai had 'comparatively higher autonomous decision-making' than most of the other provinces that were at the same administrative level as Shanghai in the Chinese system (C17, December 2018).

However, participant C17 went on to explain that everything Shanghai decided for their urban planning still needed to be within 'the spirit or guided by the spirit of the central Government'. In that context, the meaning of the local autonomy concept becomes ambiguous. Reflecting upon the previous discussion of Shanghai's role in the Chinese governance system, the 'autonomy' that Shanghai is entitled to comes in large part from its leaders' influence on national policy directions at the central Politburo and its strategic role in China's policy experimentation agenda. The former is a unique difference from leaders of local authorities such as Nottingham City Council in the English system where

local leaders (i.e., local councillors and chief officers) neither get involved in the House of Commons nor have an equivalent administrative rank with government ministers.

Based on the basic arrangements of the English and Chinese governance systems discussed above, China seems to be more centralised whereas local authorities in England celebrate more freedom in raising their opinions and setting local priorities. Nonetheless, with a special strategic role in the country's development agenda, Shanghai is said to enjoy a special form of 'autonomy' or whether it is just a way of perceiving autonomy in a Chinese characteristic. Indeed, whatever power Shanghai possesses as a strategic municipality, it is still the central organisation of the CPC that decides if Shanghai can maintain the role it is playing within the Chinese system, particularly when there are more and more rising Chinese cities that can challenge the importance of Shanghai in China's development.

That situation makes another difference between the contexts of Nottingham City and Shanghai regarding the political relationships of local governments towards their citizens and central Governments. Political leaders of Nottingham City Council (i.e., councillors), who are also from Nottingham City, have close connections and interactions with citizens as being locally elected. Meanwhile, top leaders of Shanghai, who might not be originally from Shanghai, are appointed under the central Party's personnel management scheme, which also affects their overall political careers. In that circumstance, there might be stronger influence from the central level on their political actions than from personal affinity with the locality they represent. Beneath those apparent differences, however, is a complicated nuance of comparison between them when investigating their contexts of fiscal distribution arrangements in section 4.

IV-3.2.3. Civil society regulations in China

Civil society is also an important matter when discussing public communication and engagement in China, especially in environmental and development fields. Nevertheless, the fieldwork in China raises a challenge when writing this section: finding a suitable common name for non-governmental organisation (NGO) and non-profit organisation actors when comparing the contexts of England/Nottingham and China/Shanghai. It is more problematic in the Chinese context where, as some participants pointed out, such wording as 'NGO' or 'civil society' is sometimes considered 'politically sensitive'.

As some China-based participants explicitly advised me not to call them or similar actors NGOs because 'being NGOs is a little harsh term' (C09, November 2018), I will use the term civil society to commonly address actors who are non-governmental and not-for-profit businesses in England and China, except for international non-governmental organisations (hereafter international NGO) who address themselves as such. Furthermore, the notion of civil society is commonly perceived as a 'non-profit', 'voluntary' and 'social' sector in both the UK (Cabinet office, 2018, p. 26) and China (Wang, 2018). Nonetheless, the aspect of being 'independent of state control' (Cabinet Office, 2018, p. 26) in the Western-driven conceptualisation of civil society (e.g., Harris, 2017, p. 352) is controversial to research the civil society in China where parts of the 'voluntary' and 'social' sector can be influenced or even controlled by state actors. This conceptual incompatibility is discussed in the latter sections and chapters. Meanwhile, this section presents some issues with civil society regulations and the experiences of some civil society interviewees participating in this study.

IV-3.2.3.1. Civil society struggling with organisational identities

Civil society organisations (CSOs) in China, from international to local levels, need to tailor their identities and scopes or/and areas of activities, as well as mediating relationships with state actors to position themselves in the Chinese governance system. However, deciding what organisational definition they come under is not a straightforward task, especially for international actors. Both the 'Law of the People's Republic of China on Administration of Activities of Overseas Nongovernmental Organizations in the Mainland of China' (hereafter China ONGO[10] Law) coming into force in January 2017 (Order of the President of the People's Republic of China No. 44 on 28 April 2016, Art. 2) and the latest under-review draft of the new 'Regulation for the Registration and Management of Social Organizations' (at the time of writing this thesis) require all regulated organisations to be non-profit 'social organisations' without a unified definition (Wang, 2018). In addition, 'social organisation' is a unique term used in China without an exactly equivalent definition in other Western-style legal systems (Shieh, 2018, p. 8).

That legal challenge of organisational identification could be tricky for those organisations

[10] The official translation of the Law refers to those organisations as 'overseas' organisations instead of *international* organisations.

that run both non-profit and profitable services, which is usually not a problem in the UK system. For instance, the Nottingham Energy Partnership in Nottingham runs both charity and commercial services. On the one hand, it offers non-profit energy efficiency services to help tackle energy poverty. On the other hand, it provides commercial energy services and uses those incomes to support its charity missions.

IV-3.2.3.2. State supervision and political barriers to civil society activism

The China ONGO Law requires ONGOs to 'seek the approval of organizations in charge of their operations' (Article 11) to register their operations in China. Those approval entities are public organisations at ministerial and provincial levels managing the fields relevant to the ONGOs' fields of activities. Furthermore, approval entities also join public security organs to oversee and supervise the activities of ONGOs in mainland of China (Order of the President of the People's Republic of China No. 44 on 28 April 2016, Art. 39 and 40). Therefore, approval entities for non-profit social organisations in China are partly in a comparable role with charity trustees in the UK, however, with a dominant position in the relationship with CSOs.

Some international NGO participants in China commented that such legal requirement of state approval and supervision has created technical barriers to restrict the registration and scopes of activities in some 'sensitive' areas such as 'rights-based' campaigns (interviews with two international NGOs based in Beijing, November 2018). However, there is no definition or specific guidance of 'politically sensitive' areas for the activities of social organisations. Instead, the Chinese government explicitly draws attention to some *permitted* and encouraged areas:

> 'Foster the development of social organizations. Establish the management system, prioritize the development of economic, charity, and community social organization.' (China's National People's Congress, 2011, Chap. 39)

> 'We will support the development of social organizations belonging to the following categories: industry associations and chambers of commerce, science and technology institutions, charities and public-interest organizations, and community service organizations.' (National Development and Reform Commission, 2016, Sect. 3)

This legal term of state approval and supervision, coupled with the *ambiguity* of what is counted as 'sensitive areas', poses significant challenges for new international NGOs to

be established in China if they have had no existing 'good' connections with any Chinese public organs.

> 'It makes it very difficult for many foreign NGOs, especially those NGOs working on some areas they consider to be sensitive. […] So they have the authority to decide whether they want to accept it or not, and … they make it very difficult because every foreign NGO has to have a supervising unit and supervising unit has to be ministerial levels of governmental organs, … so if they don't know you well, and if they don't have any connections with you as why they choose you? Because they have to take the responsibilities if you do anything in violation of the law.'
>
> (C20, October 2019)

Having good, or even close, connections with public organs is also an unwritten rule for domestic CSOs to register and be operated:

> 'INTERVIEWER[11]: So basically, you can register as an NGO?
>
> RESPONDENT: It is very difficult unless you are part of a government organisation, super difficult to organise… to register as a *non-profit (the participant emphasised and corrected my term NGO into non-profit)*.'
>
> (C15, December 2018)
>
> That can explain why most international NGOs who could register quickly after the new China ONGO[12] Law have had well-established relationships through previous collaboration with China's governmental organs, especially to build *trust*, as a participant said:
>
> 'INTERVIEWER: How could [your organisation] get into China in the first place?
>
> RESPONDENT: We can say in the first we have some staff working there and implementing some EU projects, because under EU projects we have very good governmental relationships both with the EU and also the Chinese ministry of environmental protection, so that is how we have built that *trust* with the governments.'
>
> (C20, October 2019)

The stricter civil society regulations in China force civil society actors to either collaborate with the government or compromise their activities to cope with the state surveillance, which is facilitated by the Chinese consistent vertical multilevel governing system as

[11] Quotes in a conversation format here and in subsequent sections is meant to better demonstrate the context of the responses and hence the relevance to the discussion points.
[12] Chinese wording of INGO as 'overseas' NGO.

discussed in previous sections. Especially, 'the most challenging part' for civil society activism in China is its 'political climate' (interview with an international NGO based in Beijing). That 'political climate' will make it even more difficult for international NGOs working in areas that are considered politically sensitive to China:

> 'RESPONDENT 3: Some… I think some NGOs could not even register like [an organisation's name] […] They are not registered, they just… (*hesitating*)
>
> RESPONDENT 1: It is a political issue.
>
> RESPONDENT 3: […] they do protests, they got a lot of problems, issues there, government doesn't want people to know, Human Rights, [an organisation's name] and things like this, really challenging for them to be registered in China right now.'
>
> (C14, November 2018)

Furthermore, besides the oversight and supervision clauses in China ONGO Law, ONGOs are also required to conduct annual reporting (including work plans and financial reports) to those relevant organisations in charge (Order of the President of the People's Republic of China No. 44 on 28 April 2016, Art. 31). Apparently, civil society regulations in China impose myriads of constraints over the *autonomy* of CSOs in China. However, recent studies document more evidence of blooming civil society activism in environmental fields (e.g., Furst and Holdaway, 2015; Ma and DeDeo, 2018; Li *et al.*, 2018). A participant also emphasises the role of civil society in contemporary environmental activism in China:

> 'NGOs play a role, it's definitely a bigger role than before whilst I was still at the university, it was never as active as now. A lot of NGOs are international NGOs, public education awareness-raising, investigation, monitoring of enterprises emissions, capacity building, policy research and recommendations.' (C19, December 2018)

Nevertheless, even the notion of 'NGO' and 'independence' from state influence are questionable when studying civil society in China. As Guttman *et al.* (2018) point out, there is a wide range of non-profit environmental organisations in China that can be labelled 'NGOs' without exercising the Western perception of NGOs. Particularly, these organisations include those with ambiguous identities of being both governmental and non-governmental (Guttman *et al.*, 2018, pp. 128-129). Consequently, even though the activity landscape of civil society in China seems to bloom, many scholars still consider the situation as an extension of the state's power or to support the state in implementing

environmental policies instead of making critical (not to mention radical) contributions to challenge the state's decisions (Teets, 2013; Furst and Holdaway, 2015).

Given the diversity and complication of non-profit actors engaging in environmental activism in China, the subsequent chapters will further explore how the environmental civil society participants of this study find their ways around the Chinese system to practice their activities, particularly in comparison with how environmental activist participants in England are struggling within their autonomy.

IV-4. FISCAL DISTRIBUTION ARRANGEMENTS AND LOCAL CAPACITY

One interesting comparative point between Nottingham and Shanghai is their contradictory positioning between the *labelled* development classes of their host countries (based on the classifications of the United Nations (United Nations, 2020)) and their local economic status. While situated in the UK – a 'major developed' economy, Nottingham City is financially struggling, especially under the austerity policy of the UK Government when its great proportion of central grant funding decreased significantly (Gray and Barford, 2018, p. 553). In contrast, Shanghai is an international financial centre and one of the five richest cities in China, which is classified as a 'developing' economy but had the world's second biggest gross domestic product in 2018 (World Bank, 2019). The discussion below will provide a further understanding of the complication beneath those generalised financial contexts of Nottingham City and Shanghai.

IV-4.1. Nottingham – Financially struggling and centrally dependent

The administrative freedom of English local authorities is constrained by the dependence on central grants in the UK fiscal system. Until 2019, local councils could retain only 50% of their collected business rates[13] - as known as 'local share', one of their income sources, and the other included council tax (charging residential properties), revenue support grants – taken from the 'central share' of the other 50% of business rates and other governmental grants for specific purposes (Local Government Association, 2018, pp. 32-33). Nottingham City was among the country's highest ranking positions – the worst – in different aspects of deprivation including income and employment in 2019 (see Table 1). It was especially in the top 10 in terms of average deprivation rank (relative ranking) and

[13] Tax collected from non-residential properties

the 11th in average deprivation score (absolute ranking). It means that Nottingham City was uniformly deprived – most of the City was deprived and deprived in multiple aspects (ONS, 2019). Thus, if Nottingham City relies on residential tax revenue, it means deep reliance on taxing the low-middle- and lower-income residents.

Table 1. The most deprived Local Authority Districts on each of the summary measures of the Index of Multiple Deprivation 2019 and on the income and employment scale measures (the 1st is the worst)

	Average Rank	Average Score	Proportion of Lower-layer Super Output Areas in the most deprived 10 per cent nationally	Extent	Local Concentration	Income Scale	Employment Scale
1	Blackpool	Blackpool	Middlesbrough	Liverpool	Blackpool	Birmingham	Birmingham
2	Manchester	Knowsley	Liverpool	Manchester	Knowsley	Manchester	Liverpool
3	Knowsley	Liverpool	Knowsley	Knowsley	Middlesbrough	Liverpool	Leeds
4	Liverpool	Kingston upon Hull, City of	Kingston upon Hull, City of	Birmingham	North East Lincolnshire	Leeds	Manchester
5	Barking and Dagenham	Middlesbrough	Manchester	Blackpool	Liverpool	Bradford	County Durham
6	Birmingham	Manchester	Blackpool	Middlesbrough	Burnley	Sheffield	Bradford
7	Hackney	Birmingham	Birmingham	Blackburn with Darwen	Kingston upon Hull, City of	County Durham	Sheffield
8	Sandwell	Burnley	Burnley	Kingston upon Hull, City of	Wirral	Cornwall	Cornwall
9	Kingston upon Hull, City of	Blackburn with Darwen	Blackburn with Darwen	Burnley	Barrow-in-Furness	Sandwell	Bristol, City of
10	Nottingham	Hartlepool	Hartlepool	Sandwell	Hartlepool	Leicester	Nottingham
11	Burnley	Nottingham	Bradford	Nottingham	Redcar and Cleveland	Nottingham	Kirklees
12	Newham	Sandwell	Stoke-on-Trent	Stoke-on-Trent	Newcastle upon Tyne	Bristol, City of	Sandwell
13	Hastings	Bradford	Halton	Bradford	Manchester	Kirklees	Wirral
14	Blackburn with Darwen	Stoke-on-Trent	Pendle	Hartlepool	Great Yarmouth	Kingston upon Hull, City of	Kingston upon Hull, City of
15	Stoke-on-Trent	Rochdale	Nottingham	Walsall	Thanet	Newham	Sunderland
16	Middlesbrough	Hyndburn	Oldham	Wolverhampton	Hastings	Tower Hamlets	Leicester
17	Rochdale	Hastings	Hastings and North East Lincolnshire (joint)	Hyndburn	Bradford	Enfield	Wakefield
18	Hyndburn	Salford	-	Oldham	Blackburn with Darwen	Wirral	Wigan
19	Wolverhampton	Oldham	Salford	Rochdale	Sefton	Walsall	Newcastle upon Tyne
20	Salford	Great Yarmouth	Rochdale	Barking and Dagenham	Salford	Wolverhampton	Doncaster

(Adapted from Noble et al., 2019, p. 50)

IV-4.1.1. Nottingham City Council's operation and functions threatened under the austerity policy

The financial shortage in Nottingham City Council (NCC) has been deepened with significant cuts of central funding during a decade of the austerity policy since 2009, which has made the City Council struggle to deliver even basic services, not to mention additional environmental protection mandates from citizens/voters:

> '[T]he City Council, because of austerity, because of the *massive* cut of local authorities' [funding], their capacity to actually do anything that we would want them to do is what's less than it used to be.' (E02, July 2018)

The austerity duration adversely affected most local authorities in England, including Nottingham City Council, in many ways as the largest central funding cuts were imposed on the Department for Communities and Local Government on top of decreased funding

for other public services (Lowndes and Gardner, 2016, p. 359). Severe financial constraints particularly restricted human resources that consequently reduced their capacity to operate non-mandatory services such as environmental projects. As some local participants said, due to inadequate budgets, many councils could only operate very basic mandatory services, 'not employing as many people [as ten years ago] to look after the environment' (E02, July 2018), and even worse, 'a large number of local authorities don't have anyone who works on climate change […] or energy' (E11, August 2018) which are two important areas that relate to diverse socio-economic issues.

Furthermore, the UK Government not only restricted local access to central funding but also indirectly controlled the fund-raising capacity of local authorities in England. An important source of self-funding for English local authorities is local taxation. Although local councils hold the right to increase council tax levels, central actors are the ones who control the tax limits. Specifically, local authorities are required to hold referenda should they want to increase their council tax levels above an excessive limit, and that limit is decided based on a set of principles determined by the Secretary of State (*Localism Act 2011, C. 20*, 2011; Sandford, 2022).

Another way for the Government to indirectly control local fiscal freedom is by imposing top-down compulsory policies that lay financial burdens on local councils while relieving those for the Government's budget. An NCC official gave an example of the Housing Benefit scheme through which the UK Government supported the payment of house rents for people eligible to claim benefits. He argued that the Government forced social housing associations (i.e., local councils' non-profit companies managing and providing social housing services for low-income residents) to reduce their social house rents by one per cent annually in four years from 2016 so that the Government could reduce their expenditure on the Housing Benefit scheme because:

> '[T]he Government is basically paying the rents for them (i.e., those eligible for the housing benefit scheme) through […] housing benefit. So, the Government wants to reduce the amount of money it's spending on housing benefit, […] they made us reduce our rent, because that's where the money goes. So, because they control our income and our rent, they would be able to do that.' (E03, July 2018)

Local authorities in England also need to bid for central grants to fund additional policies beyond statutory services, e.g., additional environmental measures besides the mandatory ones. However, funding sources are precarious because 'generally, the pots of money are

national pots available to any local authority so we're in direct competition with other local authorities' (E17, September 2019).

Besides central grants, the UK Government also manages the allocation of funding sources from the European Union (in the context of this thesis' timing when the UK was still an EU member). This EU funding allocation also created competition among local authorities, as well as between local authorities and non-state organisations who were eligible to join the bidding. In times of austerity, local authorities may even fall behind in bidding competitions with non-state organisations for funding programmes that require match-funding (i.e., a contribution from the bidder to match the funding amount) such as the European Regional Development Fund (ERDF). One NCC official shared that:

> 'There's currently a project bidding into it from the Nottingham Trent University; there's another one from Nottinghamshire County Council. So anybody within that area, as long as they have a good project that meets the strategy and also have the pre-match funding [of 50%], […] they can bid into it. […] It's difficult for councils to do that now, to be honest, just because there's not that much match funding. […] Universities have a bit more funding probably around at the moment.' (E05, July 2018)

Adding to this inter-locality competition in England is the potential paradox in the assessment of local councils' spending needs, which is based on their spending rates (i.e., the higher spending rate meaning the council needs more money). Consequently, local councils with high levels of deprivation, such as Nottingham City, might receive less funding as their spending rates have decreased following the decrease of their main resources which are, ironically, the central grants themselves (Phillips and Harris, 2018, p. 47). That vicious circle leads to a paradox that the most disadvantaged councils would be more deeply disadvantaged. This means that an *equal* distribution of funding opportunities (i.e., everyone has a chance to bid for funding) might not be *equitable* (to support the least advantaged). Indeed, English local councils can even be left going bankrupt, and that situation is anticipated to be so serious that it may affect the provision of even basic public services:

> 'Northamptonshire basically came to the verge of bankruptcy recently (*interview in 2018*), other councils have said they are on the verge of that and that is where you start even cutting elements of the statutory services.' (E11, August 2018)

In that struggle with financial capacity, even when local councils can enjoy the flexibility

to set local policy priorities in principle, highly deprived localities such as Nottingham City cannot always afford the implementation. That is a paradox in the English local governance system in which local authorities have administrative autonomy but lack financial autonomy or empowerment.

IV-4.1.2. Nottingham City Council caught between Labour voters and the Government's austerity policy

Even worse, the austerity policy also affected Nottingham City Council – an almost pure Labour council – in a way that damages the relationship with local Labour voters. Throughout the austerity period imposed by the Conservative government, Nottingham City Council, like other Labour-led councils, has been caught between local voters and dealing with decreased funding for public services due to cuts of central grants. An event of the Labour Party in Nottingham called 'Notts Transformed - Life beyond Brexit' in March 2019 to prepare for the local elections in May 2019 was started by calling Nottingham City to 'stand up against austerity'. However, a Labour candidate admitted an irony that 'We're implementing Tories' cuts and talk about socialism' (fieldnote – public event observation, 30 March 2019). The tension was heated up in the question-and-answer session when a voter urged candidates to promise 'no cuts whatsoever[!]' because 'implementing cuts is not socialist[!]' (Ibid.). Accordingly, Labour candidates received criticisms from voters about how their cuts of funding for crucial services such as young children's education and social care had adversely affected individual lives in Nottingham City. They were also warned of losing voters to other rising parties in the City if they continued the austerity approach.

This story is one example to illustrate a popular criticism of a top-down approach to localism in England, in which English local authorities are viewed as an extension of the central Government in nature (Stanton, 2018).

IV-4.1.3. Local environmental groups in Nottingham struggling through the austerity time

The austerity decade did not only affect governmental bodies but civil society activism as well. As local environmental groups in England rely mainly on donations with some receiving funding from their sectorial national organisations, the aftermath of funding

cuts from other sectors would affect the number of donations and funding they receive accordingly. Additionally, local civil society groups usually do not have much capacity for fund-raising, given that they are normally operated as small groups without many consistently active members, while some members (especially retired people) may have multiple commitments with other groups:

> 'Nottingham group appears to be… very small… both in members and… influence. […] I don't think I give [the group] enough time bearing in mind that I'm retired. But I've got lots of other commitments. So, I'm involved in other community projects as well. […] The key problem with local [the group's name] is if you have more active members, you could divide tasks.' (E08, August 2018)

Another popular problem for some local environmental groups in England is the unbalanced demography of members. Elderly members, those who have retired, are usually more active than those at working ages:

> 'I think they need more members and for more spectrum of society and all ages as well, […] I think people at my age have got more time to get involved in things like this, whereas youngsters they start to have their own careers, you know, family life and all the rest of it that they tend not to have the time that my generation have got.' (E08, August 2018)

The participant's opinion emphasises an issue that if working people are financially struggling, they would spend more time working than engaging in activities of non-profit environmental groups. Without sufficient donations and engagement of demographically diverse participants, local environmental groups in Nottingham City mostly comprise 'part-time unpaid volunteers' that lack both resources and expertise capacity (E08). In that circumstance, even though a local group is supposed to have autonomy over their campaigning areas, they would still rely on formal organisations (usually in the same areas at the nation-wide level):

> '[W]e are strongly influenced by what [an organisation's name] nationally [campaigns] because at the end of the day, they're full-time experts in this, we're just part-time unpaid volunteers. […] [The national coordinator] definitely influences the decision because he…(pause)… brings the national perspective to it.' (E08, August 2018)

For independent civil society groups who do not have affiliations with bigger formal organisations, as Harris (2017, pp. 354-355) discusses, if they are short of resources, they would tend to rely on governmental funding and hence are required to adapt to tighter regulations and formalised institutions. That may make them change their organisational

cultures (and probably organisational identities as well), which may lead to a change in the relationship nature with their beneficiary communities.

Indeed, fiscal constraints have become a more and more serious problem in the devolution strategy for England as increasing duties are passed down to local authorities to deliver public services and implement the policies made by the central Government while they are significantly dependant on central funding (Political and Constitutional Reform Committee, 2013, p. 8; Local Government Association, 2017, p. 4). There have been debates around 'fiscal devolution' to enhance the autonomy of local authorities over their financing (including raising, retaining and spending money locally) since the 2010-2015 Government, particularly following the significant funding reductions from the central Government (Sandford, 2014). As the Local Government Association (2017, p. 4) argues, 'real' devolved power for local authorities must come together with devolved fiscal autonomy; otherwise, additional packages of responsibilities are transferred from the central Government to local levels without the necessary money to implement.

The above discussion shows that even though devolution has been promoted in England, the UK Government still holds on ultimate power and influence on local authorities through various mechanisms, especially fiscal management. Consequently, policy priorities of local authorities can be driven by compromises aligning with the central policy directions because devolution in England until the end of this study's fieldwork in 2019 was still about devolving duties but not fiscal power.

IV-4.2. Shanghai and the vagueness of local fiscal autonomy in China's fiscal decentralisation and equalisation scheme

Being one of four municipalities (i.e., having the same administrative rank as the provincial level) in China and among China's most affluent and influential ports throughout its history, Shanghai has become even more crucially strategic for China since the 1990s in times of globalisation (Wang, 2019, p. 334). Thus, there has been a long-term strategy to make Shanghai a major international financial centre – an important gateway to internationalise China's economy (Lai, 2012, p. 1275; Wang, 2019, p. 335). However, when placing Shanghai in its national financial landscape, the city seems to hold both privileges and burdens.

IV-4.2.1. China's fiscal decentralisation and local resource capacity

Along with China's rising economy in the gross domestic product is a continuous increase in central public expenditures to a general trend of steadily having greater expenditure growth rates than revenue growth rates (Gao and Zhen, 2018, p. 89). That pressure has urged the Chinese government to reform its original centralised fiscal system with signs of a gradual shift from central to local fiscal management (Gao and Zhen, 2018, p. 95). The reform of China's fiscal system started in 1994 with significant actions and progress since the 16th CPC National Congress in 2002 (Jia, 2015). Among the important directions of China's fiscal reform, set by Hu Jintao – General Secretary of the CPC Central Committee – in the 17th CPC National Congress report, are to tighten budgetary management and improve its efficiency through a system 'whereby both the central and local governments have financial resources proportionate to their duties and responsibilities; […] enlarge the size and proportion of general transfer payments [i.e., redistribution of national shared incomes to local governments]; […] improve financial systems at and below the provincial level to enhance the capacity of county and township governments to provide public services' (Jia, 2015, p. 2).

Through the fiscal reform, China operates a dual system – centralised major tax revenue collection and decentralised spending responsibilities (Duan and Zhan, 2011). Centralised tax revenue includes the central Government holding entire or bigger portions of revenue from taxes that generate the greatest incomes and are important for pursuing national objectives, whereas local governments keep 97% of business tax and other taxes that are bound to the local administrative boundary and hence better collected locally (Shen, Jin and Zou, 2012, pp. 13-15). On the other hand, apart from the most crucial national issues such as national defence, foreign affairs, major national infrastructure development and protection of natural resources that belong to the central Government's responsibilities, other spending responsibilities are assigned to sub-national levels from the provincial level downwards or in shared responsibilities with the central Government (Wingender, 2018, pp. 14-15).

Although local governments in China must follow a consistent administrative structure decided by the central Government as mentioned in section IV-3.2. Local arrangements – an interlaced Party-Government relationship within a close central-local nexus, they are granted the autonomy to decide intra-provincial assignments of spending responsibilities,

including setting local spending priorities (Martinez-Vazquez, Qiao and Zhang, 2008, p. 140; Shen, Jin and Zou, 2012, pp. 29-31). Specifically, a sub-national level of government can assign spending responsibilities to its next lower level of government. Such a fiscal decentralisation mechanism, nevertheless, is concerned as a pressure decentralisation mechanism in which the lowest governing level would bear the most severe pressures accumulated through multiple levels above it while receiving inadequate funding, which is partly retained at higher governing levels (Liu, Martinez-Vazquez and Wu, 2017).

In that sense, fiscal decentralisation in China causes a similar phenomenon to the austerity policy in the UK, in that, local authorities struggle with finding money to fund their assigned responsibilities. However, unlike Nottingham City, Shanghai is an affluent municipality rich in business tax revenue and financial power. Furthermore, Shanghai has been chosen for major experiments of fiscal reform mechanisms and hence granted more power in managing tax revenue and budget allocation (Yusuf and Wu, 2001; Jia, 2015; Shanghai Municipal People's Government, 2016). Being an experimental base also gives Shanghai opportunities to shape the experimented policies from its examples. From an international NGO participant's observation of their experience working with central and local authorities in China, localities at the same administrative rank but different political positions in China might still not have the same power and access to resources. Instead, localities with more important political positions and power in China tend to attract more resources of all types, including financial and human resources, which then further strengthen their capacity compared to other peer localities:

> 'Everything here is hierarchical and the city with greater political power has more economic power… More resources… and would be educational resources and everything.' (C14, November 2018)

The C14 interviewee further explained that Shanghai was not only more affluent than most of its peer cities and provinces, but it also attracts more human resources with the highest quality in the country, both in the public and private sectors. However, an adverse effect of Shanghai's strong resource capacity and rapid growth is a rising international consideration of China as a 'developed' economy, which may reduce its access to international financial aid for developing and low-income countries. Indeed, a participant has witnessed a decreasing trend of international funding projects to China in recent years:

> 'China is no longer considered as developing country, from the international criteria, that is why I think EU has fewer and fewer such kind of [financial and technical assistant] projects recently.' (C12, November 2018)

The problem lies in huge discrepancies between those major cities with the rest of China. Many participants share the same comment that 'Shanghai is different' or that 'Shanghai is not China'. The participant below even criticised that the government's strategy to advocate those major cities as thriving China to the world is mistaken for the 'real China' situation:

> '[I]f you go to Shanghai or Beijing, you will think 'such a more than fantastic city', but Shanghai is not China! […] You go to the West part of China you can find totally different. They are much poorer. […] We should show the real China to the world, not only Shanghai, Beijing and Shenzhen, that is a strategy mistake.' (C10, November 2018)

In other words, the images of rapid growth and wealth of Shanghai and other Chinese mega-cities have accidentally reduced the opportunities of the other bigger but poorer populations and localities in China.

IV-4.2.2. Fiscal equalisation

One of the key features in China's fiscal reform is to equalise fiscal disparities among municipalities and provinces, as well as intra-provincial fiscal equalisation (Luintel *et al.*, 2020), and Shanghai is a crucial node in that fiscal equalisation scheme. Shanghai has the highest income and hence the highest contribution to the national revenue among cities in China (National Bureau of Statistics of China, 2018). Part of the national revenue will be redistributed to other provinces to compensate for poor regions. Some interview participants further explained China's fiscal equalisation scheme with an emphasis on regional disparities because of which the scheme aims 'to use the money from the [eastern coastal] rich regions and transfer it to the comparatively poor regions in the middle or the western regions' (C01, October 2018; C14, November 2018; C17, December 2018). Accordingly, the development of some 'economy engines' such as Shanghai (C14, November 2018) is 'a part of a plan' to 'make the east coast rich first and then [they] will spread the wealth across China' (C16, December 2018).

To sum up, in China's public financing system that relies on major economic engines to run the whole country, coupled with a special arrangement that intertwines local and

central political leadership, Shanghai plays a crucially strategic role and hence holds a certain level of indirect autonomy. However, from a vertical perspective, it is still the central leadership that drives local governance.

IV-5. SUMMARY OF KEY COMPARATIVE POINTS

This section summarises the key points arising as comparable from the discussions above. This comparison is based on the initial analysis of the governance contexts of Nottingham City and Shanghai. It will form the basis for further comparisons when exploring environmental governance, with specific cases of air quality management, in Nottingham City and Shanghai in the subsequent chapters.

Both Nottingham City and Shanghai witness interweaved central-local-local political relationships without complete autonomy for either case regardless of whether being situated in a democratic system (Nottingham City) or an authoritarian system (Shanghai). In the English system, the central Government and local authorities are two separate actors and hence their relationship is prone to a counter-partnership one, however, without an equal power balance. Meanwhile, sub-national authorities at all levels in China are directly influenced by their higher governance levels under the paramount control of the central Communist Party Organisation. In other words, the Chinese system forms a vertically superior-subordinate relationship from the central level towards the lowest level, or 'upward accountability' as Mok and Wu (2013) call it. The dynamics of central-local governance relationships lying deeply in both cases are, nevertheless, more complicated when considering various aspects presented in the table below.

Table 2. A summary of the comparative points in Chapter IV

	NOTTINGHAM CITY	**SHANGHAI**
Political position	Situated in a multi-party political system. A consistent Labour-led council under a Conservative-led government (as of 2019 by the end of this study's fieldwork).	Situated in a uni-party Communist political system. A strategic and powerful municipality, both politically and financially even under a uni-party government. A major policy

		experimentation hub for China.
Central-local governance relations	Local institutional and political arrangements are independent of the central Government.	Local political and administrative leaders are managed by the central Party organisation through cadre management mechanisms in an upward accountability system.
Local political relationships	Locally elected politicians tend to have closer political relationships with local communities than the central Government as being directly influenced by voters. They also have a personal affinity towards their represented communities based on a long-term attachment to them.	Local political and administrative leaders are top-down appointed and therefore are more influenced by the central level, as well as have a less personal attachment to local communities.
Political stability	High stability due to a consistent Labour leadership despite being in a democratic multi-party political system.	Local political stability depends on the stability level of the central political agendas and the appointment of local leaders.
Local resource capacity	A highly and uniformly deprived city with a financially struggling city council throughout the government's austerity policy since 2009. Limited fund-raising capacity due to the government's fiscal control.	An affluent city that attracts high-quality human resources.
Fiscal decentralisation	Facing additional devolved duties of public service delivery without sufficient funding. Difficult local competitions for central fund-bidding.	Facing additional devolved duties of public service delivery but with opportunities to access ad-hoc central grants for policy experimentation and pioneer projects due to its strategic role in China's policy development

		landscape. Playing an important financial contributing role in China's fiscal equalisation scheme.
Civil society regulations	Celebrating an open democratic environment for activism and communication with state actors. Struggling with limited and decreasing financial and human resources. Consequently, small local groups tend to liaise with national-level organisations or even local authorities.	Stricter civil society regulations since 2017, especially to control international NGOs and limit areas of civil society activities. Ambiguous organisational identities for civil society actors, including ambiguous relationships with state actors.

CHAPTER V – SHAPING PUBLIC PERCEPTIONS AND FRAMING PROBLEMS OF ENVIRONMENTAL POLLUTION

'[The air quality is] not so bad that you can see that it's bad.'
(E07, August 2018)

V-1. INTRODUCTION

Before analysing how local actors in the Nottingham City and Shanghai cases address air pollution issues, it is necessary to investigate how those issues are framed as problems to be brought onto policy agendas, including the types of problems they are categorised as. On the one hand, how a problem is defined can influence who pays attention to it and how it is addressed (Rochefort and Cobb, 1993; Mintrom and Norman, 2009; Euchner, 2019). On the other hand, ways of acknowledging and categorising a problem may depend on individual perceptions (Rochefort and Cobb, 1993; Kingdon, 2014). Indeed, individuals' perceptions of environmental quality and problems are found to influence their motivations to take responding actions (Lim and Moon, 2020; Yang *et al.*, 2020; Soares *et al.*, 2021). Furthermore, while problems can arise to catch mass attention for governance requirements, they can also fade away from governance priorities, partly dependant on changes in actors' considerations of whether those problems are still perceived problematic (Kingdon, 2014).

Given the importance of people's perceptions of environmental quality and whether it is problematic, their perception might sometimes not align with the monitored data of respective environmental conditions (Chiarini *et al.*, 2021). Varying perception of environmental quality depends on multiple factors including existing health conditions, perceptions of pollution impacts on health, exposure time, neighbourhood characteristics (e.g., living near factories or parks), or even gender (Atari, Luginaah and Fung, 2009; Liao, Shaw and Lin, 2015; Pantavou *et al.*, 2018). However, monitored environmental quality indices at a place and time can also influence people's perceptions of the environmental

quality in that specific condition even when they do not feel any relevant health reaction or sense any physical signs of pollution (Liao, Shaw and Lin, 2015). Liao, Shaw and Lin (2015), however, do not provide further depth in their quantitative study. My findings presented below will fill that gap with empirical qualitative evidence to show that data presentations and impression management tactics are important in shaping people's perceptions of environmental quality.

Furthermore, perceptions of environmental quality might correspond more positively with the monitored data for environmental issues that are recognisable through human senses (e.g., haze in China, see Yang *et al.*, 2020) or/and depending on the capacity of self-referral to existing health conditions relating to specific types of pollution (Atari, Luginaah and Fung, 2009). Meanwhile, it is harder for individuals without relevant scientific knowledge to detect invisible pollution such as odourless and colourless air without monitored data or for those who are not exposed for a long enough time to suffer health symptoms (Pantavou *et al.*, 2018). Therefore, concerns about discrepancies in perceptions of environmental quality, as well as differences between perceived and monitored quality, are particularly relevant when comparing air quality management in both Nottingham City and Shanghai.

Challenges surrounding the (in)visibility of air pollution were mentioned in both the Nottingham City and the Shanghai cases. Local authorities and environmental activists in Nottingham City were concerned that invisible air pollution may reduce public engagement in behaviour change and policy implementation for improved air quality. Whereas China's Government instrumentalised the visibility of air pollution in China to convince its performance of making the pollution less visible over time, or even invisible in southern coastal places like Shanghai.

However, by incorporating Kingdon's agenda-setting perspectives into a multi-level governance analytical lens, this study reveals different shades of perceptions among the state and civil society actors within each case study. Furthermore, following the theoretical framework in Chapter II, the explanation of some aspects of the problem-framing and public communication approaches regarding air pollution is supported by incorporating perspectives from impression management theories (Goffman, 1959 cited in Wood and Hoeffler, 2013; Cho *et al.*, 2018; Tedeschi, 1981; Bansal and Kistruck, 2006; Talbot and Boiral, 2018).

For an outline, Section V-2 discusses concerns about the (in)visibility of air pollution found in Nottingham City and Shanghai during my fieldwork in 2018 and 2019. Accordingly, Section V-3 presents the data and findings of how air pollution is framed as different kinds of problems and how these framing approaches lead to different policy mandate options imposed on local authorities in each case study. Afterwards, Section V-4 discusses issues surrounding the communication of invisible air pollution, including the use of digital technologies to create different impressions of the same environmental quality status. Session V-5 then summarises the key points of this Chapter.

V-2. CONCERNS ABOUT THE (IN)VISIBILITY OF AIR POLLUTION

V-2.1. The Nottingham case: Challenges of invisible air pollution

Departing from the dark and gloomy scenes of coal smoke and the irritating smell of noxious gases in the past of Britain's industrial times (Stradling and Thorsheim, 1999), air pollution in post-industrial English cities like Nottingham City has become more and more invisible to human senses. The shift from visible to invisible air pollution in Nottingham City follows the changes in major pollution sources (from industrial factories to home heating and transport vehicles) and hence different main pollutants with invisible physio-chemical characteristics. Nowadays, nitrogen dioxide (NO_2) and fine particulate matter ($PM_{2.5}$) are identified as the main pollutants in Nottingham City, however, at low levels that make them invisible (Nottingham City Council, 2017).

Invisible air pollution does not only mean the invisibility of the pollution itself but also of its impacts on human well-being. There are studies showing certain correlations between air pollution and health problems such as lung cancers, respiratory diseases, heart diseases, diabetes, obesity, or even low birth rates, etc. (Bayer-Oglesby *et al.*, 2006; Boldo *et al.*, 2006; Rao *et al.*, 2012; Jerrett *et al.*, 2014; Sbihi *et al.*, 2017; Conforti *et al.*, 2018; World Bank, 2020). Some health problems may take a long time after consistent exposure to harmful air pollutants to show symptoms.

Consequently, both state and non-state research participants in Nottingham City share common concerns about the invisibility of air pollution in three aspects. Firstly, as people 'don't see' or smell the pollutants, they do not know their existence and hence might perceive mild or no pollution (E01, March 2018; E07, E08, August 2018). Secondly, if

people are unaware of air pollution and its impacts that are both invisible to their sensing and understanding, they might not care about contributing to improving the air quality (E01, March 2018; E07, August 2018). A participant even emphasised that 'the invisibility is the problem' (E01, March 2018). Thirdly, the science behind contemporary air pollution in Nottingham City is also considered distant from average public knowledge and hence hinders the communication of its problems to the public. For instance, one participant views that '[knowledge of] $PM_{2.5}$ is generally held to be in the academic and expert communities' (E16, June 2019), while for an NCC official, 'there's a lot of scientific data to do with sustainable transport and clean air, and emissions especially, that people aren't necessarily going to relate to. So, it's how to say it in a way they understand.' (NCC interview, August 2018).

Despite considerations of bridging scientific knowledge and public understanding, there might still be threats of some actors in society being either deliberately or naturally excluded from air quality policy discussions due to unawareness following such understanding barriers. Indeed, there were only the NCC and a few other local environmental activists, mostly liaising with Nottingham Friends of the Earth (FoE), who consistently and deeply participated in policy discussions on the topic of air quality management in Nottingham City over the 18 months of my fieldwork duration. Meanwhile, other civil society engagement was temporary and focused on individual events.

That situation resulted in no opposition against the NCC's decisions and only some critical discussions from the Nottingham FoE. This case shows a natural policy monopoly established due to barriers to public understanding of scientific knowledge. While it might be unintentional for NCC to create such a policy monopoly in air quality management, the Council did take advantage of those public knowledge barriers to drive the public perceptions along their policy directions, which is discussed in more detail in Section V-3.1 and V-4.1.2.

Those three aspects regarding the invisibility of air pollution in Nottingham City open spaces for diverse approaches to frame air pollution (discussed in Section V-3) and shape public understanding through different communication tactics (discussed in Section V-4).

V-2.2. The Shanghai case: Visible improvements from visible problems making the public concerns invisible

Unlike invisible air pollution in Nottingham City, before 2013, air pollution in China was so severe and visible to the human senses that the people living therein were constantly aware of its existence (Peng *et al.*, 2019). Consequently, China has a bad reputation for air pollution with dense smog and grey skies. Even when the air quality in China, especially in southern coastal locations including Shanghai, had improved with more 'blue skies' since 2013 (Tilt, 2019), the old impressions still linger for people outside China. For instance, a Nottingham participant instantly referred to Beijing (China) as an example of visible air pollution in comparison with Nottingham City:

> 'In Beijing you get smog, don't you? And people can see it. You can see that it's bad air. But here, you can't. It's not so bad that you can see that it's bad.' (E07, August 2018)

As the symbol of grey skies has left strong impressions of China's negative environmental image, China's central leaders have advocated an opposite image of 'blue skies' and emphasised a 'war'/'battle' against air pollution in political directions and policy agendas since 2011, followed by stronger measures since 2013 (Boyd and Si, 2011; Liang *et al.*, 2016; Feng *et al.*, 2019; Wan *et al.*, 2019). Subsequently, significant reductions in the concentrations of all air pollutants, particularly $PM_{2.5}$, occurred in a very short time from 2013-2018 and were published on various official reports and communication platforms that were accessible to the general public (Shanghai Municipal Bureau of Ecology and Environment, 2019; Tilt, 2019). This situation made the improvements in the air quality in China and specifically Shanghai visibly and widely recognisable. These improvements somehow created a general satisfaction with the air quality:

> 'The difference in the past 5 years [is] 35 [per cent] decrease (in the Air Quality Index in Shanghai), that is good, so the people here are very happy to see more blue skies and we are very satisfied with the change.' (C10, November 2018)

> 'I have been here for more than seven years now, and when I just came here air pollution was quite serious, […] used to reach the maximum limit of being harmful. […] Over the last years air pollution has improved a lot, you don't find people talking about it as much as they used to talk about it before.' (C09, November 2018)

Participant C09's comment implies that while air pollution in China is visibly decreasing, it also gradually becomes invisible in the public concerns. Such public satisfaction with

the air quality in Shanghai rises even though quality indices for most pollutants were still far behind air quality guidelines of the WHO and many Western countries, seemingly due to the public's positive attitude towards the government's progress:

> 'The air quality in Shanghai still is a far way [to catch up] with the US or European current air [quality] levels, so it is a long way to go but we are making progress.' (C10, November 2018)

Moreover, perceptions of pollution levels and their impacts also vary by individuals. For instance, even when a participant first came to Shanghai during the peak period of air pollution, he felt that he 'never had a problem' (C09, November 2018). Therefore, despite being an environmental activist, he was not concerned about air pollution in Shanghai after 2013, both personally and in activism. Instead, his non-profit environmental organisation, as of 2018, focused more on awareness-raising for eco-friendly lifestyles and promoting material recycling. Similar decreased attention on air pollution in civil society actions was also seen in other participants' perspectives. However, they viewed that air pollution in China relates closely to China's energy generation and consumption structure; therefore, transforming social lifestyles through awareness-raising activities would help target multiple environmental problems including air pollution.

Overall, this study finds that air pollution has become a less concerning problem or even not a problem anymore in public perceptions in China for two main reasons. First, the fading air pollution problem was driven by public satisfaction with the government's actions and impressive progress in tackling air pollution. That impression was conveyed to the public by a 'demonstrative' tactic (Bansal and Kistruck, 2006) through the government's published data on annual reductions of air pollutants in major cities. An 'illustrative' tactic (Ibid.) was also taken by promoting a visual shift from 'grey skies' to 'blue skies' in diverse channels ranging from publicly accessible government's environmental reports to newspaper outlets and social media. Those tactics combined have created an impression of a problem being solved already, which made it fade in public perceptions (Kingdon, 2014).

Second, reduced attention and motivations of local civil society actors on air quality campaigning arise from a sense of action saturation – i.e., there is seemingly not much more that they can do. This point can be argued from Kingdon's (2014) perspective of problem fading when there is no available alternative. However, as discussed in Chapter IV, the limit of campaigning solutions for civil society actors in China seems to be derived

from the regulations and ambiguous political control imposed on them rather than due to the lack of technically viable alternatives. Indeed, an international NGO participant views the fading momentum in pro-environmental movements as a challenge that the Chinese government and society need to address after temporary achievements:

> 'The challenge is how we can maintain the momentum that all players in the society want to have clean air as soon as possible… How they can always, no matter for government, for NGOs like us, for [the] public, think clean air is very important for us.' (C19, December 2018)

That concern is relevant to China's future approaches to environmental governance. While the society in China seems satisfied with contemporary significant but fragmented improvements in air quality, such satisfaction creates a public acceptance of certain pollution levels even though they are still in exceedance of international thresholds for safe levels such as in the WHO guidelines for air quality. Indeed, scholars in public health and air pollution research have recently given warnings of threats from other pollutants such as ozone emissions that have previously not received as much political attention as $PM_{2.5}$ in China (Lu *et al.*, 2020; Niu *et al.*, 2020). An academic participant also contended that 'ozone is a future air pollution problem in Shanghai [and] Chinese cities' (C10, November 2018). Such concerns of C10 and C19 participants alert that the decline of a problem from a high-level policy agenda due to a false sense of the problem already being solved may lead to another crisis in the future.

To sum up, contrasting with the invisible air pollution in Nottingham, air pollution in Shanghai has rapidly shifted from visible to invisible pollution. China's authorities have made use of the visibility characteristics of air pollution to shape an illustrative impression of air quality improvement (using expressional and pictorial presentations to emphasise the shift from grey skies to blue skies) and a demonstrative impression of governance performance (through publishing details of quantified achievements in air quality targets). That strategy has increased public satisfaction with improvements in air quality and acceptance of certain pollution levels. Further details in China's approaches to framing air pollution and communicating its issues to the public will be analysed in the subsequent sections.

V-3. FRAMING AIR POLLUTION PROBLEMS

V-3.1. The UK/Nottingham air quality case

V-3.1.1. The ClientEarth legal case: The UK Government framing air pollution as a legal problem

Following the UK's non-compliance with the EU's objectives on air quality, there was an EU infringement procedure against the UK Government. That made 'locally specific' air pollution (DEFRA, 2019, p. 86; E17 interview, August 2019) become an international legal issue. The EU regulation on the UK's air quality management also provided a legal basis and reliable references for non-state actors to pressure the UK Government domestically. The trial of ClientEarth against the UK Government regarding air quality management provides an example of turning an international requirement into domestic legal pressure.

The UK Government took various policy actions to respond to the air pollution legal case including a guideline to set up Clean Air Zones (CAZs) in England (DEFRA and DfT, 2017a), a plan dedicated to tackling roadside NO_2 emissions (DEFRA and DfT, 2017b), and a proposal for an Air Quality Plan (as of 2018). However, those actions were ruled as 'unlawful' by the UK High Court as the government's 2017 plan 'does not contain measures sufficient to ensure substantive compliance with the 2008 Directive and the English Regulations' (*ClientEarth v. UK Government [2018] EWHC 398 (Admin)*, 2018, para. 104). Meanwhile, NCC and environmental campaigners in Nottingham City perceived the UK Government's actions as responses to a legal problem instead of a true willingness to tackle air pollution nationwide, for example:

> '[T]he government doesn't care about clean air in Nottingham, they only care because they have been taken to court three times by ClientEarth.' (E10, August 2018)

> 'What [the government] want[s] to do is the minimum possible to comply with [the EU] limits because the EU is now about to take action against them.' (E02, July 2018)

Such criticisms of local actors become an important concern because if the UK Government frames air pollution in England as a legal problem, that will drive the focus of their responses to mainly aim for legal compliance. That intention is shown in the

Government's approach to identifying the most concerned pollutant and shaping mitigation measures around it.

In the ClientEarth air quality legal case, the UK exceeded the EU's limits only for NO_2 emissions (DEFRA, 2019, p. 15) while even leading 'ahead of several European countries' regarding meeting the $PM_{2.5}$ standards (DEFRA, 2019, p. 28). However, some local environmental activist participants contended that the status of $PM_{2.5}$ emissions in Nottingham City was neither fully understood nor presented because there were only two stations in Nottingham City to monitor $PM_{2.5}$ emissions (Nottingham City Council, 2020, p. 12), which should not be justified to be representative of the whole city's $PM_{2.5}$ status.

This situation resembles an impression management technique found by Talbot and Boiral (2018) through which reporting entities divert attention from unmeasured emissions by drawing the focus of attention to another specific issue. In this case, NO_2 was the focus of the legal charge, so it was not only emphasised as the worst pollutant for Nottingham City but also the 'only' pollutant that the UK had not met the EU standards. Whereas $PM_{2.5}$ was mentioned as the UK's success compared to other European countries, which created a 'safe' impression for the public even when it was neither fully monitored nor as good as the WHO's guideline.

With such an intentional focus on NO_2 by policy-makers, fossil fuel transport vehicles were identified as the main source of NO_2 emissions in England (DEFRA, 2019, pp. 18-19) and thence became a legitimate focus for actions. That assumed connection between NO_2 emissions and fossil fuel transport vehicles is reflected in the institution of air quality management at the local level, as a participant pointed out:

> '[Local air quality management] has always been… very closely linked to Traffic and Transportation team (in a local council) needless to say because they're the main polluters… the main issue with air pollution tends to be traffic-related.' (E17, August 2019)

The UK Clean Air Strategy 2019 also emphasises electric vehicles as a leading example to create multiple benefits by contributing to both air quality improvement and climate change mitigation (DEFRA, 2019, p. 41). That emphasis is illustrated through the Strategy's available supporting schemes, especially funding, for measures in different areas. Accordingly, most of the funding arrangements up to 2019 mentioned in that Strategy (including those established under the Strategy itself and those within other strategies and plans but to support air quality improvement) were for transport-related measures and

particularly focused on promoting ultra-low emission vehicles (ULEVs). ULEVs in the UK are defined as any automobile vehicles 'having less than 75 grams of CO_2 per kilometre (g/km) from the tail pipe' (e.g., electric vehicles producing no tailpipe CO_2 or pollution) (UK Vehicle Certification Agency, 2021).

Specifically, at least ten billion pounds has been made available for the transport sector, from research to infrastructure development and switching to ULEVs during the period from 2010 to 2019 (DEFRA and DfT, 2017b; HM Government, 2017; DEFRA, 2018; DEFRA, 2019), whereas the Strategy does not include much concrete funding information for measures in other sectors. For instance, only three million pounds is arranged for the agriculture sector to support farmers 'over a 3 year period' (without any clear beginning and finish dates of the funding programme) (DEFRA, 2019, p. 70) to improve livestock management that can reduce ammonia emission, and less than half a million pounds as subsidies for renewable energy and smart electricity systems (DEFRA, 2019). Although there are no specific time frame for the implementation of those funding schemes, all are set to meet the UK's clean air objectives by 2030.

That heavy focus on NO_2 in air quality management of the central Government was also adopted by Nottingham City Council (NCC). However, a local environmental activist criticised the UK Government's response to air pollution for shifting the public attention away from other air pollutants:

> '[It] is interesting politically because although [governmental actors are] doing lots of things, they are aiming at nitrogen dioxide […] That is fine, that is good, but it doesn't deal with lots of other things, and we [even] haven't started talking about Ozone or volatile compounds.' (E16, June 2019)

Whereas among other air pollutants, fine particulate matter (especially $PM_{2.5}$) is considered so harmful to human health even at low concentration levels (Boldo *et al.*, 2006) that meeting the EU standards does not mean safe air for public health (DEFRA, 2017, p. 11; Nottingham City Council, 2015). Indeed, NCC itself was aware of potential problems arising from complying with the EU standards for individual pollutants at a time rather than improving the air quality holistically:

> 'There are currently levels of particles that are higher than the WHO recommended levels, but because they are not an air quality objective with an EU value for us, we don't need to meet those and that creates this interesting problem further down the line.' (NCC official, March

2018[14])

Their concerns alert conflicts between legal compliance and satisfying actual needs for environmental quality, given scientific uncertainties. Therefore, although the UK still aims to reduce half of the number of people living in locations where levels of $PM_{2.5}$ concentration are above the WHO guideline level of 10 $\mu g/m^3$ by 2025 (DEFRA, 2019, p. 30), its dominant focus on promoting ULEVs might raise a question of effectiveness when the largest sources of $PM_{2.5}$ come from other activities (DEFRA, 2019, p. 16).

Viewed from the perspective of the agenda-setting theory proposed by Kingdon (2014), the EU and ClientEarth legal challenges created the focusing events that brought air pollution in the UK to mass attention. As the environmentalist participants argued, instead of treating air pollution as bearing health problems by addressing it nationwide and in all sectors, the UK Government framed it as a legal problem and only aimed to avoid legal challenges. Therefore, air pollution control measures were prioritised surrounding the need of reducing NO_2 emissions. However, the focus on those measures among available alternatives in the policy stream (Kingdon, 2014) might not entirely follow the problem-framing approach as a one-way direction. The next subsection will discuss how an opposite way of thinking is possible. In that, a policy focus is pre-prioritised and affects the choice of problem-framing to create a nice fit with each other.

V-3.1.2. Fitting air quality management in a holistic development agenda

The UK Government's framing of air pollution as a legal problem and thus tailoring the focus of its responses in ultra-low emission transport seems to fit in with its wider development policy landscape. There are three noticeable key phrases emphasised at the beginning of the UK Clean Air Strategy 2019: 'healthier' (air); 'protecting nature', and 'boosting the economy' (DEFRA, 2019, p. 6). Accordingly, it is set to complement three other strategies of the UK Government: the Clean Growth Strategy, the 25 Year Environment Plan, and the Industrial Strategy (DEFRA, 2019, p. 6).

Air quality is placed first among the goals of the UK 25 Year Environment Plan (HM Government, 2018, p. 4), which favours cost-effective policies by '[joining] up policies in a way that maximises benefits and value for money' (HM Government, 2018, p. 10).

[14] Conducting the interview together with one supervisor for the LUCAS project that this PhD study was situated in.

Accordingly, one of three main objectives to reduce air pollution in that 25 Year Environmental Plan is to '[end] the sale of new conventional petrol and diesel cars and vans by 2040' (HM Government, 2018, p. 24), and the Plan specifically refers to the Future of Mobility Grand Challenge established in the Industrial Strategy 2017 (HM Government, 2018, p. 98), whereas electrification of transport vehicles is one of three infrastructure objectives in the Industrial Strategy (HM Government, 2017). Furthermore, some available funding schemes for the transport sector, especially for switching to ultra-low emission vehicles (regardless of private, public vehicles or taxis) and retrofitting existing vehicles, in the Clean Growth Strategy 2017 are linked to the transport-related measures proposed in the Clean Air Strategy 2019.

As the Clean Air Strategy is the last of those policy documents to be published, the UK Government's focus on NO_2 reduction based on the legal case with ClientEarth and the EU seems to fit the measures in the Clean Air Strategy with the policy landscape already shaped in the other documents. All those plans and strategies together create a prospect of promoting a non-fossil-fuel vehicle market, which is an overlapping measures taken in various governance areas of the UK Government. Therefore, the Government relied on the promotion of non-fossil-fuel vehicles to defend its potential of meeting governance targets and solve problems in multiple areas with the least costs possible.

While Kingdon (2014) argues that the problem stream and policy stream happen independently, the findings in this section add that a focusing event or crisis may trigger a process of problem definition, but that process itself can be influenced by the policies that are already dominant among the alternatives. This study also finds that, in the Nottingham City case, the process to drive the problem definition to fit in with dominant policy options was carried out through some impression management techniques to create an impression of air pollution as a local problem which was mainly caused by local transport. Further discussion of this aspect regarding communicating invisible environmental issues is presented in Section V-4.

V-3.2. China 'airpocalypse': a media crisis and a temporary developmental phase

V-3.2.1. Air pollution as a media crisis

Unlike the UK, China is not legally bound to any stringent international regulations regarding air quality management. However, it does not mean complete freedom from international pressures on their air pollution problems. Before 2013, there had been severe air pollution with visible smog around China, especially in big cities and industrial regions with blooming heavy industries. Air pollution in China has also been shaped as a transboundary issue in academic research. Many studies trace transboundary air pollution and claim adverse health impacts caused by air pollutants spreading from China to neighbouring countries (e.g., Lam *et al.*, 2005 monitoring ozone pollution from the Pearl River Delta to Hong Kong; Lee *et al.*, 2013 tracing PM_{10} blown from China to Seoul; Itahashi *et al.*, 2017 proving transboundary air pollution from northeast China to Fukuoka, Japan in winter 2015; or Altindag, Baek and Mocan, 2017 claiming impacts on infant health in Korea caused by the 'yellow dust' from China).

However, as of 2013, China's governmental system had only monitored PM_{10} as a fine particulate matter indicator, whereas $PM_{2.5}$ was only monitored afterwards. The inclusion of $PM_{2.5}$ in China's air quality management came after a period of sustained social media pressures. The pressures were allegedly initiated by the Beijing-based Embassy of the United States which started posting its self-monitored $PM_{2.5}$ readings on its official Twitter account in 2008 (Kay, Zhao and Sui, 2015; Jin, Andersson and Zhang, 2016). Since then, air pollution reporting in China through both academic research and social media has affected the country's image in domestic and international media. For instance, Chen, Huang and Cai (2014) provide evidence of economic loss for China in various aspects, especially tourism, due to the negative image of their sustainability issues including air pollution in Western media. Whereas Becken *et al.* (2017) reveal how air pollution stains China's image as a destination which international travellers perceive as posing risks to their health and therefore affecting their decisions to visit.

Following the move of the U.S. Embassy to disclose $PM_{2.5}$ readings in Beijing since 2008, social media pressures over the years finally triggered environmental movements in China to call on the Chinese government to improve the nation's air quality (Kay, Zhao and Sui, 2015; Jin, Andersson and Zhang, 2016). The media crisis burst in the period 2011-2013

at the same time as the power transition period of the Communist Party of China (CPC) when Xi Jinping began to rule the CPC. Consequently, the Premier of China's State Council declared using 'iron fists' against pollution in 2013 (Jin, 2013) with the inclusion of $PM_{2.5}$ in air quality management. An international NGO participant also shared her observation of the media's influence on raising awareness and state actions against air pollution in China since 2013:

> 'Although many people may say media may not be proactive but because of what happened here in China since 2013, the media reporting air pollution episodes, they generate the heated discussion on both conventional and social media which attract the attention of officials at the top level. […] Especially now with the information technology, social media, it is very easy to be… communicated then it could easily go viral.' (C19, December 2018)

Thus, the approach of China's government to treat air pollution appears to respond to a media crisis. The government's response was illustrated in a news article titled 'PM2.5 in air quality standards, positive response to net campaign' published by an official state-run press as that the government had listened to and accommodated the public voices (Xinhua, 2012). The news article specifically focuses on the surprising manner of the government's response as if it were a historic achievement or transformation in the Chinese governance system:

> 'A stirring campaign on the country's social network websites since last autumn seemed to have gained a satisfying response from the country's policymakers.
>
> As one of the first to bring the topic up publicly, real estate tycoon Pan Shiyi expressed his surprise about the decision in his microblog, "The order from the State Council? Was I dazzled?"
>
> "Good news, applause," posted Xu Xiaonian, the renowned economist, in his microblog.'
>
> (Xinhua, 2012)

The Chinese government has turned the media crisis over air pollution into an opportunity to legitimate its stricter regulations and create a new impression of a government willing to *listen* to the public voices. That can be seen as another impression management tactic of contrasting past negativity with present positivity. In that, China's government admitted its previous ignorance of public opinion to strengthen its new image of public outreach.

V-3.2.2. Air pollution as a temporary phase in a developmental trajectory

Studying the approaches of different stakeholders, including governmental agencies, to engage in discussions of air quality on the Chinese social media landscape, Kay, Zhao and Sui (2015) contend that the Chinese government utilises social media to create an impression that air pollution is a scientific problem and can be solved by technological advancement without sacrificing economic growth. That argument seems to be necessary for China to tackle the biggest sources of air pollution – the burning of coal and other fossil fuels for energy generation and vehicles (Schreurs, 2017, pp. 164-165).

Zheng and Kahn (2017, pp. 71-73) find that levels of $PM_{2.5}$ emissions (together with other pollutants and carbon dioxide) have increased along with the increase of coal consumption in China between 1980 and 2012. By 2012, China consumed almost 'as much coal as the rest of the world combined' (Ibid.). The amount of coal consumption in China in 2019 (approximately four billion tons) is even higher than that in 2012 and accounts for 58% of primary energy consumption in China in 2019 (EIA, 2020). As its economic growth targets keep on increasing, China needs to increase energy consumption accordingly. Meanwhile, China's energy generation still relies heavily on coal burning. Therefore, the burning of fossil fuels in industry, coupled with the amount consumed and emitted by vehicles, remains the biggest source of air pollution in China (Wang and Hao, 2012; Wan *et al.*, 2019). However, it is also the backbone of China's rapid economic growth.

In that context, air pollution in China is also framed as part of an inevitable developmental trajectory as if to justify temporary air pollution along with economic growth. A Shanghai-based researcher in low-carbon development argued that the blooming of air pollution from industries, which was the largest pollution source in China as of 2018, was partly an unavoidable consequence of a process through which pollution-intensive industries were moved from some highly developed countries (he emphasised the United States, where he conducted his doctoral study, as a notable example) to China as it became the world's biggest manufacturing country (C08, November 2018). His opinion echoes an argument of global environmental injustice resulting from the externalisation of environmental costs for pollution-intensive industries and hence environmental degradation from developed industrial countries to less developed countries (Roberts, 2007; Jorgenson, 2016).

However, environmental pollution as a trade-off for economic growth was socially acceptable during a period of China's history before the government's declaration of using 'iron fists' against pollution in 2013, even from the perspective of a foreigner living in Shanghai for several years:

> 'What I know is that the Chinese government has *definitely* done a brilliant job in lifting millions of people out of poverty and bringing them to decent levels. […] Maybe there have been […] environmental impacts because of their actions but at least people have been lifted out from dire poverty and are provided with basic necessities in many cases.' (C09, November 2018)

After a long history of heavy pollution, China's government has been making efforts to win the war against pollution, however, in ways that would not reduce economic growth, which needed to be maintained at a 'medium-high rate', as the government aimed to 'ensure that China's 2010 GDP and per capita personal income double by 2020' (National Development and Reform Commission, 2016, Chap. 3). Considering that developmental direction while reflecting upon China's 'iron fists' against air pollution would shed some light on its air pollution control tactics to pursue both economic growth and addressing polluting hotspots in big cities.

One of the most common tactics is treating air pollution as a temporary problem that can, therefore, be addressed in the short term. This tactic is carried out through short-term solutions such as temporary closures of heavily polluting factories or significantly reducing air-polluting activities whenever a clean image is needed during important events (Brimblecombe and Zong, 2019). A participant shared his observation which echoes that point:

> 'Every time there is a big international event or a conference happening in [any big city in China], the government comes out with measures to shut down these [polluting] factories, especially in winter… shuts down these factories *temporarily* (he emphasised) as the pollution control measure.' (C09, November 2018)

For another example, APEC Blue once became a term to admire scenes of clear blue skies as a depiction of good air quality in China. The term came after the government's actions to clear as many air pollution-related activities as possible in Beijing and its surrounding neighbourhood before and during the Asia-Pacific Economic Cooperation (APEC) summit in Beijing in November 2014, creating blue skies and good air quality indices recorded for a short period of time (Brimblecombe and Zong, 2019). This

example echoes the use of an 'illustrative' impression management tactic to justify the effectiveness of the government's short-term measures.

Another air pollution control tactic, which appears to be a strong commitment to prioritising environmental quality over polluting industries, is permanent closures or/and relocation of factories that have polluting emissions higher than local air quality standards. However, this tactic, either intentionally or unintentionally, creates pollution displacement against the backdrop of regional disparity in socio-economic development across China. Such regional disparity refers to the situation in which the western and central regions of China go through a later phase of economic development and industrialisation and have lower economic levels than the coastal regions, one of which is the Yangtze River Delta with Shanghai as a key municipality (Li *et al.*, 2014; Wang *et al.*, 2017). Since the 2010s, there have been trends of pollution-intensive industries to be relocated from more economically advanced localities in the eastern and southern coastal cities to their neighbouring less developed localities or to the central and western regions where environmental regulations were less stringent (Ren *et al.*, 2019), together with less social-political opposition of industrial pollution (Zhu, He and Liu, 2014; Shen, Wei and Yang, 2017; Wang *et al.*, 2019).

Ren *et al.* (2019, p. 17) warn that the promotion of industrial structure decontamination in some regions while pushing pollution-intensive industries to others within China 'does not effectively reduce the overall environmental pressure in China'. However, a low-carbon development researcher contends that the phenomenon of pollution displacement in China follows 'exactly the same' mechanism of international migration of pollution-intensive industries on a domestic scale (C08, November 2018). He believes that it will happen until environmental standards are lifted equally across China so that industrial pollution would be exported, making it another cycle of international migration of pollution-intensive industries (Ibid.). Accordingly, from a spatial and temporal perspective, China's tactics to address air pollution could be seen as an approach to living together with air pollution as a temporary phase of a developmental trajectory.

V-4. COMMUNICATING INVISIBLE ENVIRONMENTAL ISSUES

Besides offering flexibility for problem-framing as discussed in the previous sections, the invisibility of air pollution also allows for diverse approaches to presenting air quality.

Meanwhile, the presentations of air quality information can influence people's perceptions of quality levels and motivations to engage in environmental governance or make decisions on their lifestyle activities (Sun, Yuan and Yao, 2016; Pantavou *et al.*, 2018; Lim and Moon, 2020; Yang *et al.*, 2020; Soares *et al.*, 2021). Therefore, public communication of environmental issues is an important element in setting environmental policy agendas.

Departing from an early focus on the roles of offline and online news outlets in policy agenda-setting (McCombs, 2005; Walgrave and Van Aelst, 2006; Pollach, 2014), blooming digital technological advancements have diversified public access to environmental information through myriads of tools and hence enhanced opportunities and capacity for public participation in environmental governance (Mukhtarov, Dieperink and Driessen, 2018; Erkut, 2020). However, Mukhtarov, Dieperink and Driessen (2018) argue that '[information and communication technological] tools alone are not sufficient to trigger change towards participatory governance', while Erkut (2020) warns of the threats of digitalisation and creation of mass public data being 'abuse[d]' by governments for their own agenda-setting.

Such diverse perspectives about the use of digital technologies in environmental information communication inspire this section to explore deeper into how air quality is presented and public communication of environmental information in the Nottingham and the Shanghai cases. It especially focuses on the role of advanced digital technologies in shaping impressions of environmental quality and how public participants respond to them.

V-4.1. Nottingham City case: central-local modelling methodological conflicts and local public communication strategies

There are two main issues found in the communication of air quality and its management to the public in Nottingham. The first one (presented in sub-section V-4.1.1) relates to the conflicts between the air pollution modelling methodologies of DEFRA and local councils in England. Local participants considered those conflicts as the direct rationality for DEFRA to frame air pollution as a local problem and therefore push the compliance duties to local councils. Secondly, in responding to the central mandate focusing on reducing nitrogen dioxide (NO_2) emissions in some locations in Nottingham City, Nottingham City Council (NCC) and civil society actors sought two different tactics for

policy discussion and public communication, given their similar concerns about the invisibility of air pollution. While the NCC prefers simplifying scientific knowledge for better public understanding (discussed in sub-section V-4.1.2), local environmental activists dived deep into air pollution science to strengthen their campaign (see sub-section V-4.1.3).

V-4.1.1. Conflicting air pollution modelling or conflicting governance objectives?

Criticisms of the UK Government for passing the legal compliance duty to local authorities were also linked to the conflicts between the UK Government and local authorities in air pollution modelling methodologies. Although this study focuses on the NCC, it also draws some perspectives from Derby City Council (DCC) to supplement NCC's views because they are neighbouring cities, and both were among five cities besides London to have the highest levels of NO_2 emissions and therefore received the strictest requirement to set up CAZs in the most NO_2 polluted areas. Both city councils opposed DEFRA's modelling results as not reflecting the true picture of local pollution problems. An NCC official explained that:

> 'There were big discrepancies between what our own local monitoring was showing and what their modelling predicted was showing. […] it's just the amount of information and detail that goes into the local model is obviously… it's *significantly* higher than the regional model.' (NCC official, March 2018)

Due to different modelling methodologies, DEFRA's model showed fewer polluted locations (DCC interview, August 2019) and suggested incorrect types of vehicles to be restricted in a CAZ (NCC interview, March 2018) compared to what the local modelling results showed. For instance, in Nottingham City, DEFRA suggested restricting polluting buses, coaches, taxis, and heavy goods vehicles – as Class B in the CAZ scheme (DEFRA and DfT, 2020, p. 29) – on the City's ring road. However, NCC informed that the main vehicles travelling on that ring road were private vehicles and that DEFRA's suggestion would not solve the problem in Nottingham City (NCC interview, March 2018). Meanwhile, a DCC official emphasised a suspect of the UK Government using modelling technology to create a false impression of the air pollution problems:

> 'The other curiosity […] with the way [DEFRA's] modelling is done is that it excluded… Highways England roads… so you can read between

> the lines […] which obviously gave the impression that air quality problems are a localised problem, city centre problem, towns' and cities' issue, which is of course not the case because some of the most polluted roads are the roads that have the highest volumes of traffic and in particular queuing traffic, which needless to say includes some of our motorways and major trunk roads across the UK, which would be Highways England roads. And that, in terms of the message sent out to the public, I didn't think that was a particularly true reflection.' (DCC interview, August 2019)

The participant, therefore, condemned that:

> 'The measures were being designed to solve this legal problem based on all the rules that would have been set by DEFRA and based on their particular modelling methodology that didn't really reflect necessarily the real circumstances within [the city] and across the country.' (DCC interview, August 2019)

Consequently, although the NCC was the first local council to submit a clean air plan proposal by the end of 2018 following the central mandate (Date, 2018), its proposal, nonetheless, rejected establishing a CAZ in Nottingham. Based on its modelling result that was different from DEFRA's, the NCC argued that its ongoing and planned measures would help Nottingham City achieve legal compliance with NO_2 emissions faster than setting up a CAZ (Nottingham City Council, 2018b).

V-4.1.2. Nottingham City Council: simplified policy communication yet inclusive outreach

Despite criticising DEFRA's fragmented and localised approach to air pollution control following the EU and ClientEarth legal challenges, the NCC also focused on NO_2 in public communication. However, the NCC explained that its focus on advocating NO_2 reduction from transport vehicles was not only to follow the central Government's mandate (though it happened to conveniently align with it) but also to simplify the complication of air pollution science in public communication:

> 'With the clean air zone, because it was very much about nitrogen dioxide, we've been able to focus on that one pollutant and just talk about the effects of nitrogen dioxide, which makes it simpler and a bit more relatable to people than trying to introduce particulate matters to them. Obviously, that's harmful too, but that's a decision we made early on because it's just going to get confusing if you're trying to talk to people about multiple different pollutants. It helped as well. Central Government steer was very much about nitrogen dioxide, so we're in

line with that.' (E07, August 2018)

The NCC was also cautious about that simplification approach in a way that preserved technical meanings as much as possible; otherwise, the simplification might 'alienate those audiences that do want the technical information' (Ibid.). Furthermore, the NCC tried to unpack the invisibility of air pollution by advocating policy measures that focus on the visibility of pollution sources and relatability to public interests:

> 'We've been able to focus on the one that [the public are] more interested in. So, for example, one is about proposing an anti-idling campaign, educating people about the effect that idling vehicles have. We tailor that more to the public because that's something that you see when you're walking around. If you've got young children or small children, they're more susceptible to high emissions because of their height.' (E07, August 2018)

Additionally, Lavergne *et al.* (2010) find that environmental policies can also influence citizens' perceptions and intentions of pro-environmental behaviour changes. Such argument is also found in the NCC's perspective. A Nottingham City official argued that the presence of policies such as air quality management areas or clean air zones themselves can draw people's attention to air pollution, either as an existing or potential problem (E01, March 2018). In contrast, eliminating those air quality management areas after achieving legal compliance levels of air quality may cause a misled understanding that air pollution is no longer problematic to be managed (Ibid.). The NCC's perspective implies that there needs to be a consistent presence of policy measures, or existing measures should be sustained to maintain people's awareness and caution of environmental problems.

Furthermore, governmental autonomy-supportive approaches are found to encourage even more autonomous motivations for pro-environmental actions than governmental controlling measures (Lavergne *et al.*, 2010). In Nottingham City, while hesitating to impose charging measures to reduce traffic entering highly polluted areas, the City Council shifted the focus towards information dissemination to empower the public knowledge for autonomous engagement (E01, March 2018; E07, August 2018) and a consistent policy agenda on 'green transport' that considers the usage capacity of citizens with various demographic characteristics (E10, August 2018).

Regarding information dissemination, the NCC considered public consultations not only as a channel to collect public opinions but also as part of its awareness-raising programme:

> 'We need to do a public consultation prior to [submitting NCC's clean air plan proposal to DEFRA], so the public knows what we are going to do, […] trying to elicit people's views on what they perceive as being the air quality problem in Nottingham, and what needs to be done about it, that is part of the awareness-raising program.' (E01, March 2018)

Their rationality is that '[it's] not just keeping them informed of what we're doing, though, it's also trying to engage with people and getting them to understand why it's a good thing and get them supportive of what we're doing.' (E07, August 2018). To keep citizens informed of the City Council's policies and understand them in ways that encourage them to support the implementation, the NCC disseminates policy information through diverse channels and forms from online to offline platforms. However, NCC still finds outreaching the public a difficult task as it is still up to individual preferences and autonomous decisions of accessing the information or not:

> 'The public are difficult, actually, I suppose, because we've got social media and we've got a residents' magazine that goes out to every household in the city. So you can cover everyone that way, but a lot of people don't read these things, or some people will not be on social media. So that's really difficult.' (E07, August, 2018)

Ironically, while the NCC was proud of a city with 'creativity, innovative thinking and visionary leadership' to 'become a leading UK Smart and Liveable City' (Nottingham City Council, 2018c), its official was concerned about citizens refusing to use 'smart' facilities to engage in policy communications. The NCC's officials were aware that it was not possible to force the public to participate in policy communication and implementation. Therefore, although the NCC was found to intentionally draw public attention to the need for tackling NO_2 emissions in transport activities, it still emphasised the essence of empowering the public understanding of air pollution problems through diverse platforms, rather than heavily relying on digital tools, to motivate them to autonomously engage with the City Council and support policy implementation.

The NCC's commitment to information transparency to empower public understanding of the Council's governance activities is shown in the Council's database website called Nottingham Insight (https://www.nottinghaminsight.org.uk/). That website offers free public access to the NCC's policy documents and information categorised by themes of governance fields. Particularly, it is linked to the Open Data Nottingham (https://www.opendatanottingham.org.uk/) where the public can access quantified and monitored data from various fields including DEFRA's real-time air quality map.

To sum up, the NCC opted for simplification in public communication by focusing on NO_2 emissions for easier outreach to quickly gain public attention on air pollution. However, it also provided detailed information on database platforms for those who required details. This seems to prove the NCC's efforts to tailor information delivery for specific types of audiences. However, the subsequent contents will show how civil society actors in the Nottingham case utilised governmental database sources and hence reveal limitations.

V-4.1.3. The civil society approach: Elaborating scientific knowledge to unpack the ambiguity of invisible problems

Nottingham Friends of the Earth (FoE) could be considered as the local environmental group that has campaigned on air quality, among other topics, the longest in Nottingham City with a history dating back to campaigns on polluting incinerators in the 1990s (E02, July 2018). In the campaign regarding the Clean Air Zone (CAZ), despite the central Government and NCC focusing on tackling NO_2 emissions locally, Nottingham FoE members still sought different ways to further explore the science of air pollution to guide their campaigning approach.

Some Nottingham FoE members, based on their general background knowledge and long-term activism experiences in environmental protection, firstly consolidated their knowledge of air pollutants and their impacts by reviewing the scientific literature and governmental reports on air quality in Nottingham City and the UK. Interestingly, while the Nottingham Insight and Open Data Nottingham websites are free for public access, some FoE members were not aware of their existence and only found out via discussions with academic researchers (Fieldwork observations, 2018-2019). They told me that information about those websites was not made well visible to the public, at least in their experience while doing that air quality campaign. Therefore, it was not easy for those who were not familiar with searching skills for research purposes to know where to get the data they needed. Another barrier for members of the Nottingham FoE group to access scientific knowledge relates to scientific publications that were limited to paid and institutional memberships. They usually could only access such materials with help from acquaintances or fellow members who had academic access to paid publications. Their story shows that information transparency and knowledge dissemination is not only about quantity but also presentation forms and dissemination mechanisms to ensure a wide

public outreach.

With access to the government's air quality data, some Nottingham FoE members found insufficient $PM_{2.5}$ monitoring with only two stations installed in Nottingham City. Those members then borrowed a handheld air quality monitoring device from a university to sample air quality of places in Nottingham City that they suspected of potential pollution. The sampling results were surprisingly unexpected to them, who already got some background knowledge of air pollution, not to mention the general public outside this field with even more limited understanding:

> 'We did everything right as far as we could scientifically. […] So we were getting readings of [$PM_{2.5}$ concentration] between 8 to 18 [$\mu g/m^3$]. The World Health Organisation annual mean target is 10, I think its daily target was 25, so you can say on the daily target we're below, we're above the annual. But what was interesting we found was that […] it was not just by the roads, you could go […] a few hundred metres into the housing estates, that is important, you could obviously get [high] readings. […] I would hesitate to use the phrase 'indoor pollution'… […] because most of them are coming from outside, I don't know…' (E16, June 2019)

Through that sample monitoring, coupled with the consolidated understanding of air pollution impacts, especially regarding $PM_{2.5}$, a Nottingham FoE member was concerned that both governmental authorities and civil society campaigns might be misled in, or intentionally, focusing too much on traffic as the main source of air pollution in England and Nottingham City while the science behind it might point to other bigger sources:

> '[T]his is all about $PM_{2.5}$ and it is interesting because the key issues really for $PM_{2.5}$ aren't traffic as such, although traffic is a contributory factor and I think everybody probably or most people in the group want to say 'let's campaign for less traffic', which is fine, it is good for climate change and it is good for noise and it is good for nitrogen dioxide, but if you're trying to deal with $PM_{2.5}$ which is the biggest killer and the worst health risk, it is not traffic, it is probably agriculture and sources from outside.' (E16, June 2019)

Therefore, he emphasised a need for empowering civil society activism to engage more meaningfully and pro-actively in environmental governance through, as he termed, 'citizen science':

> 'Understanding [air pollutants and emission sources] is one of the first things as to say… well actually you can't naively say to the city council 'you have got to deal with $PM_{2.5}$'. […] You can't deal with something unless you know what it is and you monitor it and you measure it, and

> then you see if you can improve it. So, that is what you have to argue that the report (of $PM_{2.5}$ monitoring results which FoE members produced by themselves) is really about saying that the city council should be monitoring and measuring and trying to see where the pollution in Nottingham comes from.' (E16, June 2019)

The approach of Nottingham FoE shows a tactic to make the invisible air pollution in Nottingham City and its possible impacts become visible concerns through citizens' monitored evidence.

The case of air quality communication in Nottingham shows two opposite approaches taken by the NCC and civil society actors. The NCC simplified technical information and focused the public attention on NO_2 to quickly deliver the message of necessary air pollution control. However, the City Council still provided detailed information on online platforms accessible for those who required technical details. Whereas civil society actors consolidated scientific understanding and sought empirical evidence to strengthen their arguments with the NCC and hence improve the weight of their demands for the NCC to take action. Nonetheless, it was not straightforward for them to identify information sources that were open but not widely informed to the general public. The gap between the available information provided by the NCC and the access of the public, represented by some environmental activists, is found to lie in insufficient dissemination mechanisms.

This section also finds an unaligned relation between governmental data transparency and political trust with evidence of digital technological tools being used for tailored purposes. Despite open data platforms with free access for the public, the abundant data did not secure trust of the audiences. Local councils accused DEFRA of deliberately omitting data of pollution outside cities in its air quality modelling results to make an impression that air pollution in the UK was a local problem. This opinion echoes the point made by Talbot and Boiral (2018) regarding the strategic omission of data to create a biased impression of an environmental issue. On the other hand, environmental activists in Nottingham argued that the shortage of $PM_{2.5}$ monitoring stations in Nottingham City produced insufficient data to claim an accurate picture of air pollution in the City while the Council focused too much on NO_2 emissions instead. That raises another impression management tactic discussed by Talbot and Boiral (2018), in that, a reporting entity drives public attention away from unmeasured emissions by focusing on the significance of the measured one(s).

From a governance perspective, such critical interactions between state and non-state

actors in the Nottingham case are made possible by a political system that enables political independence for local authorities and civil society actors to take critical stances against the central Government. That makes a difference with the responses of non-state actors in the Shanghai case discussed below regarding government-influenced environmental information.

V-4.2. Shanghai: Technology shaping public perceptions

V-4.2.1. State-incentivised social attachment to technological applications for living convenience

One noticeable remark spotted in my fieldwork in China is that technological applications seemed to significantly influence the lifestyles there. Following a central political direction of boosting technological advancement as a key foundation for China's development (China's National People's Congress, 2011, Chap. 1; National Development and Reform Commission, 2016, Part II), technological innovations have been applied in many aspects of life in China, ranging from macro governance to individual daily activities. The nationwide smart city strategy has come with educating and incentivising citizens to enjoy technological applications.

A research participant used to work on information technology initiatives as an official of Shanghai government for more than ten years up to 2016 (C01, October 2018). He was involved in a programme of the Shanghai government to deliver a series of open and free public lectures for citizens to learn about different uses of technological applications that the Government would employ in social governance, as well as those that could enhance the convenience of life for citizens (Ibid.). He also gave an example of WeChat – an all-in-one mobile application that has transformed lifestyles in China. WeChat not only serves as an instant messaging programme but also incorporates other services including banking, online shopping, service booking, location tracking, news, social media interactions, etc. Consequently, participant C01 informed that, as WeChat was used by most people in China for its superior convenience, it also became an effective mechanism for governmental policy communication and propaganda, as well as monitoring policy implementation through the services and utilities incorporated in WeChat (C01, October 2018).

It appears that Chinese residents are becoming attached to the convenience of life that technological instruments such as WeChat brought to them. Such attachment to technology is so influential that people tend to trust environmental quality information provided by technological applications than individual experiences, especially when the pollution and its impacts are hardly recognisable through human senses. An expatriate participant shared his observation of a shift in public perceptions of air pollution in Shanghai through their habits of using air quality tracking applications:

> 'I have a lot of friends who like outdoor activities, who run a lot, so their first discussion [in the past] would be 'should we go out running today? Let me check the air quality', but nowadays I don't hear that so much, if people want to go out, they just go.' (C09, November 2018)

Meanwhile, a health scientist researching the health impacts of air pollution recommended me an application to check real-time air and water quality across China using the government's monitored data:

> 'The [data] sources are from the government, the NGO collects information from different government agencies, they just combine the sources together in one platform so that is the one they do. So, it is good, I think. I like that app.' (C10, November 2018)

He also complimented the efforts of China's Government in developing 'the largest air pollution monitoring network' that lifted China to 'even a better position than [the] US' 'in terms of data sharing' because they 'can get access to a lot of the environmental data' (Ibid.). From the example of the public relying on air quality tracking applications mentioned above (C09) to this scientist's compliment for the Government's environmental monitoring infrastructure, there seems to be a usual practice of using governmental data in China. Such prevalent usage of, or reliance on, state-driven environmental information in China reflects the Government's priority on using technological advancement as a key pillar in China's development agenda, including addressing environmental problems.

While there is an abundance of environmental data disclosures in China, most (if not all) officially used data are from the same source: the Government. However, there still might not be a firm 'trust' in governmental data. For instance, a participant from an international NGO appreciated that China's governmental data was greatly helpful for their annual reports of the status-quo of environmental quality in China:

> 'The reason we could do that (completing annual reports of almost 300 cities) is thanks to the information disclosure done by the Government, all of the data and policy information used in series of annual reports we collected from public sources, from the government[al] websites, officials' speeches, just everything official and public.' (C19, December 2018)

They even '[did not] cross-check the data', however, with a different reason rather than trust:

> 'because we release the report for the public every year, and for *that single purpose* we have to use the data released by the Government, then the Government couldn't question the basis of our analysis, this is for that series of reports. If you ask us for other work, if we have cross-checked them for some research, we will, yes.' (C19, December 2018)

Referring to the political context of China as of 2018 (corresponding to the fieldwork time of this study) presented in Chapter IV, the above international NGO's approach to only use governmental information for annual reports of air quality in China could be understandable for two reasons. Firstly, under China's strict civil society regulations, particularly those imposed on international organisations, it might be risky for an international NGO to create an 'image' of air quality in China without using state-verified-and-permitted sources – obviously meaning state-controlled monitoring stations. Secondly, as this particular international NGO has formed a long-term and active collaborative relationship with the Chinese central and local governments (C19, December 2018), these annual reports using governmental data could serve as a diplomatic instrument to strengthen that relationship, for it acting as the organisation's technical support for the Government to communicate its air quality status domestically and internationally.

On the one hand, my findings support Cho *et al.* (2018) that environmental information disclosures with an abundance of data which are advantageous for the reporters can help to conceal their negatives and direct the public attention away from their problems. On the other hand, that approach is only possible in specific political environments such as an authoritarian one like China's system. Indeed, the Nottingham City case also witnesses a phenomenon of abundant but biased data disclosures; the civil society actors therein, nonetheless, took critical stances with challenging actions rather than mere acceptance.

V-4.2.2. The ambiguity in managing and using data on invisible pollution

Given the usual influence of state-controlled data discussed above, this study encounters some issues with public environmental data in China that can challenge its validity and reliability. For example, even those non-governmental organisations, who use governmental data, alert threats of invalid and unreliable data collected from monitoring stations that are deliberately placed in cleaner locations, as a participant informed a past incident:

> 'Part of what the central Government inspections found is that in many cities they would do methods like they would put [monitoring equipment] somewhere that was extra clear.' (C13, November 2018)

Evidence of some Chinese local authorities manipulating or falsifying air quality data was also found in other research studies. For instance, Ghanem and Zhang (2014) found some Chinese cities manipulating PM_{10} data between 2001 and 2010 'since PM_{10} is the primary culprit of non-blue-sky days in the majority of Chinese cities' while 'blue-sky days' was part of the performance evaluation indicators for local officials at that time (Ibid., p. 205). Whereas Turiel and Kaufmann (2021) found practices of local data falsification and misreporting of air pollution by various methods including manipulating monitoring sensors. Importantly, they discovered that such data falsification practices have been conducted both before and after 2012-2013, the milestone period leading to China's declaration of the war against air pollution, with some misreporting incidents found even up to 2018 (Ibid.).

Another threat relates to environmental data disclosure and presentation for public communication. As previously discussed, most, if not all, organisations in China use the Government's environmental data collected by state-controlled monitoring stations. However, it is up to each organisation to decide what data sources to use, what data compilation and analysis methodologies to take, and what results to present to the public. The content below presents an example of possible different *impressions* of air quality at one location – the central area in Shanghai surrounding the People's Square – being reported at the same time (16:00 local time on 15 July 2019) by different digital applications owned by different organisations.



Figure 14. View from the front area of the Shanghai Museum in the People's Square neighbourhood

(Source: Author's photo, taken in October 2018)

Figure 15[15], Figure 16 and Figure 17 show screenshot images of three maps presenting the Air Quality Index (hereafter AQI) in the neighbourhood of Shanghai People's Square area at 16:00, 15 July 2019. Shanghai People's Square neighbourhood is chosen for this small investigation due to its central location that hosts some of Shanghai's key amenities (e.g., Shanghai People's Government office, Shanghai Museum, Grand Theatre, etc.) as well as people's daily activities, including physical exercise and walking tourists in Shanghai.

An AQI at a location at a specific time is calculated from concentrations of various air pollutants, including NO_2 and fine particulate matter ($PM_{2.5}$ and PM_{10}), in that condition. Countries may develop different scales of AQI corresponding to their air quality standards. When visualising the AQI to the public, such as in the maps below, AQIs are translated into colour codes. All three maps below label Green as Good air quality, Yellow as Moderate, and Orange as Unhealthy for Sensitive Groups.

[15] By the time this screenshot was taken, the IPE real-time map was still freely accessible outside China. However, when I checked it again in 2021, the map seemed only accessible with a registered Chinese mobile number as my foreign number always failed to receive an activation text message.

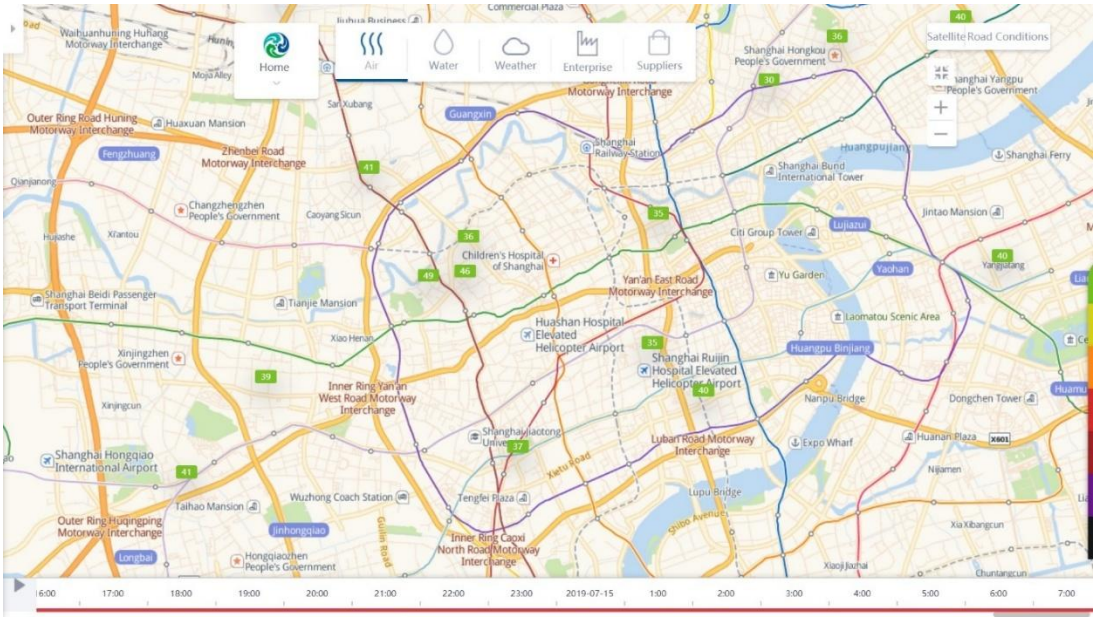


Figure 15. Screenshot image of the IPE map showing the air quality index in the neighbourhood of Shanghai People's Square area at 16:00, 15 July 2019

(Source: Institute of Public and Environmental Affairs Blue Map: http://wwwen.ipe.org.cn/AirMap_fxy/AirMap.html?q=1)

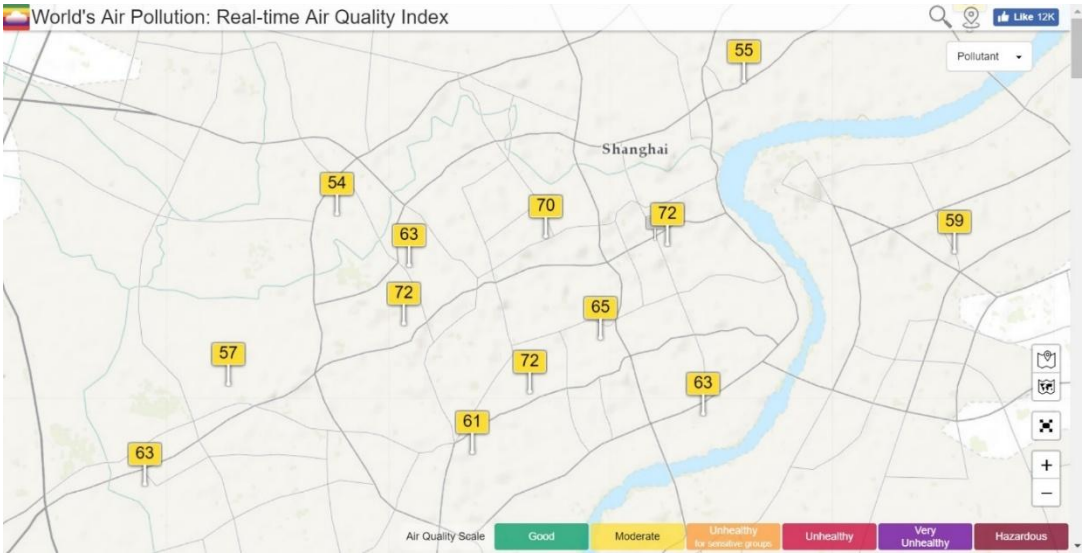


Figure 16. Screenshot image of the World's Air Pollution map showing the air quality index in the neighbourhood of Shanghai People's Square area at 16:00, 15 July 2019

(Source: World's Air Pollution: https://waqi.info/)



Figure 17. Screenshot image of the AirVisual map showing the air quality index in the neighbourhood of Shanghai People's Square area at 16:00, 15 July 2019
(Source: AirVisual Map: https://www.iqair.com/air-quality-map)

Despite presenting the air quality at the same place and time, only the top map shows all Green (good quality), while the other two show all Yellow (moderate quality) with higher AQIs than on the top map. The top map is developed by the Institute of Public and Environmental Affairs (hereafter IPE), a Chinese non-profit organisation specialising in 'collecting, collating and analyzing government and corporate environmental information to build a database of environmental information' (Institute of Public & Environmental Affairs, 2021). The middle map is created by the World Air Quality Index (WAQI) Project, an international network that originated in Beijing. The bottom map belongs to AirVisual, which is part of IQAir. Interestingly, IQAir is a private Swiss corporation specialising in air purifiers and air quality solutions.

Compared to the other two maps, AirVisual's map shows data of fewer monitoring stations in the same area, but it shows the highest AQI (88) therein. This example does not assert a relation between the choice of air quality data presented on AirVisual's map and its company's business in air quality technology. However, it might not entirely be coincident as a similar tendency of businesses' engagement in public communications for environmental issues is found in the study of Kay, Zhao and Sui (2015). Through studying the engagement approaches of the government, companies, NGOs, and individuals in the Chinese social media landscape regarding air pollution, those authors find that companies selling products and services relating to air quality such as air-related well-being, beauty and hygiene tend to be the most active to engage in air pollution-related

discussions and advertisements in ways to benefit their businesses.

Winter, Le and Roberts (2021) explain in more detail the differences in the choices of monitoring stations and the presentations of main pollutants between the above maps/applications that created different impressions of the air quality in the Shanghai People's Square area at the same time. Nonetheless, the comparison of these three maps does not aim to analyse their technological features. Instead, it highlights a warning that air quality information for the same place and time can be communicated differently and hence create different impressions. Variations in impressions of air quality can lead to variations in public perceptions that may influence individual actions concerning air pollution. For instance, if a person with a health condition sensitive to air pollution checks the above applications before visiting the People's Square for exercise, the IPE's map advises much more positively than the AirVisual's map. This example, therefore, raises a concern of ambiguity in communicating information about environmental issues that are invisible to human senses and that technological representations can be exploited to shape public perceptions of environmental quality.

V-5. CHAPTER SUMMARY

This Chapter first presents the perspectives of participants from both state and non-state sectors regarding their perceptions of air pollution and the potential threats of its invisibility to public concerns and management approaches. While air pollution in Nottingham City has been physically invisible for a long time, Shanghai witnessed a visibly recognisable shift from heavy air pollution to cleaner air quality with many more blue-sky days just within five years from 2013-2018. In other words, the changing process of the visibility of air pollution in China seems to follow a transitional path like air pollution in the UK, which has passed the visible phase in post-industrial times. Therefore, a common worry observed from both cases is about decreasing public awareness of air pollution and its impacts, which leads to decreasing public concerns and motivations to contribute to tackling air pollution.

However, there are differences in deeper layers of those concerns between the Nottingham and Shanghai cases. Both state and non-state actors in Nottingham City were aware of and worried that complicated scientific knowledge behind invisible air pollution might hinder public participation in improving air quality. Meanwhile, civil society actors

in the Shanghai case explained that the decreased public concerns about air pollution are a consequence of public satisfaction with the government's performance in making visually visible improvements for air quality. From a public governance relationship perspective, while actors in Nottingham were concerned about how to improve public participation in governance, the story in China shows a direction of the public relying on the Government's actions and enjoying the outcomes.

The Chapter then discusses different ways of framing air pollution in the two cases. Air pollution in Nottingham City was framed in a legal case in which the UK Government failed to meet the EU and UK statutory level of nitrogen dioxide (NO_2) emissions since 2008. Meanwhile, air pollution in Shanghai, as well as across China, was considered as creating an international and domestic media crisis at its peak in 2013. Framing air pollution as a problem of legal compliance, the UK pressured Nottingham City Council to focus on reducing NO_2 emissions to meet the High Court's mandate, whereas China and Shanghai focused on reducing $PM_{2.5}$, the main pollutant that causes the popular heavy smoggy image for China, in response to the public pressure through the media. Regardless of different motivations and responses, both cases show a tendency of fitting air pollution mitigation measures in their existing local and national policy landscapes that can support their ongoing development agendas.

Furthermore, the invisibility of air pollution, coupled with the complicated science behind it, opens opportunities for diverse approaches, and even ambiguity, to communicating air quality to the public. Nottingham City Council simplified the information surrounding air pollution, focusing on NO_2, in public communication to direct the public understanding and attention to specific policies. Local environmental activists in Nottingham, however, advocated for empowering public participation in air quality management by providing more knowledge and information that could better reflect the complicated image of air pollution in Nottingham. Meanwhile, there is a widespread attachment to information technology that shapes modern lifestyles in China. Technological applications used in environmental management could also influence people's perceptions of environmental quality and their motivations for participating in tackling environmental problems. However, the examples observed in this study alert some threats of exploiting digital technological advancements to create different impressions of the same environmental issue at the same place and time, probably with different underlying purposes.

Both case studies find governments' strategies for promoting environmental information

transparency, but there is no absolute political trust found in either case. However, civil society actors in the two cases respond differently to the disclosures and presentations of government-influenced environmental information despite those overall similarities. When civil society actors in the Nottingham case were critical of governmental information, they took actions to seek additional data sources for cross-checking and even created their own data set as empirical evidence to strengthen their arguments with state actors. Meanwhile, civil society actors in the Shanghai case seemed to accept the use of the government's data regardless of trusting them or not. Given such perceptions and approaches of civil society actors to government-influenced environmental information, the next Chapter will explore how they perform their environmental activism accordingly.

CHAPTER VI – NOTTINGHAM CITY AND SHANGHAI RESPONDING TO MULTILEVEL ENVIRONMENTAL GOVERNANCE PRESSURES

VI-1. INTRODUCTION

> 'One of the problems really is the lack of political will that many are unable to take the bold decisions that are needed. […] Many local authorities' and cities' leaders are calling for more power to tackle air pollution when they are not really willing to use their existing power appropriately.' (An environmental non-governmental organisation, London, February 2019)

That comment was raised at the 2nd Air Quality Forum held in London in February 2019, near the due time for English local authorities, who were identified as having or potentially having exceeding levels of nitrogen dioxide (hereafter NO_2) concentration locally, to start implementing mitigation measures that would help them, 'as soon as possible', comply with the legal NO_2 limits which they have failed to meet since 2008 (*ClientEarth v. UK Government [2018] EWHC 398 (Admin)*, 2018). However, only two local councils, including Nottingham City Council (hereafter NCC), submitted clean air plan proposals in 2018, while the others were still struggling with the puzzles of power and resources to take action.

Meanwhile, Shanghai reduced its annual average levels of fine particulate matter smaller than 2.5 micrometres in diameter ($PM_{2.5}$) by 40% to 36 $\mu g/m^3$ between 2013-2018 despite still keeping its major industry – iron and steel – which is also among the main sources of air pollutants (Shanghai Municipal Bureau of Ecology and Environment, 2019). As presented in Chapter IV, Shanghai celebrates a certain level of autonomous power within the Chinese governance system due to its special roles in both political and economic aspects that might aid its achievements in air quality improvement. However, it is still under the ultimate control of the Chinese Communist Party and the central Government which impose stringent air pollution control mandates on it.

Following the approaches of problem-framing and perceptions of air pollution discussed in Chapter V, this Chapter will investigate the approaches to addressing air pollution in the two cases of the UK/Nottingham City and China/Shanghai. Although air pollution was initially recorded locally and hence caused problems for local communities, recent stories of air quality management in Nottingham City and Shanghai were triggered by specific mandates from their central Governments. Therefore, this Chapter analyses how the governance contexts in which Nottingham City and Shanghai were situated (see Chapter IV) relate to their responses to air pollution problems. Furthermore, while air pollution provides the backbone storylines, it also leads to wider environmental governance concerns following the participants' stories and perspectives.

For an outline, Section VI-2 discusses the Clean Air Zone story in the Nottingham City case, followed by Section VI-3 about the air pollution combat in the Shanghai case. Section VI-4 then provides an analysis of how social issues are considered in environmental governance in the two cases. Finally, Section VI-5 will summarise the Chapter.

VI-2. THE CLEAN AIR ZONE STORY IN NOTTINGHAM

The UK Government decentralises air quality management with a view that '[h]igh concentrations of air pollutants are found in certain places for a host of local reasons. Local authorities know their areas best and are best placed to take the lead in rectifying the problem.' (DEFRA and DfT, 2017b, p. 12). That argument assumingly binds most air pollution to local administrative boundaries. Meanwhile, local participants pointed out greater NO_2 emissions probably coming from queuing traffic on the motorways outside their cities (E08, August 2018; E17, August 2019). Given such conflicting stances, the data presented below show two main story streams regarding the decentralisation of air quality management following the UK legal failure during 2016-2018: (1) how the UK Government decentralises air quality management; (2) local responses to the central air quality management policy mandate.

VI-2.1. Decentralising air quality management in England: decentralised governance authority or legal compliance pressures?

VI-2.1.1. Decentralising duties – Pushing a central policy mandate to local policy agendas

Following ClientEarth's legal challenge against the UK's non-compliance with the EU standard for nitrogen dioxide (hereafter NO_2) emissions, DEFRA ran the Pollutant Climate Model (PCM) to identify locations with current and potential breaching of NO_2 emission limits. The PCM results showed non-complying emission levels in five cities outside London (Nottingham, Derby, Birmingham, Leeds, and Southampton), and then expanding the list to cover 45 cities with potential non-compliance (DEFRA and DfT, 2017b; *ClientEarth v. UK Government [2018] EWHC 398 (Admin)*, 2018). DEFRA required those local authorities to develop plans to reduce NO_2 levels at current and/or potential exceeding locations. Particularly, five aforementioned cities having the highest NO_2 emissions outside London Clean Air Zones were mandated to establish Clean Air Zones (hereafter CAZs) (DEFRA and DfT, 2017b). The CAZ policy includes charging or non-charging restricted areas to limit polluting fossil-fuel vehicles, which are classified into four classes A, B, C, and D depending on the types of vehicles (DEFRA and DfT, 2017a). The strictness levels increase from A (only covering buses, coaches, taxis, and private hire vehicles) to D (covering all types of vehicles including private cars).

The abovementioned process seems technically logical for an evidence-based policy-making approach when DEFRA used its modelling results to prove highly polluting localities. However, in one interview with an official of the Joint Air Quality Unit set up by DEFRA and the Department for Transport to deliver plans for NO_2 emission reduction (Holder, 2016), the official confirmed that '[the position] that air pollution is very local is already part of the [air quality] policy framework (discussed since 2015)' (E13, February 2019). That contributes to explaining the UK Government's determination to identify local councils with the highest pollution levels while neglecting pollution outside cities. Furthermore, participant E13 informed that the original ideas behind the CAZ policy framework, dated back to 2015, relate to the UK's efforts to increase the emission standards for traffic vehicles across the UK by charging vehicles below certain standards for accessing CAZs. Governmental discussions regarding decentralising air quality management up to 2017 accordingly focused significantly on imposing the CAZ policy in

cities, particularly those with proven existing or potential emission levels that were higher than the UK's legal limits by 2020 (Ibid.).

DEFRA has conducted multiple discussions and consultations with stakeholders, especially local councils, through various channels including formal surveys, meetings, or informal communications regarding the capacity of implementing the CAZ policy (E13, February 2019). Stakeholder consultations resulted in more flexibility in DEFRA's approach to the CAZ mandate, which allowed local councils to seek the best suitable measures for their conditions other than CAZs as long as those measures are 'at least as effective at reducing NO_2' and 'will deliver compliance as quickly as a charging Clean Air Zone' (DEFRA, 2019, p. 83). However, an insider of DEFRA's air quality policy team shared that the government still considered the CAZ policy as the fastest way to legal compliance for local councils and therefore making it the benchmark policy – the least that local councils should do (E13, February 2019).

However, that decentralisation approach was ambiguous for local authorities to develop air quality plans, not to mention implementing them. The analysis of interview data and policy documents reveals that such ambiguity was driven by issues surrounding the timing and resource allocation for policy-making during the UK air quality management story. The next section will discuss these two inter-related aspects that pose challenges for local authorities.

VI-2.1.2. Time lags in policy-making and ambiguous resource allocation for local air quality management

One of the key requirements in the UK air pollution legal case was the urgent timing. Phrases depicting the urgent manner such as 'achieve compliance as soon as possible', 'urgent' or 'immediate' (action) appear throughout the High Court's ruling report of the ClientEarth trial case, relevant policy documents (including the UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations 2017) and interview participants' responses. Consequently, English local authorities (including NCC), where exceeding levels of NO_2 emissions were recorded in DEFRA's modelling, were required to produce local clean air plans 'as soon as possible' during 2017-2018 to allow for immediate implementation from 2019 to reach compliance by 2020.

From the Government's perspective, the CAZ policy is advocated because '[the

Government] kind of [knows] the effectiveness of it to a certain degree and how quickly it can be implemented' (Interview with a governmental official, February 2019). However, from a local perspective, the CAZ does not only mean setting up a spatially restricted zone and neither is a quick solution. At the 2nd Annual Air Quality Forum held in London in February 2019, where representatives of the UK Government, local councils, NGOs, and policy consulting agencies gathered to discuss clean air plans development, the representatives of local authorities argued that setting up CAZs indeed took time for planning and establishing infrastructure for management (e.g., monitoring cameras, censoring systems, etc.) (fieldwork note, February 2019). In an interview, one NCC councillor also stressed a need for developing supporting public transport infrastructure to create seamless traffic connections with traffic-restricted zones or to provide alternative options, which opposes the 'as soon as possible' requirement of the clean air trial case:

> 'The pressure as far as clean air is concerned is for it to be done NOW *(the respondent emphasised)*, […] you have got to have those measures in place (by the end of 2019), … you can't build a whole tram line in a year!' (E10, August 2018)

The situation was especially worsened by the Government's slow-paced and ambiguous policy-making, which created time lags between the government's policy development requirements and the provision of supporting tools for local authorities to implement them. Specifically, the UK Government mandated some English local authorities to develop their clean air plan proposals (which should have included CAZs) from 2016-2017 without publishing clear guidance documents, especially on what the government could support local authorities with at that time. Not until May 2017 did the Government publish the Principles for setting up Clean Air Zones in England (DEFRA and DfT, 2017a). However, specific financial support schemes for local authorities to develop and implement their proposed measures came even later in the Clean Air Strategy 2019 (DEFRA, 2019) – after the Government's deadline for local authorities to submit clean air plan proposals.

That time-lagging policy development put the involved local authorities in a 'chicken-and-egg situation' (fieldwork note - 2nd Annual Air Quality Forum, 2019). The metaphor was elaborated in this case that CAZs would not reduce traffic congestion by themselves without other policies in place, e.g., cycling and public transport infrastructures. Meanwhile, revenue from charging zones would be inadequate to fund those supporting

systems 'immediately'. Therefore, without the government's clear support prospect, local authorities found it almost impossible to draft plans that they were not certain about how to implement them. Referring to that ambiguous governance situation, a local environmental activist commented:

> 'The City Council hasn't really told us what they are doing because they don't know what they are doing because the government is not very clear.' (E02, July 2018)

Furthermore, it may also take a long procedure for local authorities to bid for existing central funding schemes, and again, with uncertainties of being successful. A participant expressed 'frustration' over a government's bidding procedure that further slowed down local air quality policy-making and implementation efforts:

> 'This has been one of my personal big frustrations with the national plan that local authorities have had to design measures, justify what they were planning to do, bid for money, maybe unsuccessful pots of money, DEFRA refusing plans where they didn't think that was the right measure to go for, not necessarily giving all of the right money to be able to implement the measures.' (E17, August 2019)

Indeed, among other reasons, that time-consuming policy-making practice has partly made 'successive governments [fail] to do enough' to address air pollution, which 'was supposed to be cleaned up over eight years [before 2018]' to comply with the EU limits (ClientEarth, 2018).

The ambiguity in the government's support schemes for local councils to implement its mandates, coupled with other challenges that local authorities and civil society actors have endured over a decade under the Government's austerity policy since 2009 (see Chapter IV), seems to intensify local dissatisfaction towards the Government's air quality management approach right at the beginning. Indeed, most criticisms just focused on potential threats such as fragmented management and displacement of pollution in the Government's initial CAZ policy proposal in 2016-2017 and the Government's act of passing the EU legal compliance duty down to local authorities. Meanwhile, other matters surrounding the whole air quality management strategy were not mentioned by any interviewees of this study. The next section will present more details of local political resistance against the central policy mandates following the challenges imposed on local authorities as discussed earlier in this section.

VI-2.2. Local responses to central policy mandates

VI-2.2.1. Local political resistance

Responding to the UK Government's approach to decentralising air quality management, local actors in Nottingham City asserted that the Government just intended to transfer the legal compliance duty to local authorities rather than implementing a strategic devolution of air quality management. Both state and non-state actors criticised:

> '[The Government has] then pushed responsibility down onto local authorities. It was a requirement put on us, mandated by the Government so that *they (she emphasised)* can meet their low emissions targets, otherwise, they are going to be in trouble in 2020.' (E10, August 2018)

> 'The Court has told the Government you have got to produce this [air quality] plan by the end of [2018] (as of the time of this interview)[…] The pressure has been transmitted down, hasn't it? From the Court to national Government to a City Government.' (E08, August 2018)

A local environmental activist even criticised the Government's act as seemingly to buy time for escaping the EU legal fines after Brexit (which, at the time of the interview, was expected to happen by the end of 2019):

> 'It can be fined quite a lot of money by the EU for not complying, so they at least… while we're in the EU, have to make it seem as though they are doing something, […] the minimum necessary to comply with the limits that will no longer apply because we'll be out of the EU by the time it's gonna be implemented.' (E02, July 2018)

Particularly, the comment of participant E10 expresses an opposition attitude of Nottingham City's Labour-led Council against the UK Government and implies a separation between the local and the central governmental levels. There was another instance when she addressed the UK Government as 'their government' which refers to a Conservative-led Government of only two Conservative councillors in NCC.

Given the challenges imposed on local authorities in England from the aftermaths of the government's austerity policy era (see Chapter IV) to the ambiguous decentralisation of air pollution control duties, most of the involved local authorities including NCC expressed resistance to the Government's CAZ mandate due to insufficient power for them to take strong actions such as setting up charging zones to restrict polluting vehicles into certain areas (E10, August 2018; fieldwork note – public event observation, February

2019). In contrast, an environmental NGO representative condemned that what those local authorities lacked was the 'political will' to take 'the bold decisions that are needed'. From that perspective, the NGO representative viewed that those local authorities kept asking for more power while not using their existing power 'appropriately'.

Both sides were right to a certain extent, though not entirely, when connecting the challenges arising from the Government's ambiguous decentralisation approach with the English governance context presented in Chapter IV. Local councils have close, or at least direct, political relationships with their residents and are independent of central control regarding their political and institutional arrangements. Therefore, if any government's policy mandates are unfavourable for either local authorities or citizens, local political opposition can be expected. The NCC's opposition stance is not only symbolic but also transferred to their responding approaches to the government's policy mandates. At the beginning of the CAZ policy negotiation when the NCC was still considering what class of CAZ they would have gone for (providing that they would have had one), an NCC official shared that:

> 'One of our politicians announced that we definitely won't have a class D, which is private motor vehicles, not sure on what grounds.' (NCC official, March 2018)

That information implies a possibly fixed political stance of NCC against having the strictest CAZ class (i.e., covering all motorised vehicles including private cars) whatsoever. A similar resistance against a charging zone was also taken in Derby City Council (DCC), especially when there has not been absolute dominance of voters to ensure re-election for any in-power council leaders:

> 'We have gone through two different administrations and both of them didn't want to implement a charging-based system in Derby. […] So as soon as that (establishing a CAZ) wasn't the case (i.e., proven by its modelling results) then that was probably never going to happen in Derby just because there was no political will to do it … various reasons but… yes so that was the position anyway.' (DCC official)

Such local resisting attitudes might hinder the government's efforts to push its policy ideas which are prioritised in the central policy agenda to the local ones. However, the combination of the governance context with the UK Government's decentralisation approach seems to create a situation in which local policy-making tended to be motivated to follow the central agendas. Section 3.1 will discuss this matter in more detail.

VI-2.2.2. Nottingham City: survival environmental commercialisation and funding-driven policy-making

VI-2.2.2.1. Environmental commercialisation for 'survival'

Against the austerity backdrop, continuous cuts of central funding since 2010 have imposed a shortage of human and financial resources on English local authorities and hence forced them to take mitigation measures. Most English local councils had to privatise the delivery of public services as the councils could not afford that themselves (Cauvain, 2018). However, the privatisation of some essential public services was found to generate adverse impacts in both social and environmental, and sometimes, even economic aspects (Cardy, 2010; Barrett and Wallace, 2011; Li and Stittle, 2014; Bayliss, Mattioli and Steinberger, 2021). Nottingham City Council (NCC), nonetheless, managed to avoid the wave of privatisation by pursuing *environmental commercialisation* to take environmental measures that can generate income for the City Council to self-fund other services (Winter and Le, 2019).

For example, NCC has been committed to a long history of 'green' policies surrounding energy and public transport even throughout the austerity period, and the Council's Energy team was said to play a focal role in realising that approach (E10, August 2018). Particularly, the Energy team pursued an 'entrepreneurial' mindset 'to generate income for the council' by providing consultancy services to '[advise] companies and organisations on how to be more sustainable and implementing sustainability' (E10, August 2018).

To maintain good performance records in environmental governance under financial constraints, NCC also reduced carbon footprints in its operation and implement its own sustainability policies through in-house services provided by the Energy team (E10, August 2018) and its non-profit companies such as Nottingham City Homes (E03, July 2018). Some other important examples of the NCC's environmental commercialisation approach include Robin Hood Energy (which makes the NCC the first local authority in the UK to own a non-profit energy company to address fuel poverty – i.e., relating to home-heating costs for low-income households (Hinson and Bolton, 2021)); the Workplace Parking Levy scheme whose revenue was spent on the development of the city tramlines; co-owning the biggest public bus company in the City to maintain control

over prices and emission standards; and having a social housing company (Nottingham City Homes) working on tackling fuel poverty (Cauvain, 2018, pp. 247–248). The NCC's ownership of major public services to sustain its self-funding capacity is a different path from a popular tendency of privatisation in many other local councils in England (Cauvain, 2018).

Nevertheless, NCC did not have the entire freedom to 'make an open commercial decision' even when it was feasible and beneficial for both the Council and citizens (E03, July 2018). NCC's struggle with environmental measures in social housing is an example. The City Council conducted projects that supported poor households to reduce energy consumption, which theoretically would allow the Council to increase annual rent prices at a lower rate than the amount of money that those households could save from energy bills. Revenue from increased rent prices could then be used to fund other retrofitting projects. However, the UK's fiscal control did not let that happen because the UK Government wanted local authorities to reduce rent prices of social houses until 2019 to help cut the Government's expenses on the housing benefit scheme. In other words, NCC's environmental commercialisation approach is sometimes hindered by the central Government's mechanisms of fiscal control.

In brief, as of 2019, NCC was in a dilemma. Even when it wanted to avoid privatising public services to address resource shortages for the public interest, it could neither fully take its desired alternatives which might affect the Government's budgets. While no local approach was a fully possible option to implement NCC's policy agenda, the central Government's options that brought along funding opportunities were considered. The subsequent section will discuss that funding-driven policy-making approach.

VI-2.2.2.2. Funding-driven policy-making

Facing financial constraints in the context of the austerity policy since 2009, NCC found it unfavourable to establish CAZs. The CAZ policy required investments in management infrastructure, but NCC could not afford costly policy measures that did not generate adequate income to compensate for investments while being 'skint' and 'really, really struggling financially' (Winter and Le, 2019, p. 10). Therefore, cost-effectiveness is an important consideration in their decision-making. Furthermore, English local councils were also 'expected to demonstrate a value for money element' in their policy proposals

to be approved for funding (E01, March 2018). Whereas, establishing a charging CAZ was anticipated to be a cost-ineffectiveness trap:

> '[P]eople will pay the charge once or twice and they will think, 'I'll just get a compliant vehicle' or change their behaviour completely, which is fantastic from an air quality point of view, but […] suddenly you have got a lot of money that you have spent on infrastructure (to support the management of a CAZ, e.g., monitoring cameras, automatic charging system, etc.) that's just dead.' (E01, March 2018)

However, such financially struggling situations also made ad-hoc funding sources become NCC's lifesavers. In the CAZ example, although the UK Government's air quality management approach received significant backlash at the beginning, it also opened opportunities for additional funding that motivated local authorities to consider centrally proposed options. A participant shared that historically his local council only focused on and bid funding for air quality monitoring and reporting rather than actual measures to improve air quality (E17, August 2019). Since the CAZ mandate happened, his Council's air quality approach 'has changed quite significantly' following the Government's shifting grant allocation from monitoring to improvement measures, so 'instantly that was a big tick in the box for the funding'. However, he was also concerned about a side effect:

> 'We now have gained no funding whatsoever for monitoring. A lot of local authorities reduce that monitoring capability quite significantly because the funding has dried up on monitoring.' (E17, August 2019)

His information confirms that central resources to support local governance needs are reduced for issues that are not highly prioritised in the government's policy agenda. In this case, $PM_{2.5}$ was not the highest priority in the UK clean air legal case. Consequently, it might be difficult for NCC to seek central support while it was pressured by local environmental campaigners to improve $PM_{2.5}$ monitoring for a better understanding of pollution statuses and areas to have suitable mitigation measures.

In contrast, funding opportunities are open for measures that support the implementation of central policy agendas. In the CAZ case, the UK's framing of air pollution problems surrounding NO_2 emission reduction matched its agenda of promoting ultra-low emission vehicles and renewable energy, so funding and supporting schemes were made available for measures along that policy path. Those policy alternatives, coincidently, suit NCC's existing 'green' transport agenda. Therefore, while NCC was constrained from effectively exercising its environmental commercialisation tactic, the UK Government's

available and planned support for ultra-low emission transport opened opportunities for the Council to push its preferred options forward. Consequently, although NCC opposed the Government's CAZ initiative, it still followed the focus on reducing NO_2 in transport and proposed a clean air plan with a heavy focus on electric vehicles and ultra-low emission public transport (Nottingham City Council, 2018a; Nottingham City Council and Nottinghamshire County Council, 2018) and argued to feasibly meet the EU compliance objectives by 2020 just by following its existing policy agenda (Nottingham City Council, 2018b) owing to a 'long history of commitment to public transport' (E10, August 2018).

By matching the UK prioritised policies and supporting schemes in the Clean Air Strategy 2019, NCC's proposed measures could gain some central funding. Specifically, NCC's air quality plan proposed the following measures: bus retrofitting – funded through the Government's Clean Bus Technology Fund; promoting the switch to low-emission taxis – funded by the Government with one million pounds; and conversing the City Council's fleet to low-emission vehicles – partially funded by the Government (DEFRA, 2018).

NCC's air pollution control approach, despite sounding convincing, reflects a highlight of the path dependence theory about the impacts of resource constraints on the reluctance to policy and institutional change that might bear significant conversion costs (Kirk, Reeves and Blackstock, 2007). In this case, as large investments had been put into developing a low-emission public transport system since the early years of the City Council, it was not favourable for the Council to adopt the CAZ policy, which had a different approach and required additional investments whose effectiveness might not last for as long as a public transport system. Instead, NCC's policy-making was tailored to fit in with its existing policy path in which huge investments have been cultivated.

This story of air quality management, therefore, provides an example of how the UK Government can address local political opposition by controlling local fiscal autonomy regarding fund-raising capacity to create local dependence on central support to drive desirable policy agenda-setting. Whereas, local responses, despite seemingly autonomous decision-making, are indeed driven to a certain path of finance-based policy-making practices.

VI-2.2.3. Independent, proactive, and critical civil society activism

The UK's democratic regulations open an activism environment where civil society actors can, in principle, freely approach diverse types of actors, including governmental ones. For example, in the UK clean air legal case, ClientEarth UK proactively approached both state and non-state actors at different governing levels:

> 'a lot of also talking to local authorities' representatives where we can, … talking to DEFRA and other departments as well. […] [We] meet fairly regularly with a team at DEFRA who are overseeing the plans and trying to influence them.' (Interview with ClientEarth UK, February 2019)

That approach helped ClientEarth UK to form consistent pressure on DEFRA to keep revising its clean air plans and negotiating with local authorities for stronger actions nationwide rather than merely focusing on several cities as the government's initial approach.

In Nottingham City, several civil society groups and organisations (hereafter CSOs), amongst which the most active ones include Friends of the Earth (hereafter FoE) Nottingham and an air pollution working group of Nottingham Citizens, have engaged in CAZ policy discussions since 2016. However, Nottingham Citizens mostly focused on awareness-raising aspects. Specifically, that group campaigned on an anti-idling policy to require drivers to turn off their vehicles' engines when idling in public areas where there were many pedestrians. Such awareness-raising-focused and non-controversial measures aligned with NCC's approach at that time. Therefore, Nottingham Citizens got positive responses from the Council at the Nottingham Citizens Assembly on 10 May 2018 (Fieldnote – public event observation, May 2018). Subsequently, Nottingham Citizens moved on with other topics in their campaigning agenda in subsequent years. Nottingham Citizens seems to take NCC's policy promise, which was then implemented, as an outcome of a solved problem. Kingdon (2014) warns that even if it is uncertain of a problem being solved, it might look like being already addressed when authorities take policy actions, and attention to that problem is thence turned elsewhere. That is when a problem fades away from a major policy agenda.

Meanwhile, FoE Nottingham campaigned on concrete and holistic measures to reduce air pollution not only to meet the legal targets, including advocating for a CAZ in Nottingham City. As the CAZ policy may include costs for both NCC (e.g., instalment

costs) and citizens (i.e., in the case of charging zones), policy negotiations were more political and challenging than decision-making over awareness-raising measures. Nevertheless, FoE continued urging NCC and encouraging the public to demand councillors and members of parliament (MPs) representing their areas to establish a CAZ in Nottingham. The title of their campaigning leaflet starts with '**Nottingham needs a Clean Air Zone**' in bold and a big font size, followed by 'Please email your MP and local councillors to ask the government and local council to set up a Clean Air Zone for Nottingham without delay'. The leaflet ends with a strong stance that FoE 'wants to see:

- Action on Clean Air Zones as a matter of urgency (in all cities and large towns);
- Clean Air Zones to include restrictions on the most polluting vans and cars, both petrol and diesel, as well as buses and HGVs;
- A national scrappage scheme for dirty diesels;
- Nottingham's Clean Air Zone to include the ring road as well as city centre.'

From the observations throughout my fieldwork when I followed the air quality campaigning events of FoE Nottingham, the group consistently pressured NCC in multiple ways: having direct meetings and email conversations with relevant councillors and officials; following air quality monitored data of NCC and DEFRA; giving updates of air quality data to the public through social media channels; scrutinising policy proposals and documents; and critically responding to NCC's public consultations.

The dynamics of local activism towards NCC was, nevertheless, not only about confrontation. Mutual understanding and outreach were formed between the NCC and local environmental groups since both sides were struggling with the aftermaths of the government's austerity policy and making efforts for local public interests.

> 'We're all working towards the same thing. No one's against anybody. So we just invited [environmental groups] in and talked them through what we're doing, and I think that was a massive help.' (NCC official, August 2018)

> 'We're supportive with the Council of what they've done on electric buses, and tram network, working place parking levy, they're all great things, so we support all that. […] There's another thing Nottingham has done that doesn't get a lot of recognition. We've got bus lanes that only buses or electric vehicles can travel in, or taxis. So, that's a move in the right direction.' (Local environmental activist, August 2018)

In some cases, local environmental groups in Nottingham City also support the City Council's policy implementation or consultations through their campaigning activities. For example, FoE Nottingham ran a one-day street campaign to encourage the public to respond to the consultation for the NCC's clean air plan proposal in August-September 2018 (Fieldnote – public event observation, September 2018). Their campaigning activity was even mistaken by some citizens as a City Council's action (Ibid.). Indeed, it is also an important part of their activist approach to public awareness-raising about air pollution by encouraging them to complete NCC's air quality surveys (E08, August 2018). They believe that such a strategy would help to empower the public capacity of engaging in local policy-making and then feed up to the national level (Ibid.).

In the CAZ policy case, FoE Nottingham and NCC even jointly directed criticisms towards the UK Government for its incompetent central actions to solve air pollution while pushing the burdens down to local authorities who lacked both power and financial capacity:

> 'Friends of the Earth have said we should be doing more but they're fairly pragmatic, they know that we do a lot already so even they realise that… it (i.e., measures to tackle air pollution) has actually got to come from central Government.' (E10, August 2018)

A member of FoE Nottingham defined their relationship with the NCC as *'critical friends'* by which he meant being 'professional with mutual respect', 'critical with evidence of the councillors' approach to certain things' but staying 'supportive in some respects' (interview in August 2018). That relationship style was based on mutual recognition of each other's incentives and limitations. However, local environmental activists in Nottingham City also found it difficult to maintain the critical-but-supportive balance against the City Council if it kept failing to accommodate their campaigning points:

> 'It's quite difficult for us from a public perception point of view to say ok, we support what they are doing so far, but it's totally inadequate and [we] want a lot more.' (E02, July 2018)

That participant's comment reflects an important role of civil society activism in the UK in critically scrutinising the governance performance of state actors. Specifically, while sometimes sympathising with the NCC's constraints controlled by the central Government and supporting some of its actions, local environmental activists in Nottingham City still performed their activist role by exploring other aspects and keeping pushing the Council for better performance. That approach puts the confrontation of

local activists in the Nottingham case more on a critical advocating stance rather than extreme opposition.

Comparing the approaches of Nottingham Citizens and FoE Nottingham in campaigning for air quality, both groups had easy access to and interactions with local authorities for policy discussions. However, they had different campaigning objectives and perspectives on air pollution issues to scope their activism limits. Nottingham Citizens stopped their air quality campaign after NCC took an awareness-raising policy action that they campaigned for. Meanwhile, FoE Nottingham maintained pressure on NCC to take stronger actions and have a long-term management system from monitoring to reducing pollution with a future-proof and precautionary mindset. The differences in those campaigning approaches show that freedom for activism does not mean effective activism because it still depends on the civil society actors to decide their engagement approaches.

VI-3. THE SHANGHAI CASE: AIR POLLUTION AS AN OPPORTUNITY TO TURN 'BLACK' TO 'BLUE'

VI-3.1. China's war against pollution: governance decentralisation or individualising governance pressures?

A key difference in a similar practice of top-down environmental policy mandates between China and the UK as of 2018 is the leading roles of the central Governments to set different approaches and policy-making paces. Contrasting with the UK Government's role which was criticised as insufficient in air quality management, the role of China's central Government in the combat against air pollution was strongly emphasised. Furthermore, unlike the UK's slow-paced policy-making, the Chinese governance system is one in which 'you kind of are forced to change rapidly' to 'make a big leap of the whole process' and 'jump out of the box of a traditional [way] in China' (C12, November 2018). Environmental governance, specifically air pollution control, provides an example of China's governance style which requires fast actions in policy-making and implementation (Xue and Zhao, 2018). It is demonstrated through the Government's consistent and continuous promulgation of major policies to match China's rapid growth pace with constant changes and increasing governance demands.

Since 2011, environmental protection has become one of the key pillars in the Twelfth

Five-year Plan 2011-2015 for National Economic and Social Development of the Communist Party of China (hereafter CPC) with strong wording and commitments such as 'actively cope with' (climate change), 'comprehensive adjustments' (regarding industrial and resource structures to 'control' greenhouse gas emissions), 'must significantly reduce' (the intensity of energy consumption and CO_2 emissions), 'must rationally regulate' (energy consumption levels), 'serious management of resource usage', etc. (China's National People's Congress, 2011). Accordingly, China's government has pushed forwards measures to make fast achievements in environmental objectives, especially focusing on city-driven actions. However, most of the policy directions set out in the Twelfth Five-year Plan rely on technological measures, particularly benefiting information technology enhancements in the energy and industry sectors, which reflect the Plan's guiding principle of pursuing a 'scientific development' theme holistically (China's National People's Congress, 2011, chap. 2). Besides, although there are policy directions to promote environmental protection, the Plan does not mention measures to address air pollution and neither referring to fine particulate matters ($PM_{2.5}$) because air quality protection is not one of its four main areas of environmental governance (Ibid., chap. 24).

A serious focus on addressing environmental pollution then arose in response to the media crisis surrounding air pollution during 2011-2013 (Chapter V). China's government declared a war against environmental pollution, marking the first time that $PM_{2.5}$ was monitored in China's Air Pollution Prevention and Control Action Plan 2013-2017 (PRC State Council, 2013). The goal of this Action Plan is to improve the overall air quality in China by 'dramatically' reducing heavily polluted days within five years and 'gradually [eliminating]' them in another five years or longer (Ibid., p. 1).

At the core of the Action Plan, the 'government takes the leading role' with the incorporation of 'enterprises' initiatives, market drives and public participation' (PRC State Council, 2013, p. 1). However, unlike the UK Government pushing a specific CAZ policy to all involved localities, the Action Plan 2013-2017 of China's government only imposes an ultimate mandate of meeting targets, which are differentiated by regions, in various fields to reduce respective air pollutants (PRC State Council, 2013). For instance, comparing pollution levels in 2017 and 2012, while all cities were only required to reduce 10% of PM_{10} concentration, three regions of Beijing-Tianjin-Hebei, Yangtze River Delta and the Pearl River Delta were required to reduce $PM_{2.5}$ concentration (which is more difficult than reducing PM_{10}) by 25%, 20%, and 15% respectively (Ibid.).

The Action Plan 2013-2017 was published in September 2013 but required 'cities with air quality below the standard', especially in three key regions, to 'build up their regional, provincial, and municipal heavy pollution weather monitoring and warning system by 2014' and 'formulate and improve their [emergency] plans and publish them to the society' (PRC State Council, 2013, p. 12). It means that cities like Shanghai had one year to fulfil the policy mandate, including setting up monitoring infrastructure and finalising local action plans. To push immediate actions, the Action Plan 2013 came with immediate central funds, in which Beijing – who faced the strictest $PM_{2.5}$ reduction target – got 700 million yuan (Zheng, 2014). Another 10 billion yuan (approximately 1.2 billion Pound Sterling) was available in 2014 for three key regions including Shanghai in the Yangtze River Delta, and other funding schemes came in subsequent years (Ibid.). Furthermore, diverse inspection mechanisms are also required from the central to local levels to ensure local compliance (PRC State Council, 2013). Despite not being clear on how the central funding was spent on air pollution control, the Shanghai Environmental Bulletin 2014 asserts that '[p]revention and control of air pollution were the priorities of the municipal government in 2014' with a wide range of measures implemented (Shanghai Environmental Protection Bureau, 2015). Particularly, replacing coal-fired burners with clean energy was among the first and most focused measures to be finished with 1,675 coal/heavy oil boilers and stoves being switched to using clean energy or shut down (Ibid.).

However, China's massive multi-tier governing system also faced difficulties in controlling the local performance of environmental governance (Jin, Andersson and Zhang, 2016). Interestingly, while some localities pose challenges of non-compliance to environmental governance mandates, some other big cities like Shanghai have still been making impressively fast improvements. Insights from previous studies and the interviews point to the influence of the Chinese cadre performance evaluation system on its contemporary environmental governance.

Previously, China's cadre performance evaluation system was viewed as one of the reasons for an 'implementation gap' in environmental governance at local levels, despite however good environmental laws, due to its prioritisation of economic growth over environmental protection (Kostka and Nahm, 2017, p. 568). Kostka and Nahm (2017) argued that because economic growth and social stability were the most important criteria to evaluate local leaders and hence affecting their political careers, local leaders

consequently focused on achieving economic targets more than anything else. Below is an example in practice for that argument through the observation of a researcher when failing to communicate the need for climate actions to a Chinese local official:

> '[T]hose in government didn't feel that climate change was a priority. Rather, they were focused on sustaining local economic growth and maintaining socioeconomic stability. This was true despite sustainable development being a national strategy since 1994 and the publication of China's first comprehensive policy initiative, China's National Climate Change Programme, in 2007.' (Xue, 2015)

However, with the recent emphasis on environmental protection in the CPC's five-year plans (since the Twelfth Plan in 2011), environmental quality indicators such as air quality targets have been included in cadre performance evaluation (Ahlers and Shen, 2018, p. 302). Wang (2013) argues that China's Government relies on the 'environmental cadre evaluation' system to use environmental protection as a tool to strengthen its political regime's legitimacy. Within the Chinese top-down superior-subordinate system (see Chapter IV), local political and administrative leaders now face pressures of achieving air pollution reduction and other environmental protection targets besides economic targets to seize opportunities for political promotion or, at least, avoid penalties. In Wang's (2013) viewpoint, good local performance in environmental protection will also represent the state's performance, which then justifies the legitimacy of the Communist Party's ruling regime. Therefore, when environmental degradation leads to social crises that can challenge the Communist Party's ruling legitimacy as in the 'airpocalypse' lesson, pushing pro-environmental actions at local levels becomes important in China's national policy agenda.

That process of devolving air quality management duties to provincial and municipal authorities in China is more extreme than that in England as Chinese local leaders are then individually accountable for the top-down mandates. Therefore, it could be considered as the individualisation of duties within devolution. Interestingly, it seems that China's government has utilised that political duty individualisation strategy to accelerate the policy-making and implementation pace at local levels, at least in environmental governance. Particularly, Shanghai plays an important leading role in China's fast-paced governance system, which is discussed in the next section.

VI-3.2. Shanghai's role in China's a fast-paced but differentiated governance system

Despite the urgent time pressure of China's Air Pollution Prevention and Control Action Plan 2013-2017 which required substantial preparation and implementation by 2014, Shanghai could still keep up with the pace by implementing extensive projects, many of which were finished by 2014, in six fields of energy, industry, transportation, construction, agriculture, and living styles (Shanghai Environmental Protection Bureau, 2015, p. 22). That positive progress continued over years. Consequently, fast-paced policy-making and implementation resulted in Shanghai's annual average $PM_{2.5}$ concentrations dropping from over 100 $\mu g/m^3$ to below 40 $\mu g/m^3$ just within five years from 2013-2017 (Shanghai Environmental Protection Bureau, 2018).

Linking such rapid policy-making and implementation practices of China and Shanghai to their overall political and administration system would illuminate Shanghai's key role in China's fast-paced but differentiated governance system. China sets differentiated environmental quality standards and required measures for different regions (PRC State Council, 2013, p. 1 and paras. 12, 27), which coincidently align with regional economic growth statuses and political roles. The Yangtze River Delta – an affluent coastal area with Shanghai as the major municipality and the country's financial centre – is one of three regions imposed with the strictest air quality targets to be achieved by 2017. Whereas Beijing-Tianjin-Hebei is the capital region, and the Pearl River Delta is the most affluent cluster on the southern coast.

A public health scientist views such differentiation as a sensible approach for China due to the huge disparity in governance and financial capacity between those affluent regions with the rest of China (C10, November 2018). He informed that many other Chinese cities could not even achieve the national air quality standard which was already far behind the WHO guidelines:

> 'That standard makes sense for me because if you take a much strict[er] standard, every city in China cannot meet the standard, it is no use *(emphasised)*, it makes no sense *(emphasised)*. So, [for] the current standard in China, I think less than 30% of Chinese cities can meet the standard.' (C10, November 2018)

Consequently, that differentiated air quality standard-setting strategy (as well as in other environmental fields) may allow for the displacement of pollution-intensive activities

from those affluent and highly capable regions to others that have lower environmental standards or more relaxing regulations. Meanwhile, some affluent cities with decent financial capacity can transform their industrial and energy structures to simultaneously sustain economic growth and mitigate air pollution such as the case of Shanghai (Shanghai Municipal Bureau of Ecology and Environment, 2019).

The discussion of China's regional differentiation strategy for environmental standard-setting contributes another perspective to existing understanding of China's multilevel governance system in which economy-driven governance mindsets are considered a huge obstacle to implementing central environmental policies at sub-national levels. Schreurs (2017, p. 164) contends that 'local and provincial governments which are at odds with Beijing's plans may try to slow, reshape or block the implementation of the central Government's pollution control and climate change goals'.

However, recent changes in China's central political directions have shaped environmental protection measures around technological advancements as supplements to economic growth. Indeed, stronger actions from the central Government for environmental protection are not only demonstrated through policy documents but also in practice with more efforts to monitor local performance and compliance (C12, C13, November 2018; C20 October 2019), for instance, as in the following story:

> 'It happened to us that we were having a meeting in Tianjin (i.e., among the local authorities receiving the strictest air pollution control mandates in China since 2013, as of 2018) and then that particular district has had heavy industries in their history, so the local government excusing himself from the meeting because there [was] the Minister of environmental protection [coming] without notice to anyone, only by his own car and some colleagues to check on particular factories whether they [were] shut down or not. So, this is kind of a structured intervention and also individual investigation combined together. So, this district [was required] more original collaboration.' (C12, November 2018)

Further information in the C12 interview shows that by 'original collaboration' she meant local authorities' genuine implementation rather than pretending to comply with the government's mandates only during inspections with advanced notice.

China's differentiated standard-setting with stricter regulations for air pollution control in the three aforementioned regions also reflects the differentiated governance approach taken in the function-oriented zone planning set in the 12th Five-Year Plan (2011-2015) for National Economic and Social Development (China's National People's Congress,

2011, Part V). Accordingly, China's government differentiates the assignments of roles and governance priorities for different local authorities and regions at different timing to implement its holistic development agenda (Fan *et al.*, 2012). For instance, some localities are imposed with stricter environmental regulations than others. As Wang *et al.* (2020) find from their survey research, pro-environmental actions of Chinese local governments' leaders tend to be motivated by self-interest rationality through instrumental motives (e.g., law compliance, money-saving, self-promotion) rather than normative values (e.g., moral obligations and responsibilities, value-driven intentions). That phenomenon is probably due to the Chinese political system that is operated with a cadre evaluation mechanism and prioritises pro-economic performance.

In that context, for major Chinese cities like Shanghai which have passed the industrialisation phase and are now holding roles of showing the fast and 'clean' developed image of contemporary China, the central Government interferes to ensure that local environmental measures are properly implemented. Meanwhile, there might be an intentional delay of environmental protection (and probably with a more relaxing central attention) in the rest of China where economic growth to secure basic social needs remains dominant over environmental concerns. However, most China-based participants consider Shanghai as among the rare cases with a unique power and capacity to pursue pro-environmental policies along with economic growth, which is unlike most localities in China. It implies remaining challenges for China's government to push effective implementation of the government's pro-environmental policy directions locally. Additionally, even for politically powerful localities like Shanghai, their inter-dependent relationships with the central Government mean that their implementation of the Government's mandates comes with conditions, or in other words, motivations.

This section shows that governance decentralisation also happens in China like the UK, but each system faces its own types of challenges to ensure local adoption and implementation of central policy priorities. The next section discusses the motivations that drive local policy directions in China, especially in the case of Shanghai.

VI-3.3. Motivations driving local policy directions: the importance of political images

For such a financially powerful city like Shanghai, funding might not be the most important motivation to adopt policy ideas from the central Government or other

external sources. A participant, who coordinated collaboration projects with Chinese cities for an international NGO, commented: 'Shanghai is different, they are rich, so they actually don't need the funding (i.e., through joining international cooperation projects)' (C14, November 2018). Indeed, only 2.8% of Shanghai's gross domestic product in 2019 alone can fund 107.925 billion yuan (equivalent to approximately twelve billion Pound Sterling) for the City's environmental protection projects (Shanghai Municipality People's Government, 2020).

However, Shanghai is considered different from most Chinese cities and therefore cannot represent the popular financial needs and governance capacity of the others. For most Chinese localities, funding remains an important incentive when considering external projects. For example, in responding to a question about the main drivers for Chinese cities to welcome international cooperation programmes, a participant at an international NGO working on urban development projects in China replied immediately:

> 'Funding. Because when an international organisation has a new initiative, they actually provide some kinds of funding […] or assistance to those cities so that is why all the cities like to get into that.' (C14, November 2018)

That opinion aligns with the perspectives of the domestic participants involved in collaboration projects with ministries and/or local governments in China (C05, October 2018; C08, C12, November 2018). They shared a common comment that most Chinese cities received external projects mainly for funding and technical assistance. Many cities even adopted different labels with similar or related meanings, such as 'sponge city' or 'resilient city' all relating to climate adaptation, to access different funding schemes (C05, October 2018). Whereas the term 'smart city' was adopted in most of 293 cities in China (National Bureau of Statistics of China, 2019) as it was highly prioritised as a national development agenda and for central funding (C08, November 2018).

However, while funding is an apparent motivation for Chinese local governments to adopt external policy ideas, this study finds that the adoption is indeed rooted in their need for gaining political recognition and/or coping with top-down political pressures. Referring to the context of China's intensive top-down pressured system discussed in Chapter IV-3.2., political reputation shown through governance performance is a crucial part of the political careers of local leaders, especially at the provincial level and big cities (Jin, Andersson and Zhang, 2016). Furthermore, while promoting urban branding is

helpful for Chinese cities to attract funding, it can also help to promote political reputation. Shanghai, for example, adopts different 'brands' for various districts such as eco-city – Chongming island, smart-eco-city – Pudong district (Tan-Mullins *et al.*, 2017), Low-carbon city – Changning District (The World Bank, 2019). The Low carbon city in Changning District was also the pilot project for 'bold policies and incentives not yet implemented at municipal or national level' in China as of the project time (The World Bank, 2019, p. 5). That emphasises the important role of Shanghai in China's policy-making system. The essence of the political reputation for Chinese cities and local leaders can be summarised in the comment below:

> 'Every city has their own approach. It becomes more and more visible that each city wants their own kind of branding or marketing that they would have their own reputation.' (C12, November 2018)

The importance of following central political directions is another motivation for local authorities mentioned in other interviews of this study. An urban planning researcher contended that, in most cases, Chinese cities adopted international supporting schemes to aid the implementation of their existing policy agendas (C12, November 2018). Those local agendas actually comprise policies from top-down mandates and thence were 'something [local governments] have to do anyway, with or without [cooperation projects]' (Ibid.). Additionally, the participant emphasised that Chinese cities may have different perceptions and intentions about specific concepts attached to international assistant projects, and that phenomenon partly poses a great challenge for international cooperation projects in China to perform in-depth 'policy learning' or 'transfer' (Ibid.). In that case, the urban 'brands' themselves do not necessarily reflect an act of Chinese local authorities adopting specific policies or practices but might be to support the implementation of their predetermined policy agendas.

The above discussion includes two flows of policy ideas into local governments: from the central Government and from international actors. However, top-down governmental policy mandates are more important for China's local governments than policy ideas mobilised by international actors. An international NGO participant commented about China's air pollution battle that once 'the central Government already set the mandate, […] cities have [air quality] targets to achieve' (C19, December 2018). This comment implies that there is no room for local opposition to central mandates in principle. Although non-compliance with meeting environmental targets at local levels still happens, some localities such as Shanghai, on the other hand, seize opportunities from

environmental governance mandates to enhance their political reputation through making rapid achievements. For example, successfully tackling air pollution becomes a highlight in Shanghai's contemporary image that contributes to its goal of building 'A More Sustainable Eco-City' (Shanghai Urban Planning and Land Resource Administration Bureau, 2018, p. 67). Significant improvements in air quality are also mentioned as the first achievement to demonstrate Shanghai's urban environment governance performance (Shanghai Municipality People's Government, 2020, p. 67).

However, when placing the analysis of Shanghai's environmental governance beyond its boundary with consideration of China's strategy of local functional differentiation, it is clear that Shanghai's progress in environmental protection does not reflect the true image of China if considering other provinces and cities, especially those poorer ones in the western and central regions (C10, C14, November 2018). For major and powerful localities like Shanghai, their national missions now include environmental protection achievements with intensive dependence on technological advancement as set in the policy directions of the Chinese Communist Party and central Government discussed above. Meanwhile, for many others, economic growth remains the top priority, at least in certain periods.

VI-3.4. Civil society environmental activism in a state-controlled political climate

The investigation of civil society engagement in environmental governance in the Shanghai case returns different discussion themes from the Nottingham case for two main reasons. Firstly, civil society regulations in the UK and China are largely different, especially regarding China's complex requirements and mechanisms to manage different categories of civil society organisations (hereafter CSOs) or social organisations as in China's official term. Secondly, as discussed in Chapter V, for many civil society actors who engaged in environmental governance in China, concerns about campaigning on air quality have decreased after rapid improvements made in some big cities like Shanghai. The two reasons combined make it difficult to find specific local activists focusing on air pollution in Shanghai with similar 'local' characteristics like in Nottingham. Instead, this study reached out to civil society actors of different categories and levels in China, exploring their activities in both air quality and environmental governance in general.

Despite strict regulations to limit free critical activism for civil society actors, the

government-civil society relationships in China are not only in a one-way state-controlled direction. This study will provide diverse perspectives by exploring different types of civil society actors. Specifically, three groups of civil society actors covered in this study are international NGOs, domestic Chinese CSOs, and local CSOs led by expatriates in Shanghai. Their stories contribute more nuances to the understanding of government-civil society relationships in China and how they influence civil society approaches to engage in local environmental governance. Accordingly, this section will discuss the approaches of each group to engage in local environmental governance in China in general and specifically in Shanghai.

VI-3.4.1. International non-governmental organisations

VI-3.4.1.1. Coping with institutional constraints in a sensitive political climate

In contrast to the style of critical relationships between the civil society and state actors in the Nottingham case, civil society actors in China are still in subordinate positions compared to state actors. China's stringent civil society regulations require civil society organisations and individuals, especially foreign ones, to liaise with relevant government organisations from central to local levels (details in Chapter IV). Interestingly, the collected data reveals that in many cases, the government-liaison requirement is also a means of activism for international NGOs as they usually seek help from their supervising ministerial organs to connect them with local authorities and collaborators (C06, October 2018; C14, November 2018; C19, December 2018).

Nonetheless, even with recommendations of central governmental organisations, collaborations with local governments may not always happen smoothly, and international NGOs may still face local resistance:

> 'RESPONDENT 2: Some cities will listen to the national government, willing to open their doors (i.e., to receive international cooperation projects introduced by the central Government) and some cities won't, we have to directly deal with the cities.
>
> […]
>
> RESPONDENT 3: That would be tough (*laughed*), it is a lot of engaging, knocking on doors, a lot of trying out… and reach out to different people and hopefully something that might work and then lead to something else.'

(C14, November 2018)

The reluctance of the Chinese local authorities to cooperate with international NGOs depends on their personnel availability – 'how busy they are at different times of the year', their different 'internal priorities' (C06, October 2018), or potential 'political risks':

> 'RESPONDENT 2: They have never seen this kind of assistance before (i.e., regarding technical assistance such as training courses or transferring management tools).
>
> RESPONDENT 1: Political risk for them and also extra work for them sometimes, and also coordination between different agencies around them, political affirmation, so one group might agree, the other might not.'
>
> (C14, November 2018)

That challenging 'political climate' (C14) may be part of the Chinese 'highly pressured' (Fewsmith, 2013, p. 22) political system. In a system where decisions over local personnel arrangements are made by higher-level cadres (Chen, 2017), the national leading Party cadres will appoint provincial (and municipal) cadres who will then appoint those they see 'fit' to be their subordinates (Fewsmith, 2013, p. 24). Therefore, governmental officials at lower governing levels are usually considerate with their decisions, especially those relating to external actors that they are not well familiar with, because unforeseen mistakes may cost their promotions or entire political careers. I also encountered that implication when trying to gain access to governmental officials through some participants. Despite saying that they had good relationships with some governmental officials in Shanghai, they all refused to make recommendations for a similar reason. It was either implied or explicitly stated that it was politically risky for those officials to share information with foreign researchers, given that those participants themselves had just got to know me at the interview. The quote below is an example:

> '[I]t is difficult to contact the government officials because it is a risk for them […] probably you can contact with people from government research agencies, instead of government officials…' (C10, November 2018)

Consequently, without strong enough support and recommendations from the central Government, international actors in China may need to find ways to establish relationships with local authorities by themselves with patience and consistency as what happened to the international NGO quoted below:

> 'Lots of relationship building, keep showing up, keep working with them showing them what we can do and hopefully they will start to buy the idea.' (C14, November 2018)

Furthermore, even when reaching out to local levels, some international NGOs would also firstly liaise with municipal/provincial governments and rely on their further suggestions and assignments of extended collaborators rather than directly approaching any local state and non-state actors because '[the authorities] are in the best position to advise' (C06, October 2018):

> '[W]e always go through the city so it is always [*their organisation's name*] working with the government and then it is up to them to choose who they want.' (C06)

In that context, governmental actors from the central to local levels play an important role as gatekeepers for international NGOs to perform activities in China. Consequently, China's central and provincial/municipal governments can also influence the activity approaches of international NGOs in China. In other words, China's civil society regulations, coupled with the tradition of its political system, have normalised the state's influence on civil society activism.

VI-3.4.1.2. Main civil society activity areas

Enhancing local governance capacity

In China's sensitive political climate, it was commonly shared in many interviews that international supporting programmes/projects in China mainly focus on enhancing governance capacity for localities. That involves mobilising resources including financial aid and technical support to improve the capacity of local actors.

However, a popular challenge to international support programmes is how to provide the support that suits the local needs that are hugely diverse among localities in China due to their significant differences in demography, governance scales, and developmental statuses (C6, October 2018; C12, November 2018; C14, November 2018). For instance, financial aid may be a stronger motivation for some localities than others. Medium- to low-income localities may expect financial aid from external partners to either conduct new projects or support the implementation of their existing policy agendas (C01, October 2018; C08, November 2018; C17, December 2018). Whereas affluent cities like

Shanghai already have a strong financial base, or their governance demands exceed what external supporting programmes can offer (C05, C06, October 2018). Furthermore, mobilised resources are usually 'just enough to help the cities do it themselves' instead of offering comprehensive support (C06, October 2018). It is particularly difficult to fully support Chinese localities due to the scales in population and governance demands that are often much larger than other local jurisdictions participating in international cooperation networks (C05, C06 October 2018).

Supporting resources also come as technical support rather than financial aids, e.g., providing temporary experts, training courses for local officials, sharing guidelines, computing models, etc. or organising networking mechanisms for knowledge and experience sharing amongst the Chinese cities as well as cities in other countries (C01, C05, C06, October 2018; C12, C14, November 2018; C19, December 2018). However, in most cases of technical assistance, collaboration activities may create more workloads for local officials without additional income (C14, November 2018). Shanghai and other big cities in China usually already 'have too many things on their plates' (i.e., too many assignments) to find time and human resources for additional assignments that are not politically compulsory (C12, November 2018).

The collected data also inform threats of superficial assistance in technical support projects in China. As mentioned in Section VI-3.3., localities sometimes receive international cooperation projects and their policy ideas for funding to conduct their existing tasks instead of practising those policy ideas. An international NGO participant also finds it not helpful in the long term for cities as passive recipients of technical assistance without a fundamental transfer of knowledge and practice:

> '[E]ven if we do have more technical assistance resources and we could perhaps send in consultants to a city to do everything for them, we don't do that because the idea is once the person leaves, the city needs to own whatever was produced right?' (C06, October 2018)

Therefore, the international NGO emphasised the values of cities themselves as the best resource and in-depth considerations of local contexts to create tailored measures and better involvement of local actors:

> '[O]ur biggest resource still is the cities themselves to exercise best practice sharing on a peer-to-peer basis. […] [W]e bring people's best practices into the city but in general, we work very much within the city to develop the context so then that helps for them to involve the right

people in the city.' (C06, October 2018)

Another international NGO shared a similar idea to mobilise resources locally to create more fundamentally improved capacity for Chinese cities (C19, December 2018). One of its resource mobilisation channels is through organising collaborative networks to bring different actors together and towards public engagement (Ibid.).

Contrasting with concerns about the possible ineffectiveness of technical assistance without matching local needs and deeply engaging local adoption of practices, other participants discussed the positivity of local governments' long-term exposure to the international technical assistance of any form. For instance, one participant observes that officials at some localities picked up and formally discussed more and more contemporarily popular concepts of global environmental issues, which they have learned from various capacity-building courses and meetings of projects collaborating with international actors (C12, November 2018):

> 'Nowadays you could talk with the Chinese officials, and they will talk, they will use the term[s]. […] like the sponge city, […] some of the local governments started to talk about resilience cities as well, especially the ones that have suffered from typhoons, from earthquakes, from these kinds of things. This term was never really mentioned in the government policy at all.' (C12, November 2018)

Furthermore, a representative of an international NGO working on air quality believes that accumulated knowledge and the general improvement of capacity basis are helpful in long-term for Chinese cities to cope with new and/or sudden policy demands from the central Government such as in the air pollution case:

> '[B]ecause of the years of running [training programmes] which helped [local authorities] build their capacity of staff over the years and the cumulated knowledge, […] when the airpocalypse happened in the beginning of 2013, whilst the political will came with a strong commitment of the Government to fight the air pollution war, they were able to just put together all of the past accumulated experience there and also with funding coming from the government, and [in] the past five years everything happened so quickly.' (C19, December 2018)

That participant considers long-term capacity-building for state actors as creating a 'healthy' collaborative relationship with them. By that she means, while state actors in China can address air pollution thanks to the NGO's technical support, it is also a gain for the NGO's campaigning goal of improving the air quality in China.

Drawing the Government's attention to problematic conditions

Besides providing capacity-building, international NGOs are also important actors in drawing the Government's attention to problematic conditions. In some cases, local authorities may not be aware of and therefore not be concerned about issues that are not on the central policy agenda. Three participants explicitly mentioned their intentions to draw the Government's attention to their works on environmental issues that they found important for China but receiving little awareness or/and concerns from the government (C12, C14, November; C19, December 2018), for example:

> 'Ozone pollution control, right now it is not high on the government agenda, but we see it as an emerging problem here in terms of air pollution, so using our channels of distributing the message to different players, […] our plan is to attract the attention of officials and then raise their awareness that this is something they must address.' (C19, December 2018)

Additionally, it is advantageous for international NGOs and experts to attract the attention of China's government as there seems to be a certain preference of the Government leaning towards foreign experts. Indeed, China's Communist Party has even been running a Thousand Talents programme since 2010 to attract overseas people, either with or without a Chinese origin, who are leading experts in various fields of socio-economic development and industries to work and transform the overall human resource quality in China (Wang, 2010). A domestic academic participant even said that China's government trusts international experts more than domestic ones (C10, November 2018) even when he himself was among the leading experts in his research field and involved in consulting national policy-making. Given that context, it might be possible for agenda-setting via political attention-drawing supported by international actors. The C10 participant is an example, in that, he has liaised with foreign partners to strengthen the voice of his research findings to convince the government.

Overall, the international NGO participants in this study perform two main activity areas in the context of strict regulations for overseas organisations in China: (1) offering support to local authorities to fulfil their existing centrally mandated policy agendas; (2) drawing the government's attention to problematic conditions to raise governance concerns.

VI-3.4.2. Domestic Chinese civil society organisations

VI-3.4.2.1. From gaining the state's attention to collaboration

Some participants informed that the Chinese government has been more interested in outreaching state-independent civil society actors. For example, one of the civil society participants was a Chinese local CSO in Shanghai (C04, October 2018, without audio recording per the participant's request) to whom I was introduced by a Shanghai-based academic. That organisation started its first pilot project for residential solid waste separation in a small community in 2011. After showing the promising effectiveness of a community-based waste segregation model, it attracted interest from the Shanghai Municipal Government and the media's attention. Consequently, the CSO *'was invited'* (C04 interview note, October 2018) to register as a formal non-profit social organisation by the Science Association of Shanghai Government in 2012. That acknowledgement was followed by funding from a district government in Shanghai since 2013 to expand its small-scale pilot projects for waste segregation in Shanghai. This CSO's story somehow confirms some other participants' opinions regarding the willingness of governmental authorities in China to seek support from civil society for policy implementation (or experimentation such as in this CSO case) (C12, C13, November 2018; C19, December 2018).

Beyond the local level, one participant was a Beijing-based Chinese non-profit organisation (hereafter NPO) working in the field of environmental quality data monitoring and disclosure across China. Similar to the aforementioned local CSO in Shanghai, this Beijing-based NPO also started their business independently from the government. The NPO pursued a 'name and shame' approach in which they analysed data on factories' environmental discharge collected by the government's monitoring stations to track down enterprises whose businesses were based on significantly polluting factories (C13, November 2018). The use of the government's data and their field of activities made them more advantageous than many environmental civil society organisations in the Chinese political climate as they seemed to benefit both the state's and businesses' interests:

> 'All of our red lines are government information, so everything that we're doing is directly in line, and many of these foundations (who funded this NPO) are also looking to be directly in line [with the

> government's policies] and the environment is one of the top three priorities. So, compared to other NGOs, I think we're in a fortunate space.' (Ibid.)

Consequently, as the NPO became more established in monitoring and exposing heavy polluters – focusing on private companies, they gradually 'work[ed] in tandem with the government' (Ibid.). The 'tandem' model means that the NPO supported the central Government to monitor and report environmental pollution (particularly air and water) from factories and businesses across China wherever the government's monitoring stations were available. Moreover, the NPO also supported China's government to scrutinise local authorities in terms of local responding speed, accuracy, and transparency to environmental data disclosure (Ibid.).

The above examples show another aspect of state-civil society relationships in China. In that, state actors may also proactively approach independent civil society actors whose works align with the government's interests. It may also be those civil society actors' deliberation to tailor their activities that suit the government's policy directions.

VI-3.4.2.2. Civil society-via-prosecutors

Furthermore, there is also a new indirect mechanism for civil society actors in China to play their roles in environmental governance through litigations. An environmental lawyer, who worked in both the UK and China, said that giving more power to environmental prosecutors to act in the public interest is a new element in China's updated environmental law (C20, October 2019). Specifically, environmental prosecutors, on behalf of the public – usually through civil society actors, can sue local authorities who abuse their power to harm the environment or public interests, and that makes a difference yet similar situation to environmental litigations in the UK as the participant explained:

> 'In the UK […] NGOs sue the government directly but in China, the NGOs can't sue the government directly because of public interest, only the prosecutors can do so, but it is for the same purpose, so the prosecutors in China are doing the same thing. […] In 2018 there were more than 6000 cases just for environmental public interest cases brought by prosecutors.' (C20, October 2019)

At this point, given the paramount and holistic influence of the Chinese Communist Party on China's whole governance system and the strict top-down control of the Central

Government regarding the state administration, the independence extent of the Chinese judiciary should be questioned. When I asked if prosecutors in China were influenced by any other power, that participant hesitated for a while before saying: 'Well... erm... strictly speaking they shouldn't.' (C20, October 2019). It was not a firm objection but a hesitant 'shouldn't'. That hesitation might bear an implication that Chinese prosecutors could be under some non-judicial control.

In the latest White paper on Court Reform in China, the Chinese judiciary is asserted to be independent of 'any interference by any administrative organ, social organization or individual' (The Supreme People's Court of the People's Republic of China, 2017). However, it goes on to state that '[t]he judicial power is a power of the Central Government' and that 'a local court in a place is not subject to the jurisdiction of the local government in that place' (Ibid.). That paper also emphasises that the power of the central Government to control the judicial system is reflected in its centralised management of personnel and resources for local courts' operation. In the words of Li (2015):

> 'Judicial independence is denied in China because to establish it is to establish the court system as a competing authority, which would necessarily undermine the supremacy of the party's authority over the state, rendering this practice incompatible with the party-state structure.' (p. 17)

The author, nonetheless, expands that the Chinese courts are made independent of the interference of other state institutions and can challenge the legality of their decisions (Li, 2015). However, all Chinese state institutions, including courts, are below the leadership of the Chinese Communist Party (CCP) (Ibid.). Meanwhile, Zhao (2019) argues that the practice of judicial independence in China should be understood 'based on China's social and political environments' in which judicial power is delegated by the CCP and varies by time (i.e., whenever the CCP directs to reform the judiciary) and issues (p. 134). One common perspective is that one of the functions of judicial power in China is to regulate the implementation of the CCP's political directions (Chng and Dowdle, 2014; Fairbairn, 2016; Zhao, 2019).

Combining the above discussions regarding the characteristics of judicial power in China's context and the C20 participant's information, it could be inferred that, at least in environmental governance, prosecutors are employed as a central governmental force to control local compliance with environmental regulations. Therefore, the model of civil society-via-prosecutors environmental litigations contributes to the landscape of China's

central Government mobilising various forces in the society to support the supervision of local governance by opening spaces for civil society actors to play their part, however, still within the government-controlled boundary.

VI-3.4.3. Shanghai expat-led civil society actors

Due to the language barrier, many of the civil society participants in the fieldwork in China are non-Chinese expatriates. Fortunately, that disadvantage brought in a discovery of a special type of local civil society organisations (CSOs) led by expatriates (hereafter expat-led CSOs). Expat-led CSOs are usually merged within the local NGO category in studies on environmental civil society in China. However, they are not Chinese by nationality, and neither are international organisations funded by overseas sources. Those foreigners, who have been living in China for a long time, set up organisations or coordinate networks to promote environmental protection locally. Unlike local Chinese CSOs and international NGOs, those expat-led civil society actors rarely have direct or close connections with state actors. The following local expatriates explained how they considered their local CSOs' approaches and 'very distant' relationships (C15, December 2018) with local state actors:

> 'It had nothing to do with [local authorities]. […] We just do what we want to do, we keep our heads down if somebody says 'oh no don't do that', we say OK. […] We follow all of the rules […] now we just noted OK this is what we want to do, as long as there are some [governmental] guidelines, don't look for trouble.' (C15, December 2018)

> 'On one hand, you have to definitely follow a certain protocol or a certain framework, to be very honest, we focus a lot of our work just on positive communication, we don't focus on the negatives [about the government].' (C18, December 2018)

Accordingly, they tend to navigate around regulations and social barriers in China while maintaining environmental activities by taking a non-confronting approach and focusing on public awareness-raising and empowering individual eco-friendly practices.

Those expatriate civil society actors emphasise the importance of following the state's rules, only doing things that are permitted in official governmental guidelines and avoiding seeking 'trouble' or 'the negatives'. Accordingly, that approach kept them safe against the ambiguity in the Chinese civil society regulations about 'permitted' or 'sensitive' areas of activities. Even foreign researchers looking to collaborate with local

Chinese CSOs also tend to approach non-confronting ones, as one participant shared their experience in the initial phase of finding a Chinese 'grassroots' organisation to collaborate with their project:

> 'I am not looking for radical grassroots, I am talking about very normal, calm grassroots which people are interested in through waste recycling.' (C16, November 2018)

It might be unintentional when that participant addressed 'non-radical' and 'calm' grassroots organisations as a 'normal' type in China. Nonetheless, that somehow shows a tendency of 'normalising' non-confronting attitudes against the state in civil society activism in China; otherwise, it would be 'abnormal' or 'sensitive'. That may give an impression of civil society being constrained and controlled in the Chinese political climate. However, some expatriate participants in this study, surprisingly, showed a certain level of satisfaction with the *freedom* that they *were granted* to conduct activities as long as they avoided state confrontation. For instance, one participant, based on more than ten years of running pro-environmental activities in Shanghai, described a unique type of freedom in the Chinese governance system that 'in the Western countries a lot of people think it is the [Chinese] government who has demanded all of this' and that '[ordinary people] don't have any power', however:

> 'One thing is [that] the government has a lot of mandates they are handing down, […] but then from the bottom it feels like, as a community, we can do something, and we can make changes as a group together, maybe that is different than the Western world. China is, I think… is really good at that which is why I think a lot of the younger generation is so involved in action because they feel like 'OK I can do something". (C15, December 2018)

Meanwhile, another participant pointed out a negative side of the democratic governance system where he comes from compared to the performance of China's government:

> 'Unlike a democracy, they keep blaming other persons right? Like in [my country], this party will blame that party, that party will blame that party, nothing will get done. Here if the government doesn't do it so there is no one else to blame, it is them, right? So, on one hand, I think the government has a huge responsibility and they are aware of it, and air pollution has gotten better, other things will hopefully get better as well, but it will be slow.' (C18, December 2018)

Accordingly, that participant raised an issue that he found ironic: 'why keep putting all of the blame on the government?', whereas they can 'focus on what can be done, what

[China's government is] already doing, and focus on what people can do' as a way to create the whole picture of environmental protection (Ibid.). This point echoes the above participant's opinion that 'as a community, we can do something, and we can make changes' (C15). Thus, there is a tendency of expat-led civil society groups in Shanghai to only focus on public awareness-raising and promoting individual pro-environmental behavioural changes in activism. That approach of individualising environmental protection duties, actually, well fits in the Chinese government's direction to 'cultivate' behavioural changes in society to address air pollution (as well as other environmental problems):

> 'Everybody is responsible for environmental protection. […] Cultivate the behaviour principle "fight together for the same air we breathe" in the whole society, and improve air quality together.' (PRC State Council, 2013, p. 13).

In the Nottingham City case, a local environmental activist therein also contends that changes at an individual level can influence national policy-making because '[i]f you can persuade ordinary people to live sustainably, they can then put pressure on the government to change their policy', and therefore most of their activities were for public awareness-raising and encouraging the public into pro-environmental behaviours (E08, August 2018). However, besides individualising environmental protection duties through behaviour change activities like the tactic of expat-led CSOs in Shanghai, local environmental groups in Nottingham City still take a critical approach and try to make influence on governmental decisions through local campaigns.

VI-4. CONSIDERATIONS OF SOCIAL ISSUES IN ENVIRONMENTAL GOVERNANCE

Part of the core principles for the global sustainable development aspirations concerted by the United Nations is to seek the balance nexus of economic-social-environmental benefits in development. Among three pillars, this study has presented that communities within and between countries seem to be on common ground regarding aspirations for economic growth while possibly having different viewpoints (including perceptions, acceptance, and satisfaction) regarding environmental quality despite referring to the same WHO air quality guidelines. Turning to the social pillar, the collected data show even more differences in perceptions between actors in the UK and China regarding social issues to be considered in local environmental governance. Although differences in

perceptions of social considerations can derive from myriad factors rooted in the culture and history of each community, this study reveals that governance contexts also play an important part to shape individuals' perceptions of social equity in a place despite their origins from other places and cultures. This section will discuss that argument in detail by comparing how social issues are considered in local environmental governance in the Nottingham City and Shanghai cases.

VI-4.1. The Nottingham case: intra-locality social equity and individual contributing capacity to environmental governance

VI-4.1.1. Affordability: a barrier that deepens social division

In the Nottingham case, social issues were actively raised by both state and non-state actors when discussing measures to improve environmental quality. A common concern is limited access and affordability of options in pro-environmental policies for people in poverty, particularly those living in deprived areas, given the context of Nottingham City with high deprivation indices (see Chapter IV).

A City councillor emphasised that 'the people in the most deprived communities' were those 'who suffer the most' from air pollution and mitigation measures (E10, August 2018). The Councillor explained that, firstly, most poor people lived in the city centre where the pollution was the worst, but they did not use private vehicles much therein. Meanwhile, the main polluters mostly came from outside. Secondly, poor people living in deprived areas outside the city centre usually had limited access to affordable and reliable public transport, while they could neither afford ultra-low emission private vehicles (Ibid.). This combined problem of lacking access to basic services such as public transport and the unaffordability of alternative options put poor people into even more difficult situations in implementing environmental policies. To a local environmental activist, unaffordability could hinder pro-environmental behaviour change and hence less engagement in implementing environmental policies:

> 'The biggest difficulty with the air quality campaign is that… the part of the people that we need to influence are the people who are the most to lose by changing their behaviour. […] Those people with the most polluting cars are generally the people with the least…money to make those changes.' (E08, August 2018)

Another Nottingham environmental campaigner argued that a financially disadvantaged

population could be blamed for using heavily polluting diesel cars while it was partly the aftermath of them implementing a UK policy in the past – the UK car scrappage scheme in 2009 (E02, July 2018). That scheme aimed to support UK car sales while reducing greenhouse gas emissions as a climate change mitigation measure by encouraging people to swap their old cars for newly-manufactured diesel ones (Butcher, 2018). However, the environmental campaigner contended that that scrappage scheme had created the contemporary massive pollution of $PM_{2.5}$ on top of issues with social unfair and inconsistent treatments in policy-making:

> 'Those people [having bought diesel cars following the scrappage scheme] are now being told 'you're gonna be charged because you did what a few years ago seemed to be the right thing to do'. And of course, it's the poorest people who own the oldest cars that are the most polluting probably face the biggest charges. So, there's a question of equity there in terms of […] how do you have a policy which doesn't disadvantage people who are already disadvantaged.' (E02, July 2018)

Connecting this example with the above discussion regarding matching favourable air quality protection measures with the promotion of ultra-low emission vehicles in the UK, it shows that the automobile industry has an important connection with air quality and climate policy agenda-setting in the UK. Broadening to other sectors, there are also promotions of shifting towards environmentally-friendly or zero-emission lifestyles and purchases, which lead to a social trend of sustainable consumption (de Koning *et al.*, 2015; Dermody *et al.*, 2015; Binder, Blankenberg and Welsch, 2020). That social trend seems to make the consumption of 'advertised' eco-friendly products become a 'social fashion', which may, as a participant believes, help to accelerate the road to sustainable development (E08, August 2018). The E08's argument is based on his view of consumption as to signal one's social status:

> '[C]onsumption is related to status, it's the way we signal our position in the society, isn't it? […] People don't wanna let go off that status signalling. […] and the people that haven't got that level of it, of income or status, quite often aspire to that. […] what would happen is that if you've got solar panels on your proof, you've got electric cars on the drive, I think eventually people would come to regard that as something to aspire to.' (E08, August 2018)

However, the affordability and accessibility of eco-friendly products for low-income people, especially those living in remote areas, are usually low (Riley, 2014; Perignon *et al.*, 2016; Mapes, 2018; Sankhyayan and Dasgupta, 2019; Goulding, Lindberg and Russell, 2020). Consequently, people with middle- and lower income in the UK society may still

rely on old polluting but affordable technologies. Therefore, the unaffordability of pro-environmental practices and making them 'fashionable' may adversely affect poor and disadvantaged people in various ways. They not only endure more impacts on health and living conditions but are also alienated from pro-environmental movements. The latter problem may even trigger shallow perceptions of the poor with polluting means as polluters and the richer who use 'clean' technologies as environmental protectors. That then becomes a matter of social inequity in environmental governance and deepens social division.

VI-4.1.2. Geographical barriers and individual physical conditions: when equal is not equitable

Additionally, non-monetary social and physical conditions were also mentioned as possible challenges for people's capacity to practice pro-environmental behaviours, and therefore should be considered in policy-making and advocacy as well. For instance, a local air quality campaigner prefers more realistic considerations of campaigning approaches and seeking diverse solutions for people with different conditions rather than advocating absolute elimination of private cars:

> '[W]e got to be realistic […]; we can't just say to people jump on the bus or get on your bike and get to work or get to school or whatever because it's physically not possible.' (E08, August 2018)

Similarly, an NCC official shared that their fuel poverty strategy was tailored with considerations of various living conditions rather than strictly asking people to reduce home energy consumption equally (E11, August 2018). To his concern, people may have diverse conditions and types of vulnerability and hence demand different levels of energy needs, so it is not always their wastefulness of using energy excessively (E11, August 2018).

To sum up, both state and non-state actors in the Nottingham case commonly supported and partly practised considerations for diverse socio-economic and physical conditions in ways that do not reduce individuals' living necessities and capacity of making contributions to environmental protection. Accordingly, when considering social equity in environmental governance, local actors in Nottingham were concerned about how to have policy-making practices that do not disadvantage the existing disadvantaged. Furthermore, the Nottingham data help to argue that equal distribution of services in a community divided by social gaps is not equitable for all people with different conditions

that need further support to be equal with others.

VI-4.2. The Shanghai case: Considering social equity with the Chinese characteristics

Unlike the Nottingham case, social aspects in environmental governance were not proactively mentioned in the Shanghai case. When being asked about social considerations, only two participants refer to the elderly and young children as vulnerable in terms of environmental impacts on health or the use of technology (C07, C09, November 2018), whereas low-income or poverty was still the most typical reference to social issues, for example:

> 'We tried to promote transport for all users and protect the more vulnerable road users. So the more vulnerable road users normally are low income people. So that we try to […] provide more accessibility to them and safer mobility for them.' (C14, November 2018)

A participant even asserted that the meaning of social equity as in the Western perception regarding social governance is not a relevant problem for China:

> 'I don't think that social equity issue here is as serious as in other developing countries […] Our global office (in the United States) has a research topic on [equitable] access to different types of basic infrastructures and they keep asking China to do similar research. […] we don't have such problems at all. […] We don't even have a gender issue. […] So I don't think social equity is such a serious issue to work on (in China).' (C14, November 2018)

Nonetheless, considerations for social equity might not entirely be absent in environmental governance in China; rather, there seem to be different perceptions of social equity in Chinese society. The popular support for the existence of social considerations in China's governance approaches is arguably based on the public's satisfaction with China's successful progress in poverty eradication and equal distribution of public infrastructures for basic social needs as the participant in the C14 interview contends. Such opinion is also reflected in the perspectives of foreigners living long-term in Shanghai such as the following participants:

> '[A]t least people have been lifted out from dire poverty and are provided with basic necessities in many cases.' (C09, November 2018)

> 'I look around me and I see the money of the people going into highways and schools, every neighbourhood in Shanghai there is a stadium, parks,

> growing metro system, … a strict regulation on automobiles in Shanghai, a very fast move from almost no renewable energy to very high levels of renewable energy, […] then I would ask what is not localised about sustainable development here?' (C16, December 2018)

The C16 participant continued to share her observation that the Chinese government's anti-corruption campaign also plays an important role in creating impressions of a *fair* society:

> 'Obviously… some people are extremely rich, but they are being targeted by the government, […] a number of people being arrested for corruption. […] A lot of corruption seems to be controlled, so people perceive that things are fair.' (C16, December 2018)

Furthermore, to some research participants, the sense of *fairness* in the Chinese society is also created by the public sense of social homogeneities, such as the following explanations:

> 'In China do you see very much of [fundamentally huge inequality such as in the Western societies]? You see some, but like in the rural areas they are very similar, in the cities they are very similar. […] These kinds of social issues are not such big issues in China because you don't have this blatant-in-your-face-every-single-day difference between rich and poor, everybody has a household licence here, everybody has the right to healthcare, depending which village you're in or city you're in it can be different.' (C16, December 2018)

> 'I think that in the city urban equality issues might be less, but compare rural with city there is a big gap. And also regional difference between the east and the west (of China).' (C14, November 2018)

In the above quotes, while both participants support the widespread provision of public services in China, they also mention that there is an equal distribution of quantity (i.e., types and amounts of basic public services and infrastructures) but possibly without equal quality (e.g., how good those services and infrastructures are) among the regions. That phenomenon echoes the status of regional discrepancies in China mentioned in previous sections. In such context, it seems that regional and urban-rural differences are more concerned than intra-locality social equity issues, at least to the China-based participants in this study.

VI-6. CHAPTER SUMMARY

This Chapter presents the stories of air quality management in two cases of Nottingham

City and Shanghai separately. However, the analysis produces the following comparative discussion points.

Firstly, both cases show a similar inter-connection between problem-framing approaches and advocating policy alternatives. The policies taken in both cases show a good fit to address the types of problems that air pollution was framed as. However, those policy ideas had indeed been prioritised in central policy agendas before the rise of air pollution problems. Therefore, the approaches to define air pollution problems and identify focused pollutants seem to open opportunities for pushing those policy alternatives forwards as the most suitable solutions.

Secondly, both central Governments created conditions to control or/and direct the responses of local actors to central policy mandates. The Nottingham case and the Shanghai case had initial differences in their governance system. Local authorities in the Nottingham case tend to respond to local demands rather than to top-down requirements, which is opposite to the Shanghai case. However, both cases show a tendency for the Governments' policy preferences to be injected into local agendas following the contexts that drive decision-making towards the central preferences. Specifically, the UK Government employed a model of duty devolution in austerity without fiscal power decentralisation. Although that approach caused distrust and dissatisfaction among local actors, they were still motivated to adopt some of the central prioritised policies into their local agendas to gain funding. Meanwhile, China's Government individualises governance duties to local political leaders through its cadre evaluation and promotion system. That approach incentivises some cities to make rapid achievements, however, also creates risks of regional imbalance and competition given significant differences in characteristics and developmental statuses among localities in China. Overall, it is similar in both cases that while both Nottingham City and Shanghai *are granted* a certain extent of *autonomy*, they still face difficulties in performing autonomous policy-making due to the constraining conditions imposed by the central Governments.

The situation of incomplete autonomy due to governmental constraints is also applicable to civil society activism in both cases. Being independent and enjoying the freedom of activism under the UK regulations, local civil society actors in the Nottingham case proactively and critically engaged in the air quality campaign and scrutinise NCC's performance. However, the austerity context also limited resources for local civil society actors in Nottingham City. Furthermore, they also acknowledged NCC's incapability to

address all their campaigning requirements due to the Council's constraints. Nottingham civil society actors ended up supporting NCC in actions of their common interests while finding it difficult to have more effective methods to campaign on the mandates that exceed the Council's capacity. In other words, the free choice of activism for civil society actors in Nottingham is also limited to the capacity of governmental actors to accommodate civil society mandates.

Meanwhile, in China, stricter civil society regulations imposed since 2017 have made civil society activism more difficult, particularly for international actors. However, there is evidence of China's government opening more space for civil society performance but within a limited boundary of activity types to suppress confrontation movements. That approach creates a vibrant activity landscape of civil society and non-governmental organisations to mobilise resources for environmental governance in China while maintaining a safe zone for the government. Furthermore, not all civil society organisations in China relate to the government, e.g., expatriate-led ones, and not all government-related organisations have a one-way state-dominant relationship with the government. Civil society activism in China is, indeed, more complicated with interwoven benefit-risk balancing approaches depending on specific types of organisations and their areas of activities regarding the state's interests.

Finally, there are differences in the ways that social issues are considered in environmental governance between the two cases. Diverse social considerations were frequently mentioned by participants in the Nottingham City case as part of the governance requirements and civil society activism. However, social inequity is sometimes created by inconsistent and uncertain policy-making and central policy directions beyond the local power. Whereas in China, social considerations in governance seem to be perceived differently rather than absent. The social component in policy-making is shaped around the sense of local fairness due to local social homogeneity and public satisfaction with the quantity of basic services provision. However, regarding the quality of those public services, there is still discrepancies among the localities in China respective to their economic capacity.

CHAPTER VII – DISCUSSION

VII-1. INTRODUCTION

This thesis has so far analysed the approaches to address air pollution in the Nottingham and the Shanghai cases. The analysis provides empirical findings about how different actors in the two case studies performed their roles in local environmental governance. Chapter V shows that the same environmental issue of air pollution was framed in different ways in the Nottingham City and the Shanghai cases. Such different problem-framing approaches lead to different choices of main pollutants and mitigation measures of state actors from the central to local levels as analysed in Chapter VI. Reflecting upon Chapter IV which illustrates the environmental governance contexts in Nottingham City and Shanghai, the whole analysis shows that both the problem-framing and local responses in the two case studies are influenced by the governance contexts hosting them.

On that basis, this Chapter will discuss the findings in more detail and connect them to highlight the contributions of this study to the theoretical discussion set out in Chapter II. The Chapter starts with Sections VII-2 and VII-3 to address the first two research questions:

- How do localities in different governance systems (Nottingham City/UK and Shanghai/China) respond to decentralised governance duties to address a similar environmental issue (air pollution)?
- What are the relationships between the environmental governance approaches of a locality and the landscape of environmental governance beyond its local jurisdiction, from a multilevel governance perspective?

Sections VII-2 and VII-3 will weave the key findings in the previous empirical Chapters (from IV to VI) to discuss possible answers to the above questions. The discussions to address those research questions will inform the reconsiderations of local autonomy and the applicability of the theoretical framework of this study in Section VII-4, which aims to address the theoretical research question: *Is it applicable to use the multilevel governance concept, which has mainly been established and developed in Western literature, to research an Asian governance*

system such as China? That theoretical discussion in Section VII-4 will also wrap up this Chapter before moving to the final Chapter to conclude the whole thesis.

VII-2. HOW DIFFERENT GOVERNANCE CONTEXTS RESPONDED TO A SIMILAR ENVIRONMENTAL ISSUE OF AIR POLLUTION

This section discusses the answers to the first research question: 'How do localities in different governance contexts (Nottingham City/UK and Shanghai/China) respond to top-down policy mandates for the same environmental issue (air pollution)?'. Overall, a short answer is that both central Governments framed air pollution as certain types of problems that suit their favoured policy alternatives to be pushed down to local levels. Meanwhile, local authorities also had their preferred alternatives and political constraints that might motivate them to resist the central mandates. To force local adoption of the central mandates, either entirely or partially, both the UK and China governments created certain conditions that could drive the responses of local actors. However, the multilevel governance (hereafter MLG) lens helps to explore and explain similarities and differences within the mechanisms of the two case studies. The following content discusses that comparison in more detail.

VII-2.1. Bounded conditions for local responses: incomplete local autonomy as no local autonomy

Both Nottingham City Council (NCC) and Shanghai had certain freedom or/and powers in local decision-making. For NCC, it was the freedom from the central Parliament and Government regarding political and administrative arrangements. For Shanghai, it was its financial power and strategic role in China's developmental pathway that make it an important player in China's politics. However, local authorities in both Nottingham City and Shanghai were found to be bounded to certain constraints that limited their decision-making freedom. Specifically, this study finds that both central Governments drove locally bounded decision-making by setting up conditions that limited local policy-makers' options.

VII-2.1.1. Nottingham case: conditions to trigger financial needs

In the Nottingham City case, the UK Government has implemented an austerity policy

since 2010. That policy was coupled with the devolution of governance duties without equivalent decentralising fiscal management powers to address their devolved duties. Local self-financing capacity was limited both by local citizens/voters' views regarding local tax rate increase and by the UK Government in cases when local revenue-generating measures would cause central expenses (see Chapter IV-4.1.1.). Some major international funding sources, e.g., the EU funding schemes, also went through the distribution of the Government, for which local authorities needed to competitively bid and convince the Government. Consequently, even though some NCC officials considered that they had a certain voice over their priorities when bidding for centrally controlled grants, it was still the Government who decided bidding criteria and policy preferences. That made it difficult for NCC and many other English local authorities under financial constraints to be 'really' independent from the central influence when setting their local policy agendas.

That combination of devolving governance duties and controlling local fiscal powers has put English local authorities into a dilemma: having more duties, being free to develop policy ideas, but not having enough resources for policy development or/and implementation. That situation became a condition that forced English local authorities such as NCC to seek funding sources to address their governance needs. Accordingly, some local authorities including NCC were drawn to policy measures that could compete for available governmental funding schemes, which were to implement the Government's policy priorities. In other words, the Government created financially constrained conditions to control local authorities' decisions on policy options.

In the example of the Clean Air Zone (CAZ) policy discussion in Nottingham City, both NCC and local environmental activists recognised other issues with air pollution in addition to the Government's focus on NO_2. For instance, local environmental activists advocated for more efforts to monitor and address $PM_{2.5}$ city-wide based on the evidence of data analysis carried out by themselves. Local actors also identified social inequity and public awareness issues in air quality management. However, measures to improve $PM_{2.5}$ monitoring were not the Government's funding priority, while policies to address social issues in air quality management might not be profitable for a business case to prove the cost-effectiveness that was part of the Government's fund bidding criteria. NCC then ended up proposing measures that were both beneficial for them and were high on the Government's funding priorities so that NCC could bid for central grants to support its challenging situation.

These findings echo the discussion of fiscal conditioning by Bailey and Wood (2017). The authors provided a detailed discussion of English devolution to illustrate how 'power [is] hoarded at the centre in the context of a purported 'devolution revolution" (Bailey and Wood, 2017, p. 983). Their discussion also places the UK's fiscal decentralisation approach in the context of austerity that has created conditions in which local authorities are 'empowered' only to the extent of meeting the spending objectives set by the Treasury (Ibid., pp. 978-979). This thesis, therefore, contributes to discussions of fiscal conditioning with empirical evidence in the field of air quality management.

VII-2.1.2. Shanghai case: conditions to drive political decisions

Contrasting with Nottingham City, Shanghai held a significant political position in China's development agenda for its strong capacity to raise revenue and attract international resources. Thus, it was granted more fiscal power and freedom than most Chinese cities to function as one of China's major economic engines and policy experimentation hubs. Furthermore, in China's cadre management system, political leaders of China's major developmental centres including Shanghai usually had high political prospects to hold China's top leading positions. Such a strong political position and financial capacity gave Shanghai more privileges than other local governments.

Theoretically, fiscal power may give Shanghai more autonomy (Pratchett, 2004; Bulkeley *et al.*, 2018). However, it was still under central control through a cadre management system which was ultimately decided by China's central Communist Party Organisation. In that system, local leaders held paramount responsibilities for local governance performance. Accordingly, they might gain political promotions for outstanding accomplishments of governance targets, which were imposed from the central level. Nonetheless, they might also endure punishments in case of significant mistakes or corruption for the Government to gain public support (Zhu *et al.*, 2015; Tsai, Trinh and Liu, 2022). The cadre evaluation system thus individualised duties to provincial political and administrative leaders in China and hence made them more pressured by national political mandates. Therefore, considerations of central policy priorities were among the factors that bounded Shanghai's policy decision-making.

Accordingly, when the central mandate of taking strict measures to cut down $PM_{2.5}$ was laid on some local authorities including Shanghai, the municipality adopted it and

performed well to rapidly meet the national targets. It should also be reminded that although the central requirements of air pollution control might have affected Shanghai's industry, the municipality did have the capacity to transform its industrial landscape. That capacity was pre-conditioned during the national agenda of a technology-driven development pathway and making Shanghai a global financial centre.

As illustrated in Chapter IV-3.2, China's long-term strategy to develop Shanghai as one of its economic locomotives includes drawing resources to advance the municipality's technological foundation and promoting innovations in both technology and policy developments. Shanghai did not only benefit from the central Government funding but was also able to attract international investments and cooperation for knowledge transfer and learning. Consequently, those conditions have equipped Shanghai with the capacity to address the central policy demands that require rapid actions and even technological or infrastructural transformation. This is in clear contrast to the situation of many local authorities in England who could not take immediate actions regarding infrastructure development to implement the UK Government's urgent CAZ mandate (see Chapter VI-2.1.2).

VII-2.2. Prioritised policy alternatives influencing problem-framing approaches

Kingdon (2014) discusses the shaping (or softening in Kingdon's words) of policy alternatives and defining a problem for governance considerations as two parallel processes. The findings of this thesis contribute another perspective to his theoretical discussion. In that, the problem-framing approaches of both central and local state actors in the Nottingham and the Shanghai cases align with the prioritised policy directions of two central Governments while also satisfying local governance priorities. Accordingly, a similar environmental issue of air pollution is framed as different types of problems in the two cities so that certain centrally prioritised policies could be suitable solutions to them.

VII-2.2.1. Air pollution as different types of problem

The Nottingham City and the Shanghai cases reveal that the problem-framing approaches based on the political context in each case study influenced the choice of focused

pollutants and prioritised emission sources. In the Nottingham case, NO_2 was chosen as the focused pollutant, while $PM_{2.5}$ was the focus for Shanghai. The initial decisions to focus on those pollutants rose from the political pressures that both central Governments were facing during 2013-2019.

In the Nottingham case, the Government's goal was to reduce NO_2 emissions to meet the EU and UK legal standards, which temporarily shifted the public attention and awareness away from other pollutants that still existed as threats to human health. Meanwhile, China's Government focused on particulate matters to clear the 'grey skies' reputation from the *airpocalypse* era during 2012-2013 (see Chapter V). That is understandable because particulate matter formed the dust that contributed the most to China's grey skies, so reducing them significantly can make a visible change in image. In other words, the intensive focus on those pollutants in both case studies was to solve salient political problems.

The differences in the selection of focused pollutants of the Governments in the Nottingham and the Shanghai cases were partly influenced by international factors. The UK, as an EU member before voting to exit the EU in 2016, had to meet the EU legal requirements for air pollutant emission standards and thence must focus on compliance with the EU's NO_2 legal limit. Whereas for China, air pollution control approaches emphasised the harmfulness of particulate matter, especially $PM_{2.5}$, more than NO_2. That $PM_{2.5}$ focus was influenced by popular air quality management approaches in the United States which were transferred to China through higher education and collaboration connections (see Chapter V). The environmental movements and overwhelming criticisms in the media against air pollution in China before 2013 were also initiated by the Beijing-based US Embassy which drew public attention to $PM_{2.5}$. However, this study only wants to take note of this phenomenon, while the collected data do not suffice to claim a clear link between China's approach to air pollution control and the America-influenced knowledge transfer into China through their leading academics in the field of air quality and public health management. Further studies in the field of policy learning should be conducted as it can improve the understanding of connections between political relations and knowledge transfer with central and local policy agenda-setting.

At the local level, the Nottingham City case provides empirical findings of a process to construct the problem-framing and interpretation of air pollution from the interactions between NCC and non-state actors. Despite different approaches to responding to the

central mandate of the CAZ policy, both NCC and local environmental activists shared a common view that this air pollution story was a problem of fragmented state management and decentralisation which resulted in air pollution and social inequity in local environmental governance (see Chapter V). Local advocacy, therefore, emphasised the need for enhancing the responsibilities of the UK Government in nationwide air quality management instead of imposing fragmented mandates on certain localities to treat individual pollution areas (see Chapter VI).

VII-2.2.2. Matching solutions for the framed problems and centrally prioritised policies

Along with the influence of political pressures on the problem-framing approaches, the proposed solutions for the framed air pollution problems were found to be driven to match existing prioritised policies of both the central and local agendas. In the Nottingham City case, Nottingham City Council (NCC) had their policy priorities based on the City's long-term vision of developing low-emission, public, and non-motorised transport systems. Their favourable measures include bus retrofitting and replacements, changing the council's fleets to ULEVs, promoting the conversion to electric cars, and improving cycling routes and pedestrian zones. However, many of those policy priorities have been on a waiting list over years due to insufficient resources for the Council to develop them. Meanwhile, the UK Government required NCC and some other local authorities to adopt the Government's idea of the Clean Air Zone (CAZ) policy – establishing restricted zones to ban polluting vehicles.

On the surface, it seems that NCC was successful in defending its decision not to adopt the CAZ policy. Nonetheless, it is partly because NCC's proposed countermeasures to address NO_2 emissions coincidently align with the government's major transport and industrial development strategies, of which the CAZ policy is a component. Indeed, NCC was only one of a few local councils that could defend a non-CAZ option, while the majority of the others gradually adopted the government's policy (GOV.UK, 2022). Specifically, the central-local matching interest was to promote electric cars – an emerging market to replace fossil-fuelled cars – and other low- to zero-emission vehicles. This common policy interest is supported by a common approach to frame NO_2 emissions from transport vehicles as the main problem to be addressed, despite local environmental activists emphasising the need of considering a wider range of pollution factors and

diverse measures equally.

In the Shanghai case, among the key priorities on Shanghai's governance agenda are smart city development, shifting industries to advanced low-emission technologies (instead of closing heavy industries like some other big cities such as Beijing) and developing into a global financial commercial centre. When the central mandate of tackling $PM_{2.5}$ came in 2013, Shanghai was among the municipalities and urban areas that faced the highest reduction targets. The central requirements of $PM_{2.5}$ control measures included transforming industrial combustion, converting to clean technologies (especially in industries and transport), and closing polluting factories, to name a few.

As Shanghai still hosts heavy industries such as steel production, the central policy requirements to reduce $PM_{2.5}$ might pose significant challenges for the municipality. Nevertheless, the city took that as an opportunity to transform its industrial sector, as well as the overall urban development and made rapid achievements in both $PM_{2.5}$ control targets and improving its industry. Like Nottingham City, there was a convenient match between Shanghai's needs and the central policy requirements. However, from the analysis of multilevel governance relationships in two cases (see Chapter V), this is also where Shanghai is different from Nottingham City when it comes to defining 'local priorities'.

The 'local' nature in setting local priorities is found to be more driven by local actors in Nottingham than in Shanghai. Chapter V reveals that local governance priorities in Nottingham City came from the opinions of either the City Council or citizens. Meanwhile, local priorities in Shanghai were shaped through the functions that it was strategically assigned to fulfil its missions within a national overall development agenda. Throughout the history of that governance landscape, Shanghai has already been a place for policy experimentation and leading in implementing major policies. Therefore, Shanghai's priorities of developing towards a smart city and global financial centre based on technological advancements and industrial transformation did not conflict with the central directions. Furthermore, the strictest targets for $PM_{2.5}$ control were imposed on just a few municipalities and urban areas including Shanghai. They were required to achieve those targets in a short time through technological transformation and other strong measures such as closing or moving polluting factories out of their localities. Connecting those pieces, the picture reveals that when $PM_{2.5}$ came in as problematic, it was shaped as a technological problem that could be treated by technological

advancements, led by major cities such as Shanghai. China's Government also treated $PM_{2.5}$ as a problem of overwhelming media attention on the Government's performance. China thus focused on a few strong measures to make significant improvements rapidly, which were expected to create an impression that the problem has been solved.

Kingdon (2014) argues that policy alternatives have been floating around in the policy stream to wait for a problem defined in a parallel problem stream so that at the right time, those alternatives are pushed in for considerations to be on a governance agenda. From the observations of the cases in this study, another possible discussion is that, in some cases of local agenda-setting, those two streams are not independently operated. Instead, problems can be framed following certain dominant policies, especially those more highly prioritised at the central level or even already on central governance agendas. This finding combines the ideas that the approach to address an environmental issue might be decided depending on the framing and interpretation of what problem it is (Kingdon, 2014; Lim and Moon, 2020; Yang *et al.*, 2020; Soares *et al.*, 2021) and the framing of salient policies surrounding that issue (Bulkeley and Betsill, 2005).

VII-2.3. Policy monopolies in different contexts

As theorised by Baumgartner and Jones (2009), a policy monopoly is created to limit policy alternatives to be considered for adding to a governance agenda. A policy monopoly could be formed by institutional settings and the advocacy of a salient policy measure as the most suitable solution (Ibid.). Both mechanisms are found in the cases of this study and will be discussed in this section.

VII-2.3.1. Institutional conditions to mediate non-state stakeholder engagement in governance processes

As observed in this study, institutional conditions created barriers to non-state stakeholder engagement in governance processes in both the Nottingham and the Shanghai cases. The data does not suffice to identify specific actors as policy entrepreneurs; however, there are signs of policy entrepreneur characteristics found in both cases.

In the Nottingham case, despite a democratic setting with open engagement

opportunities for civil society actors in policy advocacy and discussions with state actors, the final decisions were still made based on the considerations of state actors. Those considerations include choosing to support the opinions of civil society actors whenever their campaigning objectives align with the policy directions of local councils. Whereas opinions which did not align with local councils' political intentions were avoided with myriad excuses but mostly for resource constraints. It means that local councils hold the right to 'choose' what to decide eventually because citizens' opinions are still references for decision-making rather than compulsory demands to local councils.

Consequently, although there is no direct institutional barrier to limit the involvement of non-state actors in policy negotiations, governmental authorities still have the final say in public policy decision-making in England from the central to local levels. That discouraged efforts of non-state actors to get involved or limit their involvement in the governance processes. Indeed, as presented in Chapter VI, environmental activists in Nottingham City ended up trying to pressure NCC with whatever evidence they could create without any certainty of success in advocacy.

Furthermore, local civil society actors in the Nottingham case also faced difficulties in making an influence on air quality management due to limited institutional capacity to sustain their operation and the voluntary participation of unpaid members. That is a clear difference between the operational sustainability of local voluntary groups and national-level or large civil society organisations with formal institutionalisation. It shows that although civil society actors in the UK have autonomous rights to take action, they might lack the capacity to perform meaningful engagement in governance processes.

The Shanghai case shows a more direct mechanism of creating policy monopoly through institutional settings. The data from both local civil society and academic participants show a distant relationship between their activities and policy-makers, in which, most of them were in a relatively passive position to hope for the government's outreach. Instead, non-state actors mostly played their roles in the policy implementation phase. However, some international NGOs or experts appeared to have better opportunities for engagement in governmental policy-making if they have pre-established long-term and reliable collaboration relationships with state actors at the central level. In 2018, a prestigious Chinese academic, who has been engaged in shaping some major national policies, commented that they still faced difficulties in defending their scientific evidence because the government still respected international insights more than those from

domestic experts.

This study found some characteristics of policy entrepreneurs in NGO actors operating at international and national levels. In both cases, international and national-scaled NGOs were proactive in reaching out to governmental actors. International and national-scaled NGO actors in the UK were more critical in their approaches while those in China took a collaborative stance to build a long-term partnership with the central Government. Nonetheless, they all pursued long-term consistent efforts to advocate their policy ideas or/and technical knowledge.

A similarity between international and national-scaled NGOs in the cases of air quality management in Nottingham and Shanghai is that their engagement approaches could be viewed from a multilevel perspective. They pressured (the UK case) or reached out to (the China case) the central Governments to raise their policy preferences/ideas to the Governments' attention. Besides, they also approached sub-national actors for both policy advocacy and capacity-building. However, NGO's support for local capacity-building in the Nottingham case was to consolidate local pressures on the UK Government. Whereas local capacity-building in the Shanghai case was to help local actors implement central policy mandates, which is also part of the package for international NGOs to maintain their activities and involvement in policy-making and advocacy in China through mutually beneficial relationships with China's Government.

VII-2.3.2. Advocating problem-solving solutions

Another approach to creating policy monopolies found in this study is to advocate suitable solutions to the framed problems and hence limit the engagement of non-state stakeholders for critical oppositions. Two techniques are found to affect the advocacy for determining certain policy options as the most suitable solutions in air quality management in the Nottingham and the Shanghai cases. The first one is to create convenience for governance by fitting the proposed alternatives to existing central policy agendas and/or institutional arrangements and demonstrating co-benefits to meet multiple governance targets. The second one relates to mediating technical knowledge, including shaping public perceptions to drive attention and concerns. That technique can be explained through the lens of impression management in this study. Furthermore, those two techniques are found intertwined in the advocacy processes instead of

independently taken.

In the Nottingham case, the central Government and NCC advocated the shift towards low-emission vehicles the most. Especially, the measures to promote that shift account for the largest portion of the funding schemes in the Government's Clean Air Strategy 2019. To aid that advocacy, air pollution was framed as local problems with transport vehicles as the biggest polluting sources. In addition, policy communication measures were taken to create the impressions that transport-centred air pollution control was a suitable approach. Firstly, the UK Government demonstrated air pollution modelling which excluded pollution on highways. That created an image of air pollution mainly arising from inner city transport and hence a local problem. That framing directed air pollution control measures towards transport-centred solutions. That approach then aligns with a common assumption of state actors at all levels in the Nottingham case about an institutional norm of the transport sector to lead ambient air quality management. Moreover, the co-benefits of promoting zero-emission vehicles, e.g., reducing greenhouse gas emissions, were emphasised in public communication. Accordingly, it was cost-effective for both the Government and NCC to focus on the transport sector to meet governance targets of both air pollution control and climate change mitigation. Therefore, there was no opposition among state actors against the leading role of the transport sector in tackling air pollution, while the environmental departments were seen as merely having monitoring responsibilities. That approach naturally created a boundary for considering air pollution control measures within the transport sector.

The Shanghai case also shows a similar approach to framing salient policy measures as a good fit for existing governance systems and targets. Prominent measures for pollution control in the Shanghai case include applying technological advancements to promote renewable energy and energy efficiency in various fields of industry, transport, agriculture, and living. Strong controlling regulations were also imposed on local governments such as mandates to temporarily close or relocate static pollution sources (e.g., factories) out of the polluting localities. Here, there is a key difference between the policy-making procedures in the UK and China. In the Nottingham case, air pollution control measures were debated back and forth before the final decision-making. Therefore, governmental advocacy was taken during policy discussion periods. Meanwhile, in the Shanghai case, air pollution control measures were imposed on local authorities for implementation first.

Governmental advocacy was taken to justify the central policies during the policy implementation process to suppress opposition and negative interferences.

Specifically, air pollution in the Shanghai case was framed as a result of particulate matter from coal burning and industry. Consequently, shifting towards renewable energy and removing polluting factories are promoted as suitable measures. That policy direction is also a convenient match with the need to address the energy shortage for the mass population in China. As multiple targets are promoted for the same governmental agenda, coupled with the strict top-down policy enforcement system, it was easier to justify the governmental approaches and convince the public. To advocate the Government's policy preferences, there were some impression management tactics adopted.

Firstly, the metaphor of a rapid change from black/grey skies (representing pollution by $PM_{2.5}$) to blue skies (representing clean air quality) was taken to prove a significant reduction of air pollution in China and specifically Shanghai. Secondly, domestic smart technologies were promoted for citizens to access air quality information. The second tactic also contributes insights regarding the influence of technological instruments in environmental management. In the Shanghai example, a Chinese air quality reporting application was found to be more likely to present air quality statuses from more monitoring stations with good air quality indices than foreign air quality applications (see Chapter V). This finding, coupled with the example of air quality modelling that excluded certain pollution sources in the UK, raises an alert that different environmental quality impressions can be created by different digital tools and modelling methodologies even when accessing the same data sources.

VII-2.4. When a locality's political position matters

While comparing Nottingham City and Shanghai, this study also looks beyond their local boundaries to the wider governance landscapes surrounding them, both vertically and horizontally. Both the case of CAZ rejection in Nottingham City and the outstanding achievements in the air pollution control of Shanghai do not fully reflect a common phenomenon for other local governments in their countries. While the UK Government approved NCC's non-CAZ proposal, many other local authorities followed the government's policy. Whereas, while Shanghai got impressive success in meeting the government's $PM_{2.5}$ requirements, non-compliance and falsified data reporting still

happened in many other localities as informed by the research participants, which echo similar findings in previous studies (Ghanem and Zhang, 2014; Turiel and Kaufmann, 2021). One possible explanation that this thesis draws on is the influence of the political positions of cities within their national governance systems.

Political positions of the cities within their national governance systems were found to be important for how much 'power' they might be 'granted' to perform local governance. If a city holds national importance with the potential of making contributions to other domestic localities, and hence beneficial for its national Government, such as Shanghai, it might benefit from central resource allocations to develop it as an economic engine. In contrast, if a city holds little direct importance for its national Government such as the independent governance relations between Nottingham City and the UK Government, there might be few efforts from the Government to empower that city.

VII-3. POSSIBLE RELATIONSHIPS BETWEEN LOCAL ENVIRONMENTAL GOVERNANCE APPROACHES AND THE ENVIRONMENTAL GOVERNANCE BEYOND LOCAL BOUNDARIES

Departing from the analysis of how different actors engage in local environmental governance, this Chapter takes inspiration from the multilevel perspective to discuss possible implications of local environmental governance approaches for the governance of environmental issues beyond local boundaries. Firstly, the section discusses the paradox of decentralisation found in the studied cases. On that basis, the section proceeds to discuss the potential risks of local struggles in that paradox. The final discussion point is the implications of the findings surrounding social interactions with digital technologies in communicating invisible environmental issues.

VII-3.1. The paradox of decentralisation

This thesis has investigated the decentralisation of environmental governance through the case studies of air quality management in Nottingham City/UK and Shanghai/China in the period 2013-2019. The investigation explores both vertical and horizontal relations of local state actors with the central Governments (vertical) and local non-state actors (horizontal), as well as the factors that influence those relations.

In both cases, vertical institutional arrangements are still a dominant factor to control

local actions even though Nottingham City Council (NCC) has more independence from the UK Government regarding administrative relations than the relations between Shanghai and China's Government. Vertical governmental relations in the two cases set rules and boundaries for horizontal interactions of state actors and non-state actors at sub-national levels. However, the set rules need to be explored in deeper layers than the political-institutional label of a system. For instance, despite being named a democratic system with a strategy for devolution, local governance in England was still caught in centralist rules which hold the paramount powers for the central Government to supervise and approve/disapprove local policy proposals (Stanton, 2018).

While it was naturally centralist for China to follow its strictly top-down hierarchical governance system, the centralist tendency in the UK system needed to be supported by placing local authorities in contexts that could force them to continue following the Government's mandates. As local authorities in England are constitutionally independent of the UK Government in terms of political structures and administrative arrangements, a possible explanation for their reluctant acceptance of the Government's requirements lies in the consequences of the austerity policy and the fragmented decentralisation approach that has caused more local competitiveness rather than meaningful empowerment for effective governance. Fragmented decentralisation is also found in the Shanghai case. Specifically, there are fragmentations in three main decentralisation aspects namely political, administrative and fiscal decentralisation (Ivanyna and Shah, 2014; Isufaj, 2017) in both cases. Furthermore, the relations between those aspects are not causal in single directions but, instead, inter-dependent.

For NCC, a combination of the austerity policy, the abstention of local fiscal power, and decentralised duties drove policy options despite local political and administrative independence. For Shanghai, the financial and political influence of Shanghai on China's governance system was limited by a holistic central control over local leading cadres through a cadre management system. That system placed individualised pressures on political prospects (for both rewarding and punishing aspects) on provincial-level political and administrative leaders. Accordingly, both Nottingham City and Shanghai witnessed interwoven central-local political relationships without complete governance freedom for either case regardless of whether being situated in a democratic system (Nottingham City) or an authoritarian system (Shanghai).

Moreover, this study finds that fragmented decentralisation and the political contexts that

affected local authorities in the UK and China also affected the engagement of civil society actors in local environmental governance. In the Shanghai case, Chapters V and Six show that China's Government did open space for civil society activism, however, within a boundary of permitted activities and under governmental supervision. On the one hand, following China's strict top-down political and institutional control, local authorities kept a distance from civil society actors while supervising their operational and financial activities. On the other hand, China's governmental authorities supported civil society actors whose activities aligned with governmental demands for policy implementation, notably in public awareness-raising, local governmental capacity-building and scrutinising local public and private compliance with national regulations and policies. Those actors were therefore granted permissions and resources to perform their activities to fulfil the tasks assigned by, or agreed with, governmental authorities.

The decentralisation approach in China corresponds to the general ideas of a managerial localism strategy (Evans, Marsh and Stoker, 2013) or coerced autonomy (Bulkeley *et al.*, 2018) for both local authorities and civil society, however, in a multilevel manner. Firstly, China's Government decentralised duties to meet governmental policy targets to local authorities. Although those decentralised mandates came with resources for implementation, the responsibilities might still exceed local governance capacity, especially regarding human resources. Therefore, China's Government regulated civil society in ways that local authorities could outsource part of their tasks to Chinese civil society actors, whereas expat-led civil society groups could perform non-confrontational activities to indirectly support governmental policy implementation.

Meanwhile, although there was no specific regulation to strictly control civil society activism found in the Nottingham air quality case, local environmental activists were held back by the influence of the overall depressed financial context following the austerity policy. Without sufficient donations and dependent on voluntary participants for their operation, local environmental groups in Nottingham City struggled to maintain their activities. Consequently, they could only choose a few campaigning topics or limited campaigning durations regardless of whether the initial campaigned problems had been solved or not. Civil society actors in Nottingham formed a liaison with each other, as well as with NCC, to consolidate their capacity and arguments against the central Government.

That point echoes the argument by Eckersley (2017) that when the capacity of local authorities is limited, they might seek horizontal cooperation with non-state actors to

strengthen their capacity. However, while Eckersley focuses on local authorities, this study finds that similar behaviour is also applicable to local civil society actors. Nevertheless, despite their efforts and although NCC and local non-state actors could freely express criticisms to the central Government or argue for different policy preferences, they ended up accepting that they needed to give up part of their priorities while adopting part of the Government's priorities. That is also an outcome of the UK's paradoxical decentralisation approach. In that, the Government transferred *responsibilities* for local policy-making and public services delivery to local authorities but held back the *power* to make final decisions on local issues.

Particularly, fiscal decentralisation mechanisms were found as important conditions to control local autonomy through creating fragmented decentralisation in both cases. Overall, two fiscal decentralisation mechanisms observed in this study are revenue sharing and revenue assignment. Bahl (1999) defines revenue sharing as when a central government distributes tax revenue to local authorities. Whereas revenue assignment happens when local authorities receive assignments to raise revenue locally (Ibid.). Shanghai performs both forms of fiscal decentralisation with formal assignments of revenue-raising as China's economic engine. Whereas the notion of revenue assignments does not entirely fit the political position of Nottingham City. Regarding Council Tax collection, in principle, NCC holds the right to raise local taxes and other local revenue from their policies. However, the power to control council tax increases is distributed to the Government and citizens (Sandford, 2022). Firstly, the Secretary of State sets the principles to decide whether a proposed Council Tax level is excessive (*Localism Act 2011, C. 20*, 2011). Secondly, in case of a proposed excessive Council Tax level, the proposing local authority must hold and win a referendum for the proposed tax level to be approved (*Localism Act 2011, C. 20*, 2011). Turning to other local revenue-raising, the Government may have different policies to indirectly control local fund-raising capacity like in the example of the Government's regulation on social house prices (see Chapter IV). Paradoxically, while the UK Government requires local authorities in England to improve local revenue-raising which would help to improve the self-funding capacity for their operation and delivery of public services, the Government also sought ways to control local fund-raising practices that may cause increases in the Government's expenditure.

Viewing local fiscal autonomy from the perspective of powers to generate, retain, and spend local revenue (Chapman, 1999c, 1999b; Kithatu-Kiwekete, 2013; Figus *et al.*, 2019),

Shanghai municipal government appeared to have more fiscal autonomy than NCC. However, this study shows that both Shanghai and NCC, regardless of their *granted* fiscal autonomy extent, were caught in a vicious circle of always seeking additional resources for governance, which indirectly drives them to eventually shape responses in line with their central Governments' agendas. In other words, local fiscal autonomy without political-administrative autonomy is a combination that may drive local authorities to implement the central political directions and policy agendas.

Through the analysis of central-local relations for local environmental governance in Nottingham City and Shanghai, this study supplements a critical discussion of the argument that local independence from the central control – and hence higher autonomy – can be enhanced by improving horizontal cooperations with a more public-private partnership to strengthen local governance capacity (Eckersley, 2017) or taking a bottom-up approach to localism (i.e., governance processes led by local institutions and local people) (Stanton, 2018). Indeed, the effectiveness of local horizontal partnerships for local policy decision-making depends on both vertical administrative relations and the political contexts that create conditions to limit local governance capacity. Those factors are also inter-connected and mutually influential.

To sum up, the paradox of decentralisation is found in both case studies despite their different political traditions and decentralisation approaches. Both Governments distributed more responsibilities and a certain level of decision-making power to local authorities and civil society. However, they then took measures to limit and control the independence of local actors from the central influence by fiscal mechanisms (both cases) and political administration (the political cadre management system in China).

VII-3.2. Risks of local struggles within fragmented decentralisation and controlled autonomy in environmental governance

Local actors in the Nottingham and the Shanghai cases were found struggling within the fragmented decentralisation and controlled autonomy to navigate suitable approaches for environmental governance. Empirical findings from those two cases also reveal some consequences of fragmented decentralisation. Accordingly, this section will discuss possibly associated risks from those consequences.

VII-3.2.1. Inter-local competitiveness and financing-driven policy-making

A common consequence of fragmented decentralisation in the UK and China is that it leads to inter-local competitions, though on different scales and with different purposes, between Nottingham City and Shanghai with other domestic localities. For Nottingham City, there were inter-local competitions to bid for centrally distributed funding sources. Meanwhile, Shanghai needs to preserve its strategic political role among the Chinese cities for individual political career prospects of its municipal leaders and attract domestic and international resources/investments. This study alerts that inter-local competitiveness bears risks to the socio-economic development within and beyond local boundaries.

A potential risk from inter-local competitive attitudes is the tailoring of local policy options to suit funding and/or investment criteria, which may or may not fully align with the policy demands of local communities. Especially, in the case of funding distribution criteria that focus on cost-effectiveness, local authorities might opt for profitable policy measures, while non-profitable but necessary options are not prioritised. That situation was found in the Nottingham City case when the most supported policy proposals for air quality management were those promoting investments in purchasing electric vehicles or retrofitting old/polluting vehicles. Meanwhile, other less or non-income-generating measures such as improving $PM_{2.5}$ monitoring, restricting polluting vehicles, or empowering public knowledge of diverse air pollutants other than NO_2 received less focus in governmental policy communication.

The risk of inter-local competitiveness and financing-driven policy-making then threatens both intra-local and inter-local equity. Within a locality, when policy-making is driven by certain cost-effective priorities, there are decreasing opportunities for non-cost-effective policies. Whereas policies to support disadvantaged communities are likely to be non-cost-effective as those communities cannot afford payments to for-profit policies. For instance, enhancing ultra-low-emission vehicles (both public and private) in quantity does not always mean increasing access to them for disadvantaged people due to affordability or/and other individual conditions. Whereas increasing the affordability and accessibility for disadvantaged people might be too costly for a local council with a high level of deprivation like NCC. Indeed, NCC held back the power to determine fares for public transport in Nottingham City and has been keeping competitive prices compared to other major cities in the UK. However, the Council still faced challenges to maintain affordable

fares against increased operation costs and investments in new technology to meet stricter environmental standards (Nottingham City Council, 2020c). Regarding inter-local equity, when localities compete to attract external resources or to bid funding, the criteria for resource allocation may create bias and inequity for those localities that are not as competent in fund-bidding as the others. Furthermore, inter-local inequity can also happen in the occurrence of pollution displacement, which is another risk of fragmented decentralisation to be discussed in the next section.

VII-3.2.2. Pollution displacement

Another risk from fragmented decentralisation on top of controlled local autonomy is pollution displacement. Both case studies show that when pressures of environmental pollution control are imposed on specific localities, the pollution or/and polluting sources (e.g., vehicles as in the UK or factories as in China) might be taken from one locality to its neighbours or even farther.

In the UK CAZ case, while the focused pollution source was identified as mobile sources from traffic vehicles, the government initially promoted measures to address it locally. That contradiction, inter alia, was not convincing for Nottingham City Council to adopt the CAZ policy. NCC argued that the CAZ policy might create a possible diversion of polluting traffic to other routes through neighbouring localities that did not have CAZs. Meanwhile, China deliberately differentiated pollution control targets for different regions and hence creating opportunities for pollution displacement. This point re-emphasises the need for multilevel management of environmental problems because pollution from local sources (e.g., inner-city travel) or even static point sources (e.g., factories) can still be made mobile by policy measures taken outside local boundaries.

The lesson learned from the Shanghai case also implies possible threats of inter-local inequity and fragmented environmental pollution control when considering local autonomy from a multilevel perspective. China took a differentiated responsibility approach to set pollution reduction targets. Accordingly, local authorities who received more relaxed mandates of environmental pollution control from the central Government tended to prioritise economic growth over environmental regulations. That let them adopt polluting industries from localities that had stricter environmental protection mandates. This situation was made possible due to China's framing of environmental

pollution as a temporal problem in their developmental trajectory.

This study finds two factors leading to that framing approach. Firstly, China's Government framed air pollution as a technological problem that can be addressed by technological advancements. That justifies the phase-differentiated approach to firstly impose pollution reduction responsibilities on the localities that had a high capacity for technological advancements. Secondly, there was a viewpoint found to be shared by various groups of actors in China that environmental pollution was an inevitable phase of a developmental trajectory following a long-term process of continuously spreading pollution displacement on a global scale. That perception seemingly normalised pollution displacement and hence the overall public acceptance of pollution by the developmental phase. Such a mindset is also a threat to climate change and other environmental-social pressures whose impacts require urgent actions.

VII-3.3. When invisibility makes ambiguity: social interactions with digital technologies

Throughout the fieldwork for this study, the visibility of air pollution became a noticeable topic in the discussions of policy communication and environmental quality data disclosure. Air pollution in Nottingham City has become invisible for long while the symbolic grey skies for air pollution in China have also gradually been turning into more blue skies. That improvement in the visual aspect of air pollution was particularly celebrated in Shanghai so much that air pollution became a minor concern to the public. As air pollution becomes hard to sense, it then opens opportunities for variations in communicating air quality statuses. Indeed, a common finding in both the Nottingham and the Shanghai cases is the exploitation of digital technologies to influence perceptions of invisible air quality. The investigation of how various actors engage in environmental policy discussions, development, and implementation through the MLG lens has flagged up the role of digital technologies therein. Nonetheless, the two cases have two different landscapes of actors' responses to the use of digital technologies and the information gained from them.

The applications of digital technologies in environmental governance (mainly air quality governance) discussed in this study include computer modelling of environmental quality, publicly accessible digital environmental databases, and digital presentation of environmental quality for public use. In the light of researching the applications of digital

technologies in governance, Mukhtarov, Dieperink and Driessen (2018) complement an initial framework to conceptualise citizen participation through information and communication technology (ICT)-enabled interactions by Linders (2012). Some of their proposed types of government-public interactions via digital technologies were observed in both case studies. However, behind those apparent similarities between the two cases are different extents and motivations for actors' interactions with digital technologies.

Mukhtarov, Dieperink and Driessen (2018) argue that in the type of *'Government as a platform'*, in which governments use digital technologies to inform citizens of data and knowledge, governments can gain public trust and empower public engagement capacity by providing transparent information and knowledge to citizens (see Section II-4.3.1). Meanwhile, the empirical data of this study shows more complexity when comparing the practices in different governance contexts of Nottingham City and Shanghai.

The Nottingham case especially shows a paradox between high levels of openness in governmental data disclosure systems and public distrust in governmental practices regarding air quality management. The openness in governmental data and knowledge sharing to the public through digital channels did empower citizens, specifically environmental activists in Nottingham, to engage in local environmental governance. Ironically, a clear distrust against the UK Government still existed among local state and non-state actors in the Nottingham case. Additionally, environmental activists at all levels critically engaged with governmental data along with other scientific information sources to challenge governmental performance. That Nottingham City case shows possible irrelevance between governmental transparent data disclosure and public trust.

The Shanghai case, on the contrary, aligns with the argument of Mukhtarov, Dieperink and Driessen (2018). Most interviewed participants expressed satisfaction with the abundance of governmental environmental data that were disclosed to the public through digital monitoring-disclosing systems (e.g., real-time air quality maps) and communication applications (e.g., mobile phone applications and social media channels). It was particularly satisfying for the public when the governmental environmental data disclosure went along with the gradual invisibility of air pollution.

The above contrast can be explained through the differences in the civil society governance traditions between the UK and China. In that, as the UK opens more freedom for civil society activism and critical discussions with governmental actors, data

disclosure serves as a reference source for public-civil society debates. Therefore, the abundance of data disclosure does not guarantee public trust if the disclosed information itself is questionable. Whereas in China, civil society critical activism and public-civil society debates are largely restrained, governmental data disclosure serves as one of the limited public communication channels. Consequently, in a governance tradition of scarce government-public communication, data disclosure is considered as one of the criteria to gain public satisfaction. Accordingly, this thesis argues that the link between governmental data transparency and public trust in governmental data can be influenced by the level of political criticism, while political criticism levels can be influenced by the political context that enables or restrains critical interactions between the public and governmental actors.

In another type of public communication with the aid of digital technology, Linders (2012) defines *'Do It Yourself'* government as citizens' self-organised services and information/knowledge sharing platforms (e.g., social media networks, blogs, open-source real-time maps, etc.), without or with very little involvement of governments, to support each other in particular issues or events. This type was practised in both Nottingham City/UK and Shanghai/China regarding social movements against air pollution. However, the momentum of social environmental movements in China has faded away following the increasing public satisfaction with the Government's rapid progress in tackling air pollution. Whereas in Nottingham, even though the air quality has met most of the regulatory standards, environmental activists still kept monitoring the records and the management process and keep their communities informed to have prompt responses whenever alarming pollution occurs.

The type of *collaborative* interactions between governmental actors and citizens with the help of digital tools proposed by Mukhtarov, Dieperink and Driessen (2018) was also observed in the two case studies, however, with differences in the power balance between state and non-state actors. In Nottingham, civil society actors critically engaged with governmental actors from the central to local levels. They proactively approached state actors to question their modelling methodologies and other technical issues. They also did their own monitoring and discussed the results with NCC. Although there was no specific evidence to claim that NCC made decisions on air quality policy as a result of its collaborative interactions with civil society actors, the political-institutional arrangements did allow for government-public collaboration in a fairly respectful balance.

The situation was different in the Shanghai case. In China, state-civil society collaboration still exists, nevertheless, on a state-dominant basis. It is more about China's central Government having civil society organisations that have a strong capability in digital technologies to support its environmental quality management, including monitoring local governance performance and progress in environmental quality. In Shanghai, there were also stories of local governments outsourcing components of policy implementation and progress monitoring to non-state actors. Therefore, even within one type of digital technology-enabled government-citizen collaboration as Mukhtarov, Dieperink and Driessen (2018) conceptualise, there can be nuances of collaboration extents or even sub-types with different natures of collaboration.

This study unpacks how the research participants perceived environmental quality through interacting with the technologies that inform different *impressions* of the quality to them. In other words, the study takes another route, not to explore how citizens participate in governance with the help of digital technologies, but how their motivations and choices of responses can be shaped by digital technologies even before taking action.

By combining the analysis of social interactions with digital technologies and the MLG framework, this study argues that public participation in environmental governance can be influenced by the digital technologies that are used as political instruments and the political-institutional context of a specific place and time. Accordingly, this argument supports another argument that digital technologies alone cannot improve public engagement in environmental governance or governance in general (Fung, Russon Gilman and Shkabatur, 2013; Wesselink, Hoppe and Lemmens, 2015; Erkut, 2020).

In contrast, digital technologies may even be utilised to hinder or control public motivations to critically engage in environmental governance if people are satisfied with the impressions of environmental quality given to them. In other words, public technical empowerment alone is insufficient to enhance meaningful public engagement in environmental governance without institutional and financial empowerment. This study, therefore, echoes and contributes to discussions of multilevel governance research that requires the analysis and incorporation of all socio-technical, institutional, political, and policy aspects (Bulkeley and Betsill, 2005; Lange *et al.*, 2013). The next section will summarise the key findings to present the main theoretical contributions of this study.

VII-4. MULTILEVEL GOVERNANCE AND POLICY AGENDA-SETTING AS AN ANALYTICAL FRAMEWORK TO REVISIT LOCAL AUTONOMY

This study has combined theoretical elements of multilevel governance (MLG) and agenda-setting theories to investigate the practice of local environmental governance in Nottingham City and Shanghai and potential relationships with the landscape of environmental governance beyond their local jurisdictions. The findings show explanatory values when combining those theories, together with the support of impression management analysis. This section will synthesise the findings to flag up key theoretical contributions of this study before moving to the Conclusion Chapter.

VII-4.1. Multilevel governance and agenda-setting combined: going beyond descriptions

Eckersley (2017) asserts that the multilevel governance (MLG) perspective does not hold explanatory capacity but merely provides a descriptive analysis of governance systems. This thesis demonstrates that MLG can be used as an analytical framework to both describe and explain local governance.

In this study, MLG was used as an analytical lens through which the processes of policy agenda-setting for local environmental governance in Nottingham City and Shanghai were analysed. Specifically, this study views the process in which a central government set policy mandates for local policy-making options as an interacting process between the central policy agenda and a local agenda-setting process. In other words, it could be viewed as *multilevel agenda-setting*. In that, the MLG perspective was applied to identify relevant stakeholders and analyse their roles and motivations within the institutional system and the political context which was relevant to the cases of local air quality management in Nottingham City and Shanghai. Accordingly, this theoretical approach helped to explore and explain the processes of policy problem-framing, policy advocacy and relevant political situations through the interactions and inter-relations of various actors and policies. The motivation extents of the actors to engage in local environmental governance were also explained via the analysis of socio-technical interactions regarding the actors' interactions with technological instruments used in the communication of environmental information.

VII-4.1.1. Multilevel interactions of the 'three streams' for governance

agenda-setting

Through the multilevel agenda-setting framework, the findings show that policy agenda-setting at a governing level can be influenced by the setting of policy agendas and interactions with actors at other levels and sectors. These explorations can provide better explanations for the behaviours of various actors when engaging in local environmental governance. Accordingly, the following findings contribute to revisiting Kingdon's 'three streams' theory of agenda-setting. Specifically, this thesis argues that the three streams of problem definition, advocacy for policy alternatives, and political situations have inter-relations during the agenda-setting process instead of flowing in parallel through a policy 'window'.

When applying the MLG perspective to investigate local policy agenda-setting, this study finds that local actors in both cases ended following the central policy preferences regardless of their different aspects of freedom for local decision-making or governance capacity because of the driving conditions that the central governments had created. Those conditions were created by weaving a strategised policy landscape with institutional limitations for local actors. In that, a strategised policy landscape means a series of policies in various fields that altogether create a political context to limit local governance capacity and to improve local dependence on external support, including the central support. It means that the policy stream and the political stream are inter-related.

Additionally, the influence of political contexts was formed in relation to existing institutional settings. On the one hand, as in the words of Lowndes, (2005, p. 294), '[institutions] are inherently political' because the shaping of institutional settings is influenced by the power relations of actors and governing levels. This thesis finds that existing institutions can also modify pre-established political power relations and/or lead to new power relations. Meanwhile, it was found in this study that the problem-framing process also relates to the existing institutional settings that already identify relevant institutions for certain problems. Therefore, the problem-framing process can be influenced by the institutions and the political motivations to frame problems that can be addressed by certain institutional settings.

This thesis also responds to Kingdon's argument that policy alternatives float around in the policy stream and wait for a suitable problem to be defined in the problem stream (Kingdon, 2014). As mentioned in the above paragraph, instead of viewing the policy and

the problem streams as parallel processes, this study finds that problems can be framed to suit dominant policy preferences, particularly when those preferences are also prioritised in a central policy agenda.

VII-4.1.2. Socio-technical interactions in multilevel governance processes

Another contribution from investigating actors' engagement and relevant issues surrounding local environmental governance from a MLG perspective in this study is findings about the influence of socio-technical interactions in multilevel governance processes. This study has explored socio-technical interactions regarding the interactions of actors with digital technologies in environmental information communication. The exploration produces empirical evidence regarding how digital technologies can be employed to shape actors' perceptions of environmental quality and hence influence their motivations and/or actions to engage in local environmental governance processes. Accordingly, this study raises the following points to revisit theoretical discussions surrounding socio-technical interactions in environmental governance.

The first point relates to socio-technical interactions in governing invisible environmental problems. It is assumed that more data disclosure and transparency provided by the government can lead to more public trust in governmental performance (Linders, 2012; Mukhtarov, Dieperink and Driessen, 2018). However, it was found in the case studies of this thesis that the openness of the government's data does not guarantee public trust in the government. Instead, public trust in governmental data and governmental performance is influenced by the levels of political criticism. Meanwhile, political criticism levels seem to be influenced by the overall institutional settings and political environment that either enable or restrain free expressions and actions of political criticism.

Secondly, it is expected that enhancing the access and the capacity of the public to interact with technological governance instruments can help to empower public participation in governance processes (Linders, 2012; Evers *et al.*, 2016; Mukhtarov, Dieperink and Driessen, 2018; Rebecca Rumbul, 2019; Hsu, Yeo and Weinfurter, 2020). However, the case studies in this thesis provide examples that digital technology can also be utilised to demotivate public engagement by delivering false impressions of environmental quality and hence false impressions of pro-environmental governance achievements. This point echoes the argument regarding whether a government wants to restrict or open public

engagement when introducing technology-based governance instruments, including social media and other digital instruments (Kleinhans, Van Ham and Evans-Cowley, 2015).

VII-4.1.3. Multistakeholder engagement in multilevel agenda-setting

Through the MLG lens, this study has analysed the interactions and inter-relations of actors from both vertical and horizontal perspectives. Accordingly, the analysis generates findings about multistakeholder approaches to engaging in local environmental governance.

Firstly, the Nottingham case and the Shanghai case share a similarity that both Governments acted as gatekeepers to control major funding flows from international sources to local authorities. It should be clarified that non-state actors in the Nottingham case did have the freedom to perform international partnerships and receive funding directly from international actors, unlike the restricted situation in China. However, when it comes to funding sources through national-international relations, the paramount power to control the funding distribution lies on the two central Governments. Indeed, inter-local collaborations, both domestically and transnationally, existed in both case studies. Nonetheless, they were viewed as part of the efforts to increase the possibility to win the bidding for central grants (in the Nottingham case) or as part of the national scheme to moderate resource distribution (as in Shanghai). In this regard, both cases do not illustrate the desired principles of MLG as a governance model that enables free interactions between stakeholders from any level and sector (Bulkeley and Betsill, 2005; Betsill and Bulkeley, 2006).

Secondly, policy monopolies were observed in both case studies but in different forms. In the Shanghai case, the establishment of policy monopolies in environmental policy-making is straightforward as it follows China's institutional settings that deliberately limit the involvement of non-state actors in policy discussions and decision-making. In that system, the central Government and local authorities are key players in the monopolies, while academic elites and a few major Chinese civil society actors acted as policy consultants and/or supporting players to monitor local implementation of the Government's policies.

Meanwhile, policy monopolies were formed in a more indirect mechanism in the Nottingham case. Although the UK's legislation grants the paramount decision-making influence to the UK Government, local authorities and non-state actors still had the freedom to interact and have policy discussions. However, it was observed that only a few local environmental activists did proactively and consistently engage in policy discussions and maintain pressure on NCC. Whereas the difficult technical knowledge surrounding air pollution made it so distant from the general understanding and awareness of the public that they did not engage in the governance processes (e.g., low responses to the City Council's consultation survey). Furthermore, even when the active civil society actors engaged in policy discussions with NCC, their engagement capacity was also restrained by the challenges generated from the overarching context of austerity. The case of Nottingham City, therefore, contributes to the discussions of policy monopoly (Jones, Baumgartner and Talbert, 1993; Baumgartner *et al.*, 2009; Baka *et al.*, 2018) by supplementing possible mechanisms to form policy monopolies apart from regulatory and technical constraints.

Finally, this study does not have sufficient insights to claim a specific type of actors as policy entrepreneurs in the case studies. However, some attributes of policy entrepreneurs (Zahariadis, 2007; Kingdon, 2014; Mintrom, 2019; Tanner *et al.*, 2019) were observed from the actors' engagement approaches and their roles in local environmental governance in Nottingham and Shanghai. In the Nottingham City case, both Nottingham City Council (NCC) and the local Friends of the Earth (FoE) group consistently pursue their policy advocacy purposes. However, while NCC shows an entrepreneurship attitude (Zahariadis, 2007; Tanner *et al.*, 2019) in managing the Council's budget and seeking fund-raising for the Council operation, Nottingham FoE did not include that entrepreneurship tendency. Accordingly, only a few core members of Nottingham FoE seriously invested their time and efforts in maintaining the air quality campaign, while the others just joined the group activities occasionally.

Meanwhile, in the Shanghai case, INGOs show the most attributes of policy entrepreneurs among the studied actors. They took efforts and cultivated resources to establish collaborative relationships with the central and local governments in China to inject their policy ideas into China's environmental governance system. Although academic elites in China also played an important role in shaping policies, they mostly served as policy consultants under the assignment of the central Government rather than

deliberately investing their own resources to promote their policy ideas (Kingdon, 2014). Meanwhile, INGOs could circulate resources and knowledge to support policy-making and implementation in China, nonetheless, only if they were permitted to do so.

VII-4.2. Revisiting local autonomy

Reflecting the empirical findings in this study upon various ways of conceptualisation and typology of local autonomy (Clark, 1984); (Pratchett, 2004); (Bulkeley *et al.*, 2018), the Nottingham City and the Shanghai case studies illustrate certain combinations yet also the inadequacy of forms of local autonomy. Especially, neither case study shows local policy decision-making with entire independence from the central influence.

Nottingham City had freedom for political elections and administrative arrangements, while Shanghai had a powerful financial and political position in China's governance system. However, both cities did not have absolute policy initiation powers as conceptualised by Clark (1984) and entire freedom to make policies or achieve their desired outcomes as conceptualised by Pratchett (2004). The powers over policy-making of Nottingham City were restrained by the UK legislation in which the central Government, in most cases, held the right to approve or reject local policy proposals. China was even more centralist when paramount decision-making powers were constitutionally laid in the Government's hands. Furthermore, neither city had immunity (Clark, 1984) or freedom from central control (Pratchett, 2004). For instance, although NCC was 'immune' from administrative control, it was not immune from the political landscape that the UK Government had created over many years to control local decision-making capacity.

Regarding the typology of autonomy forms by Bulkeley *et al.* (2018), the autonomy of NCC resembles a mixture of distributed autonomy and networked autonomy. Firstly, NCC was granted independence from central control in some respects. Secondly, NCC and non-state actors could freely interact and practice their political and social activities. Whereas the Shanghai case epitomises coerced autonomy. This results from China's downward decentralisation of duties and upwards accountability system.

Nevertheless, analysing forms of power distribution to local actors is inadequate to explain their approaches to respond to top-down policy mandates as investigated in this study. When placing the investigation of local autonomy in the context of local policy

agenda-setting, this study finds that local capacity was crucial and hence became a target for the central Governments to moderate in both cases. Therefore, this study supports the idea that a key aspect when discussing local autonomy is the capacity of a locality to develop and implement actions for local interests (Jacob *et al.*, 2008; Eckersley, 2017; Smith and Spicer, 2018).

Jacob *et al.* (2008) view that local autonomy is insufficient for a locality to exercise its governance powers without the capacity needed 'to take advantage of new powers' (Jacob *et al.*, 2008, p. 408). The cases of air pollution control in Nottingham City and Shanghai echo that point with an illustration of fragmentations in decentralisation and fiscal management schemes that were employed as mechanisms to keep local capacity from fully exercising their institutionalised and politicised governance powers. This study also demonstrates that a locality needs to have all four dimensions of capacity (strategic planning (planning initiation or coping with existing situations); public participation and support; expertise; access to revenue) as suggested by Jacob *et al.* (2008) to meaningfully utilise its autonomous powers. Nonetheless, this point implies a possibility of viewing local autonomy and local capacity as two separate concepts instead of having autonomy as one component of local capacity like the conceptualisation of Jacob *et al.* (2008). In this regard, Eckersley (2017) suggests distinguishing local autonomy and capacity.

However, Eckersley discussed the local autonomy concept as the autonomy of local governments against all other external actors, both actors at higher governing levels and non-state actors while this thesis suggests viewing local autonomy as the autonomy for all local actors. From this perspective, Eckersley's argument is not always applicable. Indeed, the capacity of a locality to perform environmental governance comprises not only the capacity of state actors but also of non-state actors due to the relationships between them in local environmental governance. The relationships could be 'critical friends' (critical discussions for common goods rather than for opposition) as in the Nottingham City case. They could also be distributed functions from local governments to non-state actors to support policy implementation and monitoring as in the Shanghai case. This discussion then aligns with the conceptual framework of Jacob *et al.* (2008) who view public participation as one component of local capacity.

Overall, the discussion in this section highlights three main points to re-consider local autonomy in environmental governance. Firstly, a combination of the MLG lens and policy agenda-setting theories can form a helpful analytical framework to understand local

environmental governance. That framework goes beyond the descriptive capacity of MLG analysis (Eckersley, 2017) as it shows that different factors and actors beyond local boundaries can influence the autonomy in the environmental policy-making of a locality. Additionally, that local autonomy in environmental governance can also influence other actors and policy-making outside that locality.

Secondly, research efforts to classify forms of local autonomy (e.g., Clark, 1984; Pratchett, 2004; Bulkeley *et al.*, 2018) have created a foundation to analyse local governance processes. This study has tried to apply those ways of typology to the analysis of the Nottingham City and the Shanghai cases to contribute to their discussions. The findings show that when viewed from a MLG perspective with the analysis of political, institutional, policy and socio-technical interaction aspects, the concept of local autonomy for a locality can be a combination of various types rather than strictly falling into a specific category. Furthermore, although the stories of Nottingham City and Shanghai had some similarities such as centralist and fragmented decentralisation and resource-driven policy-making tendencies, their local autonomy should be viewed as two different types. Nottingham City showed a combination of distributed autonomy and networked autonomy, while Shanghai epitomised coerced autonomy yet with a certain level of indirect influence back on the central policy directions.

Finally, this thesis supports and supplements the view that local autonomy is a relative concept (Pratchett, 2004). Pratchett argues for the relative manner of local autonomy regarding power distribution between national and sub-national units. However, this thesis supplements another viewpoint that the relative characteristic of local autonomy also relates to the relationship between local autonomy and the capacity of local actors to engage in governance processes. It is hard to assert whether local autonomy is part of local governance capacity (Jacob *et al.*, 2008), or whether governance capacity is a component to define local autonomy. Indeed, it is necessary to investigate both notions when analysing how and why local actors behave in certain ways to engage in local governance.

VII-4.3. Theoretical applications in different contexts

One theoretical research question of this doctoral study is whether it is possible and/or suitable to use a theoretical framework that has largely been developed in the Western

literature to research China. After the discussion to convince the combination of MLG and agenda-setting theories in Section VII-4.1 and how that theoretical approach helps to revisit the local autonomy concept in environmental governance in Section VII-4.2, this Section will discuss the considerations for the applicability of that theoretical framework to research different governance systems.

To begin with, both storylines of the Nottingham City case and the Shanghai case contain the materials to be explored using the multilevel agenda-setting framework of this study. The study started with the cases of air pollution control that happened between 2013 and 2019 in Nottingham City/UK and Shanghai/China. Air pollution in the UK and China was initially noticed from signals of air quality conditions – i.e., air quality indices (objective quality) or/and sensed quality of the air (subjective quality such as vision and odour). However, the pollutants were mostly invisible to human senses in Nottingham City and have been increasingly invisible in the Shanghai case. Their presence and concentrations, therefore, were mainly identified and communicated through technological instruments. Information on air quality conditions detected and presented by technological instruments was then delivered to different actors. When the conditions exceeded the regulated levels (i.e., the exceedance of NO_2 emissions in the Nottingham City/UK case according to the EU legal limit of NO_2 emissions) or suggested levels of international air quality guidelines (i.e., the exceedance of $PM_{2.5}$ emissions in Shanghai/China compared to the WHO Guidelines), those conditions were considered as a technical problem to be solved.

As air pollution problems were identified and communicated to the public, policy mandates were imposed on local authorities to control the pollution. Those policy mandates required resources for local authorities to develop and implement measures. Pollution control measures were proposed according to the identified main pollution sources and initiating pollutants. They were transport-related measures to address NO_2 emissions in the Nottingham City/UK case and industry-related measures to reduce $PM_{2.5}$ in the Shanghai case. Employing technological solutions then required resources.

Once resources were concerned, there came questions of politics regarding resource distribution and power relations. Nottingham City and Shanghai both received top-down policy mandates to control air pollution. They both faced a phenomenon of top-down influence to inject policy ideas into local policy agendas. However, their resource situations were different. Nottingham City was facing a shortage of resources to perform

its desired policy agendas, while Shanghai was an affluent and leading municipality in China. In other words, Nottingham City and Shanghai faced a similar governance phenomenon within different governance contexts.

Although the Nottingham City and the Shanghai cases shared both differences and similarities, they belong to different geographical-political regions and have different political traditions and governance systems. Therefore, this study follows the idea of the 'most-different' international comparison (Hopkin, 2010). The 'most-different' comparative approach provided comparative evidence from those two cities with different governance traditions in the West (the UK) and the East (China) to supplement findings from single case studies (e.g., (Hysing, 2009); (Belinskij *et al.*, 2019) or comparative studies of cases that share more similar backgrounds or/and are in the same geographical-political region (e.g., (Michael, Noor and Figueroa, 2014); (Lucas *et al.*, 2016) in the urban comparative research area. Specifically, this study highlights the applicability of its theoretical framework, which is based on Western-influenced literature, to research a Western case (Nottingham City/UK) and an Eastern case (Shanghai/China) with different governance traditions and contexts. That is another contribution of this study to the theoretical discussions surrounding the applicability of the MLG concept to analyse China's governance system (Homsy, Liu and Warner, 2019; Westman, Castán Broto and Huang, 2019; Tang, Luo and Ying, 2022).

From a MLG perspective, the study aimed to collect information from actors from different governing levels and sectors that engaged in local air quality management, which was then expanded to local environmental governance in general following the participants' stories. To do that, a snowball recruitment strategy was taken. The study started with the first few participants that had direct relations to the studied air quality management cases. The fieldwork then found other actors who directly or indirectly engaged or were engaged, in local environmental governance in both case studies. Especially, the fieldwork found the engagement of actors from the national level and non-state actors in local environmental governance. Additionally, there were practices of governance responsibilities and/or resources being distributed from the central Governments to other state actors and non-state actors, however, within restricted boundaries for them to perform activities surrounding the management of environmental issues at the local level in both cases.

For instance, the UK Government provided freedom for multistakeholder interactions

to shift the governance responsibilities from the Government to other, especially local, actors. In that system, vertical and horizontal interactions of state and non-state actors were dynamic. From a vertical perspective, the Nottingham City/UK case depicts an example of type I of the MLG concept (Hooghe and Marks, 2001). That includes a top-down flow of policy mandates going from the EU to the UK Government to local authorities including Nottingham City Council (NCC) and a bottom-up feedback policy negotiation process between NCC and the UK Government to defend NCC's clean air policy proposal. Type II of the MLG concept (Hooghe and Marks, 2001) was also practised in the Nottingham City case with vibrant public-private partnership relations in Nottingham City, inter-jurisdictional networking among local authorities, and interactions for policy discussions between NCC and local civil society actors. However, on top of those vertical and horizontal interactions, the UK Government still held onto decision-making powers and influential capacity to drive local policy options to its priorities.

Meanwhile, the Shanghai case also epitomises Type I of MLG through the involvement of the central Government as the focal point to connect international actors and resource flows with local governments. The vertical dimension is clear in China's context for a multi-layer governing system, however, mostly with top-down directions. Whereas bottom-up interactions are usually in the form of reporting. For such a special municipality as Shanghai, bottom-up interactions may also include joining policy discussions at the national level, yet still under the power imbalance of top-down decision-making.

Regarding Type II of MLG, local governments in China have also been engaging in transnational networks as well as domestic inter-jurisdictional relationships. This study also found the existence of state and non-state interactions, both at the national and local levels in China. At the national level, there were partnerships between national state actors with international NGOs, international and domestic academics, and even domestic non-profit organisations. At the local level, there were partnerships between Shanghai Municipal government and local Chinese civil society actors to support their policy implementation. For local civil society actors who were expatriates living in China, despite not having partnerships with governmental actors, they also formed activism networks among themselves to work on awareness-raising activities.

Those findings from the Shanghai case contribute to revisit arguments that the MLG approach in China focuses more on hierarchical accountability than on subnational inter-

jurisdictional coordination/collaboration or lacking transnational networking (Homsy, Liu and Warner, 2019; Westman, Castán Broto and Huang, 2019). Perhaps, those authors' conclusions were applicable for other localities in China, while major municipalities like Shanghai show a different image. For instance, there are also similar findings on the existence of vertical and horizontal interactions between state and non-state actors in studies on Shanghai's context (Arantes, Zou and Che, 2020; Tang, Luo and Ying, 2022). However, it should also be cautious that the meanings of state and non-state partnerships in China are different from the original ideas of MLG in democratic systems. Instead, China seems to adopt the model in ways to suit their governance purposes than to open up for free collaboration platforms (Teets, 2013, 2018; Tang, Luo and Ying, 2022), and indeed, collaborative relationships are still insufficient and put under the hierarchical control of the Government (Lin *et al.*, 2011; Ma *et al.*, 2018).

Overall, this Chapter has presented a discussion of the empirical findings of this doctoral study. The discussion has connected the findings with the theoretical basis and methodological approach to demonstrate how this study has addressed its three research questions. Following this discussion, the next Chapter will give a conclusion for this study.

CHAPTER VIII – CONCLUSION

This thesis has told the stories of local environmental governance under multilevel pressures in Nottingham City and Shanghai over seven chapters. Throughout the previous seven chapters, the thesis has demonstrated a research approach and findings to contribute to the literature on local environmental governance and its relations to the landscape of environmental governance beyond local jurisdictions.

Before presenting conclusions, this Chapter will first revisit the whole thesis journey in Section VII-1. Limitations of the research will be identified in Section VII-2. Despite its acknowledged limitations, this thesis makes important contributions to knowledge surrounding studies of local autonomy for environmental governance. Accordingly, the Chapter will conclude with the key contributions of this study in Section VII-3.

VIII-1. SUMMARY OF THE THESIS JOURNEY AND PREVIOUS CHAPTERS

My doctoral study began in March 2017. It has been a long journey with both excitement and difficult personal circumstances, including sustaining inputs through the COVID-19 pandemic, to reach this finish line. The study has had a memorable exploration of the field in the UK and China with most of the fieldwork time spent in Nottingham City and Shanghai. Despite having an outsider position as a researcher in both the UK and China and facing cultural and language barriers, I have successfully conducted 37 in-depth interviews and observed 29 public events across both case studies. The breakdown is, for Nottingham/UK 17 in-depth interviews compared to 20 in Shanghai/China, and 23 observations of public events in Nottingham compared to 6 in Shanghai (in part explained by the shorter fieldwork window). The average interviews in the UK lasted approximately 70 minutes and those in China 55 minutes.

At the outset, this thesis raises questions about the role of local autonomy in local environmental governance and whether it varies by governance system. To seek the answers to that broad question, the thesis sets out three concrete research questions:

- How do localities in different governance systems (Nottingham City/UK and Shanghai/China) respond to decentralised governance duties to address a similar

environmental issue (air pollution)?

- What are the relationships between the environmental governance approaches of a locality and the landscape of environmental governance beyond its local jurisdiction, from a MLG perspective?
- Is it applicable to use the multilevel governance concept, which has mainly been established and developed in Western literature, to research an Asian governance system such as China?

One of the key purposes of the first question is to compare different governance systems and contexts. The chosen case studies are Nottingham City in the UK and Shanghai in China – two of the cases within the framework of the Leverhulme Research Project 'Sustaining Urban Habitat' which funded this doctoral study. Accordingly, Chapter II has reviewed the literature to construct a theoretical framework for the investigation of the research questions. Through the review of relevant literature and consideration of theoretical applicability the thesis adopts a combined framework of MLG (Hooghe and Marks, 2001; Bulkeley and Betsill, 2005; Lange *et al.*, 2013) and governance agenda-setting (Kingdon, 1984, 2014; Baumgartner *et al.*, 2009). Additionally, impression management theories are employed to augment the overarching theoretical framework with further explanations of approaches to policy problem-framing by driving public perceptions of environmental quality.

However, given the potentially significant differences in China's political and institutional settings, there could be challenges to applying Western-developed theories. Therefore, this thesis also discusses the third research question: whether MLG, which has mainly been established and developed in Western literature, has explanatory power in an Asian governance system such as China.

Based on the theoretical framework and methodological choices set out in Chapters II and III, Chapter IV describes the governance contexts in the Nottingham City and the Shanghai cases. This Chapter employed valuable empirical data from the fieldwork to inform and illustrate the analysis. In other words, it is not simply a contextualisation of the cases. In addition, it presents the viewpoints of the research participants about those contexts. Chapter IV provides a bridge to the discussions of actors' responses in Chapters V and VI.

To sum up the comparative analysis of governance contexts in Chapter IV, Nottingham City enjoyed more freedom than Shanghai regarding local political and administrative arrangements. However, Shanghai had more resources and governance capacity to respond top-down policy mandates, while Nottingham City faced a shortage of resources to attempt to satisfy the demands of both the local community and the UK central Government.

Based on the contextual analysis in Chapter IV, Chapters V and VI analysed the approaches of actors engaging in local environmental governance, especially in air quality management, in Nottingham City and Shanghai. Chapter V focused on actors' approaches to policy problem-framing and shaping perceptions of environmental quality in policy communication. Chapter VI investigated the responses of local actors to the top-down policy mandates and what influenced those responses. Chapter VII then brought together the previous analyses in an overall discussion.

VIII-2. THE LIMITATIONS OF THIS STUDY

Not surprisingly, despite all the effort and care taken with this doctoral study, it still has limitations. Those limitations include both methodological and theoretical aspects.

Methodological limitations

The first methodological issue is the asymmetry between the data sets of the Nottingham City case and the Shanghai case. This asymmetry was influenced by two factors. Firstly, there was a shorter data collection duration for the Shanghai case than for the Nottingham case. I had flexibility to conduct fieldwork for the Nottingham case as I was resident in the UK during the data collection phase. However, due to funding and logistical constraints, the fieldwork in China took place during one five week field visit. The second factor is the language barrier as I did not speak any Chinese languages. This barrier was coupled with my outsider position as a researcher concerning the Chinese culture and professional connections for participant recruitment in China. As discussed in the Methodology Chapter (Chapter Three), potential informants in China were generally more cautious and reluctant to accept interview invitations and/or recommend further contacts than those in the UK. Due to those factors, recruiting participants and accessing published information was more challenging in the Shanghai case than in the Nottingham case. That has led to the asymmetry in the richness of the data collected from

the two case studies, especially regarding primary data about governmental actors.

The Chinese language barrier also posed the second methodological challenge for this study. As most of the interviews in China were conducted in English without interpretation (except for only one interview conducted in Mandarin Chinese with English interpretation), the data collection missed out on potential informants who did not speak English. For mitigation measures, most of the English-spoken interviews were conducted with Chinese people, and linguistic cross-checking was applied during the interviews and the transcription phase. However, it is still necessary for further research to be done with non-English-spoken participants in Chinese languages (i.e. not only Mandarin Chinese) to maintain as many primary linguistic expressions as possible.

Thirdly, in qualitative research, although respondents' subjectivity is arguably a value rather than a limitation, it needs to be considered to improve research approaches. As a cultural outsider in both case studies, the challenge for me to elicit information from participants comes from both internal and external aspects. Internally, my understanding of contextual information (i.e., information based on political and cultural contexts) needed to be double-checked with the informants. Externally, it depends on the informants to decide their attitudes towards and types of information to provide to an outsider. For instance, participants in China might have chosen certain respondent stances when speaking to me as a foreigner (Reny, 2016). Despite my efforts to cross-check the information across the participants, deeper information and understanding might be generated by a researcher who is Chinese and works in China.

Theoretical choices

Different theoretical approaches can be taken to research different aspects of a topic/object. Therefore, there can be other theoretical choices than the approach taken by this study, and they may reveal a different set of findings. As discussed in the Theory Chapter (Chapter II), some theoretical concepts are commonly used to research China, although they focus specifically on the authoritarian regime of China. This study does not use those concepts to ensure theoretical comparability for an international case study comparison. However, this study does have limitations in exploring the literature and information sources that are only in Chinese or have restricted access from outside China. Therefore, this thesis does not claim an exhaustive review of theoretical approaches to investigate China's governance system.

Under this circumstance, the study proposes a theoretical framework founded in knowledge that originated and was largely developed in the Western literature including the MLG and policy agenda-setting theories. Although the study has demonstrated the applicability of that theoretical framework, I suggest that future research would expand the knowledge by comparing the findings of this study with findings generated by theoretical approaches that are commonly used and/or originated from China such as ecological civilisation and authoritarian environmentalism.

VIII-3. SUMMARY OF KEY CONTRIBUTIONS TO KNOWLEDGE

This section identifies three key contributions to knowledge by this doctoral study. The first is the combined theoretical approach and its applicability to researching different governance contexts. The second contribution is empirical, highlighting the potential threats of invisible pollution in times of digital technology. Finally, there are contributions to theoretical discussions of local autonomy and considerations for localising environmental governance.

VIII-3.1. A combined theoretical approach and its applicability in different governance contexts

The first contribution of this study is the combination of MLG and agenda-setting to research two case studies from different governance traditions. The combined multilevel agenda-setting framework in this study includes theoretical components of MLG and agenda-setting theories. That main framework is supplemented with impression management theories to help analyse the mechanisms and influence of policy problem-framing and communication approaches. That combination within the theoretical framework is helpful for this study in two ways. Firstly, the agenda-setting and impression management components add analytical value to the MLG framework, which is viewed as more descriptive than explanatory (Eckersley, 2017). Secondly, placing agenda-setting in a MLG lens helps to illuminate the motivations and mechanisms of agenda-setting processes, which thence improves the explanatory capacity of agenda-setting analysis. Accordingly, this study argues that agenda-setting analysis should analyse not only one governing level but also interactions and inter-relations of policy agenda-setting processes at both the central and local levels.

The use of this theoretical framework in different governance contexts was conducted through a 'most-different' international comparative research design with one case study from a Western political tradition – Nottingham City/UK, and another from Asia – Shanghai/China. Furthermore, in the methodological aspect, the findings from using this research design support the use of qualitative comparative research in international settings. In that, instead of strictly finding similarities or differences, this study demonstrates nuances of underlying differences within similar phenomena between the two cases of Nottingham and Shanghai. Accordingly, it shows the usefulness of enquiring deeply into actors' motivations and the contexts behind the governance approaches which might appear to be similar.

MLG was used in two ways in this study. Firstly, as a theory, it served as an analytical lens (Hooghe and Marks, 2001; Bulkeley and Betsill, 2005) to describe and explain the phenomena in the case studies. Secondly, as an operational governance framework (Homsy, Liu and Warner, 2019), MLG offers a model to revisit the governance practices of the two cases.

In theory, the use of MLG analysis requires the researched systems to have the involvement and interactions of different actors at different vertical governing levels and horizontal spheres/sectors in governance processes (Hooghe and Marks, 2001; Bulkeley and Betsill, 2005). In this study, the multilevel agenda-setting analytical framework fits well in researching the UK-Nottingham City context given its central-local separation in institutional arrangements and a wide range of non-state actors involved in governance processes. Regarding the Shanghai case, the framework could also elicit meaningful analysis. That was possible due to the special role of Shanghai's political leaders who usually held a high position in China's top political decision-maker group – the Politburo. Therefore, though Shanghai's policy agendas might apparently be driven by the central directions, the involvement of its municipal leaders in the national discussion platform gives opportunities for reverse local-central influence on setting national agendas. Furthermore, the contemporary tendency of more and more non-state actors being involved in China's governance system through different strategies and roles (Teets, 2013; Jing and Li, 2019) also provides the necessary materials to apply MLG analysis.

Based on the above theoretical considerations, this study assessed the operational aspect of MLG as a governance model by analysing its theoretical components in the local environmental governance stories of Nottingham City and Shanghai. Accordingly, the

investigation has found that the MLG concept was adopted for different purposes in both the UK and China compared to its original ideas in Western literature and practices. That is that the Nottingham case shows a closer practice of MLG compared to the theories in terms of multistakeholder partnerships in vertical and horizontal dimensions. Meanwhile, the Shanghai case also provides evidence of multistakeholder partnerships vertically and horizontally; however, they are still under the focal control of the central Government and bear power dominance of state actors over non-state actors.

Those findings in this study contribute to the theoretical discussions of whether MLG can be used to analyse governance systems from different political traditions other than Western-like democratic systems. While this study demonstrates that it can, the use of this concept should be understood as a guiding framework to analyse the operation of a specific system although that system might not satisfy all the Western-influenced principles of MLG. This point reflects the argument that different governance modes can enable different extents or forms of multistakeholder interactions in governance processes (Hysing, 2009; Lange *et al.*, 2013). Those governance modes are changeable by time, place, context, and even governing issues.

VIII-3.2. Invisible pollution and possible threats in environmental governance agenda-setting in digital times

One notable issue with the environmental pollution observed in this study is the invisibility and the shift from the visibility to the invisibility of air quality conditions in Nottingham City and Shanghai. That technical issue was found to influence the processes of environmental governance agenda-setting with the involvement of diverse actors in policy communication and discussions.

From this study's findings, when the invisibility of environmental conditions is coupled with the complicated science behind it, that combination makes it difficult for the public to detect pollution or define if certain conditions are problematic enough to require policy actions. This situation opens space for ambiguity in the communication of environmental quality. In both cases in this study, the air quality conditions of the same places and at the same time were communicated as different impressions by different modelling methodologies.

Consequently, policy discussions to address invisible environmental pollution might be held among elite policy-makers and a limited group of non-state actors who have adequate technical capacity and/or influential connections with state actors. Meanwhile, civil society actors who have insufficient technical knowledge to identify and assess the significance of the concerned pollution might shift their attention away from that topic if they perceive, either through their subjective senses or through the information communicated to them, that the pollution problem has been solved or cannot be further improved. This argument echoes and connects the views of Baumgartner *et al.* (2009) and Kingdon (2014) regarding the role of technical knowledge barriers in establishing policy monopolies and factors that can lead to the fading of a policy problem. This study contributes empirical evidence to show the invisibility of environmental problems might contribute to creating policy monopolies as a result of technical knowledge barriers and causing demotivated pro-environmental concerns.

The above addition to the theory is important as it helps to explain another threat of invisible pollution in governance practices. As technical knowledge and decision-making power are held by a certain group of actors, policy options might be shaped according to the interests of those actors. The advocacy could then be facilitated by framing environmental conditions as certain types of problems which could be addressed by their advocated policy options. Those policy options might bear potential adverse consequences such as conflicts between solving one environmental problem and enhancing others or risks of pollution displacement. However, as mentioned above, the invisibility of the problems and their consequences might demotivate activist so that there might be little opposition to those monopoly-framed policies.

Therefore, the thesis further emphasises the need to include socio-technical interactions and actors' perceptions of technical knowledge surrounding the studied environmental issues when analysing environmental governance practices. Apart from regulatory barriers, demotivation to engage in solving a certain environmental problem could be largely driven by the perception that the problem has been solved or cannot be solved anyway. Accordingly, this thesis suggests relevant measures to be taken in policy communication practices to bridge the gap between technical ambiguity and public concerns as public concerns were found to be an important factor to enhance public engagement in environmental governance.

VIII-3.3. Local autonomy and local capacity: putting local environmental governance in a multilevel agenda-setting context

Based on the multilevel agenda-setting analytical framework in a 'most-different' comparative design, a key empirical contribution of this thesis is to provide evidence to revisit the meanings of local autonomy in environmental governance. This study has analysed different aspects of the conceptualisation of local autonomy: policy initiation power, political immunity from the central influence, administrative freedom, and fiscal power (Clark, 1984; Bahl, 1999; Pratchett, 2004; Bulkeley *et al.*, 2018).

Local autonomy: whose autonomy?

Through investigating actors' opinions in the Nottingham City and the Shanghai cases, those aspects of local autonomy were perceived as not only relating to local authorities but also important for non-state actors to engage in local environmental governance. This is an important viewpoint to consider in studies of local autonomy in the contexts where multistakeholder engagement in local governance exists.

In previous studies, those four aspects of local autonomy were mostly discussed surrounding local state actors and concerning governmental institutional settings. Nonetheless, the MLG approach helps this study to illuminate the relevance of discussing the connections, either as direct influence or indirect consequences, of those aspects with local non-state actors and their engagement in local environmental governance. Accordingly, the findings in this study support the argument that when the operational capacity of local non-state actors (specifically environmental activists in this study) decreases due to direct or indirect impacts of the overarching political-policy context, they tend to rely on the support of the actors that they consider as having greater capacity to make influence on policy-making to form activism alliances. By doing that, they need to compromise part of their original objectives to match with the others. While this point echoes an argument by Eckersley (2017) regarding the sacrifice of autonomy for local authorities to increase their operational capacity, it supplements that the argument is also applicable to local non-state actors.

Another concern about local autonomy is the horizontal inter-relations of local environmental governance options. This study argues that environmental governance approaches in one place or of one type of actors may influence the capacity and

governance options of another or others. That could be due to the inter-relation of policy consequences, including the relocation of pollution arising from those chosen policy options. Furthermore, localities with stronger governance capacity and political positions could have higher levels of autonomous decision-making on governance options, which then potentially limit the options of others who have less capacity and power. This point leads to the question of inter-locality equity when discussing local autonomy from a multilevel perspective.

Overall, it is found from this study that in centralist governance systems such as the UK and China, local autonomy is more favourable and beneficial for actors with the capacity and positions to defend and perform their governance decisions regardless of how much freedom one is granted by institutional settings. At this point, this argument leads to another conclusion regarding the relationship between the concept of local autonomy, governance capacity, and the overall governance contexts and hence suggests revisiting the approaches to analyse local autonomy. The following section will discuss this conclusion.

Local autonomy: intertwined with capacity and relative to the context

Local autonomy closely relates to local governance capacity, and each concept has multiple conditions (Jacob *et al.*, 2008; Eckersley, 2017). From the observations of the case studies, those conditions might neither be equally nor simultaneously satisfied if central governments want to mediate local freedom of governance decision-making. For instance, both the UK and China's Governments took measures to control the autonomy of local actors by controlling the components that made up their governance capacity.

The case studies also provide examples of potential mechanisms to facilitate the influence of central policy agendas on local agenda-setting processes. The first mechanism would be to create a political context that sets a limited boundary for local decision-making. From the case studies, that political context can be formed by existing institutional settings, which set operational rules for local governance and power relations among different stakeholders in the governance system and/or a landscape of national policies that impose challenges and opportunities to limit local policy options. The second possible mechanism is to concentrate resource allocation and central support on the government's favoured policies to partly or wholly drive local policy options towards

those directions. However, this mechanism would be more effective if the local actors concerned are placed in a refrained governance context mentioned in the first mechanism.

The second mechanism could also be consolidated by framing an issue as the type of problem that can be solved by the government's favoured policies to justify those policies as suitable solutions. Accordingly, this thesis finds that managing the impressions of environmental quality plays an important role in problem-framing processes. However, the influence of impression management tactics comes with conditions. On the one hand, this thesis supports the view that in environmental governance processes, when policy contents and information on environmental quality are communicated among various actors, their decision-making might be influenced by their viewpoints about the informed information and how environmental problems are framed (Lim and Moon, 2020; Yang *et al.*, 2020; Soares *et al.*, 2021).

On the other hand, the study finds that there is not a certain causal link between abundant governmental data disclosure and the availability of supporting technologies with public trust in the government and public engagement in environmental governance. Instead, public trust in the government and the motivations for public engagement in local environmental governance was found to relate to both factors: their perceptions of environmental quality and whether the host political-institutional environment would enable or demotivate their critical engagement activities.

From this perspective, political environments may dominate the capacity of local actors. Even if they are capable of performing actions, they might be discouraged from taking action at the very beginning by the political environment. In other words, without political autonomy, it is challenging for local actors to execute their capacity. This perspective then consolidates the argument of this study that local autonomy and local governance capacity could be viewed as two different yet intertwined concepts rather than viewing local autonomy as a component of local governance capacity (Jacob *et al.*, 2008), and each concept has multiple components of its own.

To sum up, this doctoral study has navigated a complex journey to arrive at a final argument that local environmental governance should be analysed in context and in connection with other issues and actors within and beyond a local jurisdiction due to the interdisciplinary and transboundary manner of environmental issues. It is especially important to place local environmental governance in a MLG perspective (Bulkeley and

Betsill, 2013; Lange *et al.*, 2013; Bulkeley *et al.*, 2018), particularly incorporating socio-technical interaction analysis in problem-framing and policy communication, in times of aspirations for sustainable development. Accordingly, risks of fragmented decentralisation and fragmented freedom for local actors to make policy decisions need to be understood in order to minimise inequity in environmental governance and sustainable development opportunities across localities.

Furthermore, the local autonomy concept is insufficient to discuss local environmental governance approaches. Instead, the approaches of local actors to engage in environmental governance could be influenced by multiple factors and actors, including the influence to shape the extent of their autonomy and engagement motivation. In other words, local autonomy is a relative concept. It is relative to external factors such as the governance context and the inter-relations with other actors, and relative to the autonomy-bearers' internal factors such as their engagement capacity and motivation.

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Annex 1. List of the observed public events/meetings

	Organisation	Event name/ type	Date	Location	Note
	Event observation in Nottingham/UK				
1	Nottingham Citizens' Air Pollution Working Group	Meeting	19/04/2018	Nottingham	Public
2	Nottingham Citizens	General Assembly	10/05/2018	Nottingham	Public
3	Nottingham Citizens	Listening Workshop	19/06/2018	Nottingham	Public
4	Nottingham Environment Conference	Conference	25/06/2018	Nottingham	Public
5	Nottingham Environment Conference	Conference	26/06/2018	Nottingham	Public
6	Friends of the Earth	Meeting	26/06/2018	Nottingham	Public
7	Local Access Forum	Meeting	27/06/2018	Nottingham City Council, Nottingham	Free invitation for the public.
8	Friends of the Earth	Friends of Colwick Woods Gala Day	01/07/2018	Nottingham	Public
9	Green Party	Monthly meeting	03/07/2018	Nottingham	Public
10	Regen Project	Site visit event	11/07/2018	Community Hub of the Trent Basin site, Nottingham	Free invitation for the public.

11	Friends of the Earth	Monthly meeting	01/08/2018	Nottingham	Public
12	Friends of the Earth	Campaign stall	01/09/2018	Old Market Square, Nottingham	Public
13	Friends of the Earth	Air Pollution Café	03/09/2018	Nottingham	Public
14	Local Access Forum	Meeting	10/10/2018	NCC, Nottingham	Free invitation for the public.
15	Nottingham City Council	Nottingham City Council Budget Consultation 2019-2020	29/01/2019	Nottingham	Public
16	Friends of the Earth	Frack Free Notts monthly meeting	11/02/2019	Nottingham	Public
17	Arup London	2nd Annual (2019) Air Quality Forum	26/02/2019	London	Public, registered.
18	Friends of the Earth	Annual General Meeting	26/03/2019	Nottingham	Public
19	Nottingham Labour Party	Notts Transformed - Life beyond Brexit – gearing up for May's local council elections!	30/03/2019	Nottingham	Public
20	Local Access Forum	Meeting	10/04/2019	NCC, Nottingham	Public

21	Friends of the Earth	Groundswell Birmingham (FoE's Midlands regional annual event)	08/06/2019	Nottingham	Public
22	Friends of the Earth	Monthly meeting	12/11/2019	Nottingham	Public
		Event observation in Shanghai/China			
23	Shanghai's Municipal Government	Shanghai Urban Planning Exhibition Center (site visit)	19/10/2018	Shanghai	Public
24	Fudan University, University of Oxford, Health Effects Institute USA, Chinese University of Hong Kong	International Symposium on Air Pollution	20/10/2018	Shanghai	Free invitation, open for public registration
25	Eco Design Fair	Eco Design Fair	21/10/2018	Shanghai	Public
26	Green Initiatives	Green Initiatives Event - Citizen Science and Environmental Action	24/10/2018	Shanghai	Public, registered.
27	Green Initiatives	Singles Day, Multiple Problems: Green Drinks' 115th Monthly	15/11/2018	Shanghai	Public, registered.

28	Green Initiatives	When Nature Calls: World Toilet Day 2018 Special Event	17/11/2018	Shanghai	Public, registered.

Annex 2. Participant information sheet



Participant Information Sheet

参与者信息表

Title of Study: A comparative study on the environmental policy transfer approaches of Nottingham City and Shanghai[16]

研究项目: 诺丁汉市与上海的环境政策变迁方法比较研究

Name of Researcher(s): Nguyen Que Huong Le

研究人员：Nguyen Que Huong Le

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. One of our team members will go through the information sheet with you and answer any questions you have. Talk to others about the study if you wish. Ask us if there is anything that is not clear.

我们想邀请您参加我们的研究项目。在您决定前，我们希望您了解本研究的目的以及它将为您带来什么。我们的成员将会与您一起阅读这份"参与者信息表"，同时会回答您所提出的问题。
如果您愿意，可以与其他人讨论该研究。如果您有不明白的地方，请随时提出问题。

What is the purpose of the study?

本研究的目的是什么？

The purpose of my study is to explore the approaches of cities in different local contexts to address their environmental issues within the broader concept of sustainable development.

本研究的目的是在可持续发展概念中，探索不同环境背景的地区解决环境问题的方法。

Why have I been invited?

[16] The title in the Information Sheet and the Consent Form is the initial and temporary title that was used for the ethics application. Therefore, it is different from the final version of this thesis's title.

为什么会邀请我参加？

You are being invited to take part because you are involved with environmental policy-making in Shanghai. We are interested to know more about your experiences and perspectives in this area.

您被邀请参加是因为您与上海的环境政策制定有关。我们希望能了解您在这方面的经验和观点。

What will happen to me if I take part?

我有义务参加吗？

If you decide to take part in this research, we will arrange for a time and place to interview you. With your permission we will audio-record the interview. The meeting will take approximately 30 to 90 minutes. There is a chance that in the future we will contact you for a follow-up interview.

您没有义务参加我们的研究项目。如果您决定参加，我们会提供给您这份"参与者信息表"以及请您签署一份知情同意书。您也可以在研究的任何阶段决定停止参加并且无需给出理由，这不会影响您的合法权利。

What will happen to me if I take part?

如果我愿意参加，我要做什么？

If you decide to take part in this research, we will arrange for a time and place to interview you. With your permission we will audio-record the interview. The meeting will take approximately 30 to 90 minutes. There is a chance that in the future we will contact you for a follow-up interview.

如果您愿意参加本研究，我们会安排时间和地点与您面谈。在您的同意下，我们将对这次面谈进行录音。面谈过程大约需要 30 到 90 分钟，也许我们将会与您联系进行后续面谈。

Expenses and payments

费用与报酬

Participants will not be paid to participate in the study.

您参加本研究不用负担任何直接的经济费用，并且不会获得任何报酬。

What are the possible benefits of taking part?

这项研究对我的好处?

We cannot promise the study will help you but the information we get from this study may help us and others in the field to better understand current challenges and benefits of environmental policies in cities.

我们不能保证该研究会对您有所帮助，但我们从该研究中获得的信息可以帮助我们和其他学者更好地了解当前城市环境政策面临的挑战和益处。

What if there is a problem?

如果有问题要如何?

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. The researchers contact details are given at the end of this information sheet. If you remain unhappy and wish to complain formally, you can do this by contacting Simon Roberts (see contact details on page 3).

如果您对这项研究的任何方面有疑问，请您直接提问我们的研究人员，他们会尽全力给您提供答案。研究人员的联系方式在本信息表的第三页。如果您仍然不满意并希望正式投诉，请您直接联系 Simon Roberts 先生
(请参阅第三页的联系方式）。

Will my taking part in the study be kept confidential?

你们如何保护我的隐私?

We will follow ethical and legal practice and all information about you will be handled in confidence. If you join the study, some parts of the data collected for the study will be looked at by authorised persons from the University of Nottingham who are organising the research. They may also be looked at by authorised people to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and we will do our best to meet this duty.

我们将遵循道德和法律实践，所有关于您的个人信息将被保密。如果您加入该研究，该研究收集的数据的某些部分将会被诺丁汉大学的相关研究人员查看。同时相关研究人员也可以查看该研究进程是否正确进行。作为研究参与者，所有人都有保密义务，我们将尽最大努力履行其职责。

All information which is collected about you during the course of the research will be kept **strictly confidential**, stored in a secure and locked office, and on a password protected database. Any information about you will have your name and address removed (anonymised) and a unique code will be used so that you cannot be recognised from it.

在研究过程中，所有我们收集的有关您的信息和资料将受到严格保密，存储在安全且上锁的办公室以及受密码保护的数据库中。任何有关您的信息都将删除您的姓名和地址（匿名），并使用唯一的代码，以便您不会被认出。

Your personal data (address, telephone number) will be kept for one year after the end of the study so that we are able to contact you about the findings of the study *and possible follow-up studies* (unless you advise us that you do not wish to be contacted). All other data (research data) will be kept securely for 7 years. After this time your data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain your confidentiality, only members of the research team will have access to your personal data.

您的个人资料（地址，电话号码）将在研究结束后保留一年，以便我们能就研究结果或者进行后续研究与您联系（除非您告知我们您不希望我们联系）。所有其它数据（研究数据）将安全保存 7 年。在此之后，您的数据将被安全处理。在此期间，所有相关人员将采取所有预防措施以保护您的机密性，只有研究团队的成员才能取得您的个人资料。

Although what you say in the interview is confidential, should you disclose anything to us which we feel puts you or anyone else at any risk, we may feel it necessary to report this to the appropriate persons.

虽然您在面谈中所说的内容是保密的，但如果您向我们披露任何我们认为会给您或其他人带来风险的事情，我们可能会认为有必要向相关人员报告。

What will happen if I don't want to carry on with the study?

如果我不想继续参加研究又如何？

Your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without your legal rights being affected. If you withdraw then the information collected so far cannot be erased and this information may still be used in the project analysis.

您的参加是自愿的，您可以随时退出，无需提供任何理由，且不会影响到您的合法权力。如果您退出，则无法删除目前收集的信息，此信息仍可用于项目分析。

What will happen to the results of the research study?

研究结果会怎么样？

We expect results of this study to be published after 2020 through academic journal articles. The results will also be discussed at academic conferences and within our project research group, i.e., the Leverhulme Programme 'Sustaining Urban Habitat: An Interdisciplinary Approach'. You may indicate that you wish to receive a copy of the published results.

我们预计这项研究的结果将在 2020 年之后在学术期刊上发表。研究结果也将在学术会议和我们的项目研究小组内讨论，即 Leverhulme 计划"维持城市栖息地：跨学科方法"。您可以表明您希望收到已发布研究结果的副本。

Who is organising and funding the research?

研究组织和资助是谁？

该项研究由诺丁汉大学组织，由 Leverhulme Trust 资助。

Who has reviewed the study?

这研究项目由谁审查？

This study has been reviewed and given favourable opinion by School of Sociology and Social Policy Research Ethics Committee.

该研究是通过社会学和社会政策研究伦理委员会的审查并给予有利的意见。

Further information and contact details

更多信息和联系方式

Nguyen Que Huong Le, PhD Candidate
Room A35, Law and Social Sciences Building
University Park
University of Nottingham
NG7 2RD
Email: huong.le@nottingham.ac.uk

Simon Roberts, Co-Investigator (Supervisor)
University of Nottingham
B39, Law and Social Science Building, University Park
Nottingham, NG7 2RD
0115 846 7767
Email: Simon.Roberts@nottingham.ac.uk

Amanda Winter, Postdoctoral Research Fellow (Supervisor)
Room B12, Lenton Hurst
University Park
University of Nottingham
NG7 2RD
0115 748 6316
Email: Amanda.Winter@nottingham.ac.uk

Alison Mohr, Chair of the Research Ethics Committee in the School of Sociology and Social Policy
Room A18 Law and Social Sciences
University Park
Nottingham
NG7 2RDUK
Telephone: 0115 84 68151
Email: alison.mohr@nottingham.ac.uk

Annex 3. Consent form

CONSENT FORM

知情同意书

Title of Study: A comparative study on the environmental policy transfer approaches of Nottingham City and Shanghai

研究项目: 诺丁汉市与上海的环境政策变迁途径比较研究

Name of Researcher: Nguyen Que Huong Le

研究人员： Nguyen Que Huong Le

Name of Participant: **Please initial box**

参与者姓名：

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. ☐

1.
我确认已阅读并理解上述研究项目的参与者信息表，并已获得机会提出疑问。

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my legal rights being affected. I understand that should I withdraw after publication of the results, the information collected so far cannot be erased and that this information may still be used in the project analysis. ☐

2.
我理解我的参加是自愿的，我可以随时退出，无需提供任何理由，且不会影响

到我的合法权力。我理解我该在研究结果公布后退出，到目前为止所有收集信息无法删除，并且该信息仍可用于项目分析。

3. I understand that relevant sections of my data collected in the study may be looked at by authorised individuals from the University of Nottingham, the research group and regulatory authorities where it is relevant to my taking part in this study. I give permission for these individuals to have access to these records and to collect, store, analyse and publish information obtained from my participation in this study. I understand that my personal details will be kept confidential. ☐

3.
我理解研究中所收集的数据的相关部分可能会被诺丁汉大学的授权人员、研究组和监管机构查看，这与我参与本研究有关。我允许他们查看这些记录，并收集，存储，分析和发布从我参与本研究中获得的信息。我理解我的个人信息将被保密。

4. I understand that the interview will be recorded and that anonymous direct quotes from the interview may be used in the study reports. ☐

4.
我理解我的面谈过程会被录音，并且在研究报告中可以使用面谈中的匿名直接引用。

5. I understand that the information collected about me may be used to support other research in the future, and may be shared anonymously with other researchers. ☐

5.
我理解所有你们收集的有关我的信息和资料可能会用于支持未来的其它研究，并可能与其他研究人员共享。

6. I agree to take part in the above study. ☐

6. 我愿意参加上述研究项目。

_____	_____	_____
Name of Participant	Date	Signature
参与者姓名：	日期：	签字：
_____	_____	_____
Name of Person taking consent	Date	Signature
征得同意人的姓名：	日期：	签字：

2 copies: 1 for participant, 1 for the project notes

2 份：1 份给参与者，1 份为项目记录